

NewGen IEDC Project
(New Generation Innovation & Entrepreneurship Development Centre)

Progress & Outcome
(2021-22)

Submitted to:



**National Science & Technology Entrepreneurship
Development Board (NSTEDB), DST, GoI**

Submitted by:



Entrepreneurship Development Institute of India
Ahmedabad

C O N T E N T

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**Outcome/Progress Report of NewGen IEDC Project
(New Generation Innovation and Entrepreneurship Development Centre)**

NewGen IEDC aims to inculcate the spirit of innovation and entrepreneurship amongst the young S&T students, encourage and support start-up creation through guidance, mentorship & support. Selected academic institutions host NewGen IEDCs where students are encouraged to take up innovative projects with possibility of commercialization. NewGen IEDCs also spread the message of entrepreneurship and create a culture of entrepreneurship in the Host Institution (HI). With faculty already trained in the nuances of entrepreneurship, the presence of NewGen IEDCs in HI creates a vibrant entrepreneurial culture amongst the students. Few amongst the “**Job-Seekers**” are converted to “**Job-Generators**” through the entrepreneurial route.

1. Project Progress/Outcome as on March, 2022:

In all, 26 institutions have been identified for hosting the NewGen IEDCs in their respective institutions of which 25 academic institutions are active and continuing with this project. For effective implementation of the project, an Advisory Board/Committee has been constituted for each of the institution. The Advisory Board/Committee review the progress made from time to time, fix up physical and financial targets, suggest measures for raising funds, effective utilization of facilities and expertise available in the parent Institute and sourcing of expertise and facilities from other institutions in the region etc.

The progress made under the project since its beginning is very encouraging and the highlights of the same are given in the following table;

Consolidated Progress Made under NewGen IEDC Project as on March, 2022

Sr. No.	Outcome	Total
1	Total number of Student Projects supported	1571
2	No. of Patents filed by students	471
3	No. of Patents Granted	40*
4	No. of Companies/Starts up Set up by Students	138**
5	No. of Enterprise/Business Commercialized	67***

* Details are enclosed as Annexure-I

** Details are enclosed as Annexure-II

*** Details are enclosed as Annexure-III

Highlights of the Institution wise progress made is as under:

Sr. No.	NewGen IEDCs Sanctioned during 2017-18	Progress Made: Till March, 2022	
1	Kuppam Engineering College, Kuppam, Andhra Pradesh	* Total number of Student Projects supported	70
		* No. of Patents filed by students	13
		* No. of companies/Starts up Set up by Students	05
		* No. of enterprise/Business commercialized	04
2	Ramachandra College of Engineering, Eluru Andhra Pradesh	* Total number of Student Projects supported	65
		* No. of Patents filed by students	33
		* No. of companies/Starts up Set up by Students	20
		* No. of enterprise/Business commercialized	03
3	Sasi Institute of Technology & Engineering, Tadepalligudem, Andhra Pradesh	* Total number of Student Projects supported	65
		* No. of Patents filed by students	14
		* No. of companies/Starts up Set up by Students	04
		* No. of enterprise/Business commercialized	03
4	L. J. Institute of Engineering & Technology, Ahmedabad, Gujarat	* Total number of Student Projects supported	102
		* No. of Patents filed by students	41
		* No. of Patents Granted	01
		* No. of companies/Starts up Set up by Students	07
		* No. of enterprise/Business commercialized	07
5	Manav Rachna International University, Faridabad, Haryana	* Total number of Student Projects supported	57
		* No. of Patents filed by students	08
		* No. of Patents Granted	01
		* No. of companies/Starts up Set up by Students	19
		* No. of enterprise/Business commercialized	09
6	B. N. M. Institute of Technology, Bengaluru, Karnataka	* Total number of Student Projects supported	97
		* No. of Patents filed by students	14
		* No. of companies/Starts up Set up by Students	04
		* No. of enterprise/Business commercialized	04
7	University of Science and Technology, Ri-Bhoi, Meghalaya	* Total number of Student Projects supported	67
		* No. of Patents filed by students	38
		* No. of companies/Starts up Set up by Students	19
		* No. of enterprise/Business commercialized	01
8	College of Technology and Engineering, Udaipur, Rajasthan	* Total number of Student Projects supported	61
		* No. of Patents filed by students	02
		* No. of companies/Starts up Set up by Students	03
		* No. of enterprise/Business commercialized	03
9	Dr. MGR Educational and Research Institute, Chennai, Tamil Nadu	* Total number of Student Projects supported	65
		* No. of Patents filed by students	05
		* No. of Patents Granted	01
		* No. of companies/Starts up Set up by Students	24
		* No. of enterprise/Business commercialized	02
10	National Engineering College, Kovilpatti, Tamil Nadu	* Total number of Student Projects supported	65
		* No. of Patents filed by students	44
		* No. of Patents Granted	01
		* No. of companies/Starts up Set up by Students	03
		* No. of enterprise/Business commercialized	03
11	Velammal Engineering College, Chennai, Tamil Nadu	* Total number of Student Projects supported	75
		* No. of Patents filed by students	22
		* No. of companies/Starts up Set up by Students	03
		* No. of enterprise/Business commercialized	01

Sr. No.	NewGen IEDCs Sanctioned during 2017-18	Progress Made: Till March, 2022	
12	Sphoorthy Engineering College Hyderabad, Telangana	* Total number of Student Projects supported	65
		* No. of Patents filed by students	25
		* No. of companies/Starts up Set up by Students	09
		* No. of enterprise/Business commercialized	02
13	GLA University, Mathura, Uttar Pradesh	* Total number of Student Projects supported	99
		* No. of Patents filed by students	36
		* No. of Patents Granted	08
		* No. of companies/Starts up Set up by Students	05
14	University of Kashmir, Srinagar, Jammu and Kashmir	* No Progress Reported So far	

Sr. No.	NewGen IEDC Sanctioned during 2018-19	Progress Made: Till March, 2022	
1	Indian Institute of Technology, Guwahati, Assam	* Total number of Student Projects supported	45
		* No. of Patents filed by students	03
		* No. of companies/Starts up Set up by Students	01
2	Marwadi University, Rajkot, Gujarat	* Total number of Student Projects supported	50
		* No. of Patents filed by students	21
		* No. of Patents Granted	03
		* No. of companies/Starts up Set up by Students	03
3	Jawaharlal Nehru National College of Engineering, Shimoga, Karnataka	* Total number of Student Projects supported	39
4	Datta Meghe Institute of Medical Sciences, (Deemed to University), Wardha, Maharashtra	* Total number of Student Projects supported	45
		* No. of Patents filed by students	20
		* No. of Patents Granted	14
		* No. of companies/Starts up Set up by Students	04
5	Chitkara University, Rajpura, Punjab	* Total number of Student Projects supported	60
		* No. of Patents filed by students	40
		* No. of Patents Granted	08
		* No. of companies/Starts up Set up by Students	10
		* No. of enterprise/Business commercialized	03
6	Mar Ephraem College of Engineering & Technology, Elavuvilai, Tamil Nadu	* Total number of Student Projects supported	45
		* No. of Patents filed by students	15
		* No. of companies/Starts up Set up by Students	04
		* No. of enterprise/Business commercialized	04
7	Nehru Institute of Engineering and Technology, Coimbatore, Tamil Nadu	* Total number of Student Projects supported	45
		* No. of Patents filed by students	33
		* No. of Patents Granted	01
		* No. of companies/Starts up Set up by Students	27
		* No. of enterprise/Business commercialized	01
8	S. R. M. Institute of Science and Technology, Kattankulathur, Tamil Nadu	* Total number of Student Projects supported	83
		* No. of Patents filed by students	14
		* No. of Patents Granted	01
		* No. of companies/Starts up Set up by Students	06
		* No. of enterprise/Business commercialized	03
9	C. V. R. College of Engineering District: Ranga Reddy, Telangana	* Total number of Student Projects supported	62
		* No. of Patents filed by students	02
		* No. of companies/Starts up Set up by Students	02
		* No. of enterprise/Business commercialized	02
10	Sumathi Reddy Institute of Technology for Women, Warangal Urban, Telangana	* Total number of Student Projects supported	47
		* No. of Patents filed by students	06
		* No. of Patents Granted	01
		* No. of companies/Starts up Set up by Students	06
		* No. of enterprise/Business commercialized	04
11	I. T. S. Engineering College Greater Noida, Uttar Pradesh	* Total number of Student Projects supported	52
		* No. of Patents filed by students	19
		* No. of companies/Starts up Set up by Students	09
		* No. of enterprise/Business commercialized	01
12	Indian Institute of Information Technology Allahabad, Uttar Pradesh	* Total number of Student Projects supported	45
		* No. of Patents filed by students	03
		* No. of companies/Starts up Set up by Students	08
		* No. of enterprise/Business commercialized	07

The project, has been doing extremely well as many institutions have reported excellent progress. Following are the highlights of the consolidated progress made under the project during the **FY 2021-22**;

Sr. No.	Outcome: FY 2021-22	Total
1	Total number of Student Projects supported	539
2	No. of Patents filed by students	111
3	No. of Patents Granted	07#
4	No. of Companies/Starts-up Set up by Students	47##
5	No. of Enterprise/Business Commercialized	17###

Details are enclosed as Annexure-IV

Details are enclosed as Annexure-V

Details are enclosed as Annexure-VI

Highlights of the Institution wise progress made during the FY 2021-22 is as under:

Sr. No.	NewGen IEDCs Sanctioned during 2017-18	Progress Made During the FY 2021-22	
1	Kuppam Engineering College, Kuppam, Andhra Pradesh	* Total number of Student Projects supported	21
		* No. of Patents filed by students	01
2	Ramachandra College of Engineering, Eluru Andhra Pradesh	* Total number of Student Projects supported	20
		* No. of companies/Starts up Set up by Students	17
3	Sasi Institute of Technology & Engineering, Tadepalligudem, Andhra Pradesh	* Total number of Student Projects supported	20
		* No. of Patents filed by students	08
		* No. of companies/Starts up Set up by Students	01
4	L. J. Institute of Engineering & Technology, Ahmedabad, Gujarat	* Total number of Student Projects supported	29
		* No. of Patents filed by students	01
		* No. of Patents Granted	01
		* No. of companies/Starts up Set up by Students	02
		* No. of enterprise/Business commercialized	02
5	Manav Rachna International University, Faridabad, Haryana	* Total number of Student Projects supported	20
		* No. of Patents filed by students	02
		* No. of companies/Starts up Set up by Students	04
		* No. of enterprise/Business commercialized	03
6	B. N. M. Institute of Technology, Bengaluru, Karnataka	* Total number of Student Projects supported	32
		* No. of Patents filed by students	02
		* No. of companies/Starts up Set up by Students	02
7	University of Science and Technology, Ri-Bhoi, Meghalaya	* Total number of Student Projects supported	22
		* No. of Patents filed by students	07
		* No. of companies/Starts up Set up by Students	03
		* No. of enterprise/Business commercialized	01
8	College of Technology and Engineering, Udaipur, Rajasthan	* Total number of Student Projects supported	21
9	Dr. MGR Educational and Research Institute, Chennai, Tamil Nadu	* Total number of Student Projects supported	20
		* No. of companies/Starts up Set up by Students	03
10	National Engineering College, Kovilpatti, Tamil Nadu	* Total number of Student Projects supported	20
		* No. of companies/Starts up Set up by Students	01
		* No. of enterprise/Business commercialized	01
11	Velammal Engineering College, Chennai, Tamil Nadu	* Total number of Student Projects supported	20
		* No. of Patents filed by students	03
		* No. of companies/Starts up Set up by Students	02
		* No. of enterprise/Business commercialized	01
12	Sphoorthy Engineering College Hyderabad, Telangana	* Total number of Student Projects supported	20
		* No. of Patents filed by students	08
		* No. of companies/Starts up Set up by Students	04
		* No. of enterprise/Business commercialized	01
13	GLA University, Mathura, Uttar Pradesh	* Total number of Student Projects supported	27
		* No. of Patents filed by students	04
14	University of Kashmir, Srinagar, Jammu and Kashmir	* No Progress Reported So far	

Sr. No.	NewGen IEDC Sanctioned during 2018-19	Progress Made During the FY 2021-22	
1	Indian Institute of Technology, Guwahati, Assam	* Total number of Student Projects supported	20
2	Marwadi University, Rajkot, Gujarat	* Total number of Student Projects supported	25
		* No. of Patents filed by students	17
		* No. of companies/Starts up Set up by Students	01
3	Jawaharlal Nehru National College of Engineering, Shimoga, Karnataka	* Total number of Student Projects supported	14
4	Datta Meghe Institute of Medical Sciences, (Deemed to University), Wardha, Maharashtra	* Total number of Student Projects supported	20
		* No. of Patents filed by students	08
		* No. of Patents Granted	06
		* No. of companies/Starts up Set up by Students	03
5	Chitkara University, Rajpura, Punjab	* Total number of Student Projects supported	20
		* No. of Patents filed by students	09
		* No. of companies/Starts up Set up by Students	01
6	Mar Ephraem College of Engineering & Technology, Elavuvilai, Tamil Nadu	* Total number of Student Projects supported	20
		* No. of Patents filed by students	10
		* No. of companies/Starts up Set up by Students	01
		* No. of enterprise/Business commercialized	01
7	Nehru Institute of Engineering and Technology, Coimbatore, Tamil Nadu	* Total number of Student Projects supported	20
		* No. of Patents filed by students	20
		* No. of companies/Starts up Set up by Students	13
8	S. R. M. Institute of Science and Technology, Kattankulathur, Tamil Nadu	* Total number of Student Projects supported	24
		* No. of Patents filed by students	03
		* No. of companies/Starts up Set up by Students	02
9	C. V. R. College of Engineering District: Ranga Reddy, Telangana	* Total number of Student Projects supported	24
		* No. of companies/Starts up Set up by Students	02
		* No. of enterprise/Business commercialized	02
10	Sumathi Reddy Institute of Technology for Women, Warangal Urban, Telangana	* Total number of Student Projects supported	20
11	I. T. S. Engineering College Greater Noida, Uttar Pradesh	* Total number of Student Projects supported	20
		* No. of Patents filed by students	08
12	Indian Institute of Information Technology Allahabad, Uttar Pradesh	* Total number of Student Projects supported	20
		* No. of companies/Starts up Set up by Students	04
		* No. of enterprise/Business commercialized	04

2. Institution wise progress report:

NewGen IEDC: Kuppam Engineering College

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Kuppam Engineering College		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. S. Sudhakar Babu		
Name of NewGen IEDC Coordinator	Dr. G. N. Kodanda Ramaiah		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> Mobile Number e-Mail ID 	9502686286 gnk.ramaiah@gmail.com		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/01 Date: 15/06/2017	Rs. 60.00,000
	2		Rs. 47.50,000
	3		Rs. 60.00,000
	4		Rs. 60.00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

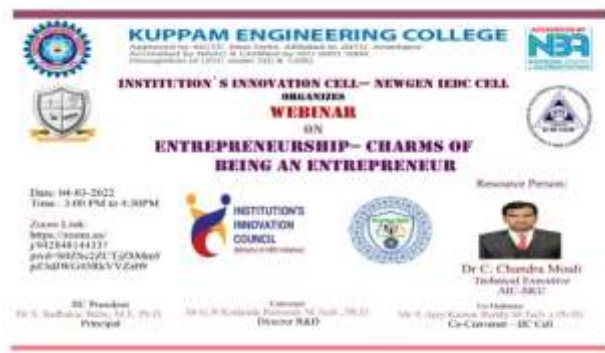
1. **“Awareness Programme on Entrepreneurship”** by Mr Karthik Sekar, Incubation Manager, Atal Incubation Centre, Sri Krishnadevaraya University (AIC-SKU). Held on 29th September 2021.

- 50 students from various departments of KEC participated in the IGNITE 2.0 program.
- Four teams Won prizes in the IGNITE2.0 Start-up program @Atal Incubation Centre, S.K University, Anantapur.
- Selected teams are undergoing internship training @Atal Incubation Centre, S.K University, Anantapur.



2. One Day Webinar On **“ENTREPRENEURSHIP: Charms of being an Entrepreneur”** by Dr.C Chandra Mouli, Technical Executive, Atal Incubation Centre(AIC)-S.K University, Anantapur, held on 4th March 2022.

- 140 (60 Offline and 80 Online) students participated from various disciplines and learned about the role of innovation, creativity, and Entrepreneurship in socio-economic sustainability.
- During the brainstorming session many students have come out with “Out of the Box” ideas.
- Dr. Ramaiah assured mentoring support, and incubation facilities to the interested students who wish to develop prototype modules of their ideas.



3. One Day Event on “**Project Exhibition: Innovations at KEC**” by Dr.G.N Kodanda Ramaiah, Chief Coordinator, NewGen IEDC, Kuppam Engineering College, 19th February 2022.

- Approximately 100 students and 10 staff members participated in the project exhibition and explored various innovative project models.
- During the brainstorming session many students have come out with “Out of the Box” ideas.
- Dr.Ramaiah assured of mentoring support, and incubation facilities to the interested students who wish to develop prototype modules of their ideas.





4. Five Days Workshop on **“Innovation in Solar Power System Design and Installation”** by Mr. V.Manoj Kumar, Managing director, NIRE SOLUTIONS, and Mr. R.ELAVARASAN, Managing director Pranav Solutions. , Bangalore, Held from 3rd December to 7th December 2021.

- 74 students and 25 staff members participated and learned the process of Solar PV design for Hybrid solar systems, Grid-tied solar systems.
- Nearly 30 students are willing to be interns of the “Pranav Solutions” during their final year of engineering.
- Many student teams are being asked to do mini and main projects on Hybrid energy harnessing techniques.

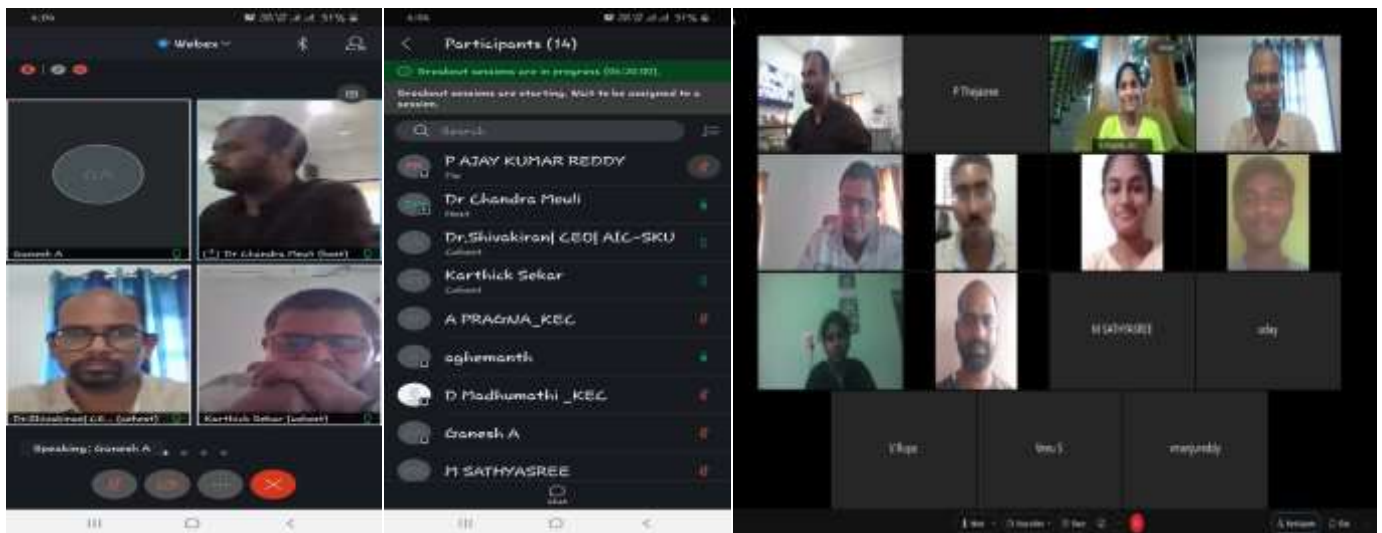




[B] To identify, develop & commercialize students' innovative ideas

1. One-day Virtual Event on **“IDEA COMPETITION”** By Dr. Siva Kiran, CEO, Mr. Karthik Sekhar, Manager, and Dr. C Chandramouli, Technical Executive Atal Incubation Centre, S.K University, Anantapur. Held on 6th February 2022.

- Four Teams were selected for the final competition held @Atal Incubation Centre, S.K University Anantapur.
- One out of four teams won the Second Prize in the completion.
- The selected team is undergoing the start-up internship @Atal Incubation Centre, S.K University, Anantapur.



2. One-day seminar on **“Industrial Product Development”** by Mr. Kiran Kumar, Chief Protocol Designer, OnePlus India, Bangalore, Held on 3rd December 2021.

- More than 80 student's participants experienced the product development environment and processes in the industry.
- Nearly 30 students have shown interest in taking internship in the embedded systems design.
- Mr. Kiran assured of helping in the formalization of concept development and testing processes



3. Two-day Training on “Innovations in VLSI Automatic Test Equipment (ATEs) or IC Testers and Design Verification”, by Mr. Tharun Kumar Reddy, Senior Verification Engineer, AMD India Pvt. Ltd., Bangalore, from 26th - 27th November 2021.

- 90 participants were Enlightened with the vast knowledge of the VLSI design process and the key role played by the Automatic Test Equipment (ATEs) or IC testers for ensuring efficient performance of the devices.
- Nearly 35 students have shown interest in taking up internships in the VLSI design and Testing.
- Mr. Reddy posed a real-time problem to the students and asked the students to find the solutions by developing IC testing devices using the latest technologies for their Laboratory ICs.



4. Three-days Hands-on Training on “Innovations in Home and Office Automation” by Mr. Shailesh, Trainer, Siemens, Bangalore, from 28th – 30th January 2022.

- 50 students from various departments of KEC participated and learned the embedded automation process in this training program.
- Students had hands-on experience on embedded home/office automation boards.
- Few students have come out with mini project ideas on automation of processes



[C] To enhance Industry-Academia interaction

1. One-day Workshop on “**IDUSTRY4.0**” by Dr. Amar Deepak, R&D Head, Cambridge Institute of Technology, Bangalore, held on 26th November 2021.

- More than 150 students from various departments of KEC participated and learned about various advanced technologies in this workshop.
- Students were motivated to undergo internships on Industry 4.0.
- Many students were suggested to carry out their undergraduate projects on smart technologies under Industry 4.0.



2. Three-days Hands-on Training on “**LabVIEW & 5G -Software Defined Radio**” by Mr. Ajay, NI-Avgarde systems, and Mr. J. Ravi Kumar, Technical Instruments, Bangalore, on 23rd, 24th and 27th December, 2021.

- More than 80 students from various departments of KEC participated and experienced a new platform in this training programme.
- Students could able to learn the various functionalities of LabVIEW to develop any applications on top of it.
- Many students showed interest in developing projects based on SDR and LabVIEW.



3. One Day Workshop Hands-On Training On “LED LIGHTS ASSEMBLING AND MANUFACTURING TECHNOLOGY” by Mr. Pranav Shah, CEO, Pranav Solutions, Bangalore, on 30th December 2021.

- 70 students and 20 staff members participated and learned the process of LED lights (including solar lights) manufacturing and assembling.
- Nearly 25 students are willing to be interns of the “Pranav Solutions” during their final year B.Tech.
- Many student teams are being asked to do mini and main projects on smart lighting systems.



4. Five-day workshop and Hands-on Training on “PCB Design and Fabrication” by Mr. Sanjay Kumar, Product Manager, Pantech Solutions, Chennai, from 06th -to-12th February 2022.

- 30+ students from various departments have participated and learned the PCB design process using Cadence tools.
- Students had hands-on experience in designing single layer and Multi-Layer PCBs.
- Students were suggested to develop customized PCBs for their mini project ideas.



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

There are only a few minor deviations or changes in the execution of activities and student projects according to the action plan submitted to EDII at the beginning of the year are;

- i. Under the initiatives/Activities undertaken section, all the activities/events conducted in three sub-sections are having different dates from the actual proposed date and there is a slight change in the meaning & titles of a few of the activities.
- ii. **Student Project Section:** Many student projects are executed according to the proposed action plan with few changes in the project ideas as per the Advisory board member's suggestions but in a short time, in a few cases, execution has been successfully completed, and still only a few projects under development with few changes in the plan of action. The reason for the delayed execution is the financial requirements of those projects, as we received the 4th year grant in February 2022. However, we tried our level best to initiate the execution of the project from the beginning of the year with the financial assistance of the host institution.

With reference to the ADVISOR MEETING held on 11-03-2021, the Advisory Committee comprising of Dr.Naveen Vasista, Scientist, DST, and Mr.S.B Sareen, Director, Department of Projects (Govt.), EDII, have suggested to reconsider some of the project ideas and emphasized to focus on the ideas of the need/rural ideas. Therefore, as per their suggestions, we included some new ideas to address the local farmer's needs and social problems.

3. Other important highlights (new initiatives), if any:

NewGen IEDC of KEC is working towards upgrading the existing facilities through many initiatives in the field of Innovations & Entrepreneurship development, upgrading the technical skill sets of science & technology students, to bridge the technical gaps between industry & academia by providing the quality education and training.

Few of the new initiatives are as follows;

I.Internship Program in “IoT and Embedded Development”

- More than 250 students have undergone internships in the Internet of Things and Embedded Project Development for Two Weeks

II.TinkerCad Lab: Established the TinkerCad Lab for providing hands-on practical training on computer-aided design, software simulation, and PCB design

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Design and Fabrication of Automatic Storage Retrieval System

I. Project Title : Design and Fabrication of Automatic Storage Retrieval System

II. Mentor Name : Mr. K Ganesh

III. Student team details

1. G. Venkateswaran
2. J. Josinpaul
3. Shashi Ranjan Kumar
4. S. A. Arif

IV. Brief description of the student start-up

Start-up Registration in Process.

This is the idea to solve the problems in car parking, material handling in warehouses, and letters and parcel handling in post offices. In a decent manner by using IOT based web app to control the system. In this parking system, we have designed a rotary mechanism for the automatic material lifting and placing system. A material storage system that rotates around its horizontal axis is suggested.

The system of moving vehicles and materials does not require any mechanical devices and there are no ceilings, load-bearing walls, or pillars in this ASR System it is easy to use, inexpensive and dependable As this project was developed in collaboration with Mindset Engineering solutions and Jaya Lakshmi engineering solution, Bangalore and small manufacturing companies. We have simplified the design and also made it cost-efficient and affordable to post offices, warehouses, and car parking. For this machine, we can utilize different mechanisms. After testing and approval from the government and proceedings from all the collaborators, we have applied for startup registration.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

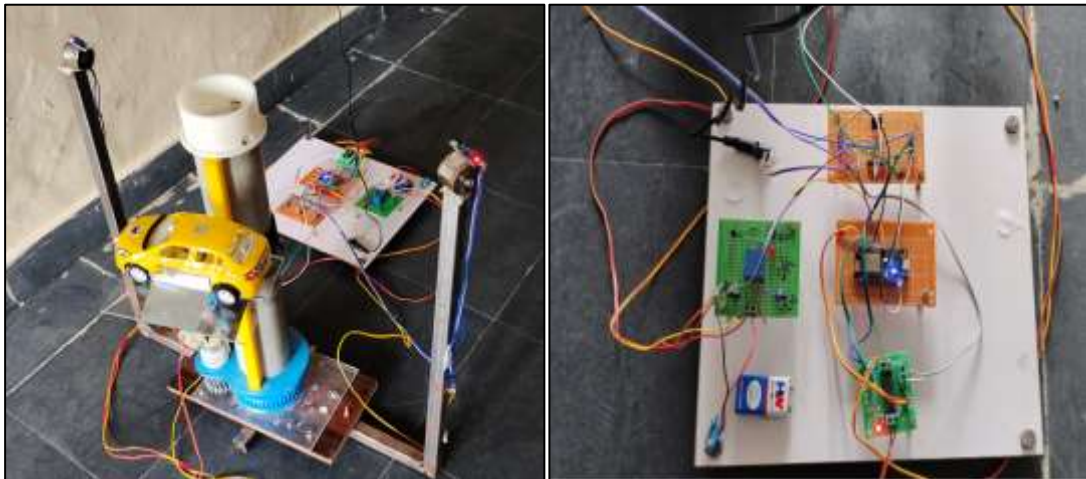
We are facing the problems in cities due to rapid use of cars and low space availability in cities Our aim is to provide the product which can reduce the effort of manual work and also the time was taken of material loading and unloading. It occupies less floor space and continuous operation is possible without stopping and also a quick response is achieved. In that, the cheaper and easily available material is used and made as an eco-friendly product.

- ✓ Automated Storage and Retrieval System
- ✓ Automated Storage and Retrieval systems are designed to be used in Warehouses or Storage inventory in the industry.
- ✓ Where the Storage materials can be handled easily by the special mechanism.
- ✓ It consists of stepper motors for smooth and precision operation.
- ✓ It is a customized product, so the design and specification of the materials are depending on several factors such as Available Floor Space Area, Materials to be handled, and the Holding capacity of the Gripper.

The project team & Mentor had discussed the Jayalakshmi industry and Mindset engineering solutions, ways of innovations, practical viability, Commercial viabilities & Reliability at the beginning of the year.

Discussed with technical experts, Ajaya engineering works, and Moon industry experts Bangalore, for practical feasibility and technological implementations.

- The project team was able to develop a proof-of-concept (POC) prototype successfully.
- Demonstrated the prototype model to many industry experts, and investors for possible intervention to take up to the product level.



VI. Contribution of NewGen IEDC in the same

The chief coordinator & project coordinators of NewGen IEDC, KEC have played a key role in promoting the student idea to the Demo Product level by bridging the industries & Government with our institution.

Varies levels of support & contribution made by KEC, NewGen IEDC are;

- Provided financial assistance to develop the prototype & Demo Product module of the project idea.
- For developing the prototype, we had a meeting with Ajay's engineering solution and the Moon industry and came up with a primary design.
- Extended all the support systems for the project team to work with Ajaya engineering works, Bangalore, and technical experts.
- Promoted the project team to participate in all innovation & Entrepreneurship activities at free of cost.
- Provided industrial exposure by referring student teams to various companies for Internships.

VII. Future plan

Smart Parking solutions play a huge role in the smart city ecosystem, betterment in convenience, congestion, lower costs, urban mobility, and practical information & intelligence delivery. Digital smart cities change the consumer's experience and set expectations that shape the demand for parking services. The progress of all-inclusive information services has led Smart Parking to extend our technology and services to meet smart city solution needs.

Smart parking applications have a positive impact on all investors. Bikers will be equipped to reserve parking spaces in advance. Officials will better be able to manage traffic and catch parking breaches. Managers and parking facility owners can better use the space and resources within their parking lot. Smart parking will be a great move for urbanization. Hire top app developers for mobile app development for your business.

- Parking demand management and space optimization
- Personalized parking guidance
- Parking reservation systems
- Dynamic parking prices and policy optimization
- Detection of parking zones, fees, and overstay violations
- For additional information we are going to consult with Experts for improvisation

VIII. Important highlights

- The system detects if parking slots are occupied using IR sensors.
- The system reads the number of parking slots available and updates data with the cloud server to allow for checking parking slot availability online.
- Thus the system solves the parking issue for cities and gets users an efficient IOT-based parking management system.
- It occupies less space then compare to other parking systems.

Best Project-2: Agri-Quadcopter

- I. Project Title** : Agri-Quadcopter
II. Mentor Name : Mr. P. Ajay Kumar Reddy

III. Student team details

1. K. Thrinesh
2. G. Santhosh Kumar
3. S. Muskan
4. M. Poornima
5. S. Sathya Narayana

IV. Brief description about the student Project

An unmanned aerial vehicle (UAV), commonly known as a drone is an aircraft without any human pilot, crew, or passengers on board. UAVs are a component of an unmanned aircraft system (UAS), which includes adding a ground-based controller and a system of communications with the UAV. The flight of UAVs may operate under remote control by a human operator, as remotely-piloted aircraft (RPA), or with various degrees of autonomy, such as autopilot assistance, up to fully autonomous aircraft that have no provision for human intervention. Agri-drones can be used to spray chemicals as they have reservoirs, which can be filled with fertilizers and pesticides for spraying on crops in very little time, as compared to traditional methods. Thus, drone technology can usher in a new era for precision agriculture. But, for small farmers these drones are not an affordable price and applications wise need to purchase multiple drones. The Idea is to develop all-purpose agriculture drones and they should be available for small farmers as well. Drones can be used for Seeding, spraying pesticides, nano Urea, Crop Monitoring, and Animal Tracing, etc,

Objectives:

- To Import Excellency in Smart Farming Solutions
- To produce the most complete IoT solutions on Smart farming.
- Educate Rural and remote location Villages on future farming
- Production & commercialization of smart Farming solutions by working closely with agriculture Department, organizations & government for successful implementation.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Start-ups entrepreneurial journey passed through the following two different stages with different activities undertaken to complete the project design & development process;

First Stage: (IDEA-to-Prototype)

- Project team & Mentor had discussed the specific problems the Quadcopter Design, innovations, practical feasibility, Commercial viabilities & social impact at the beginning of the year.
- Discussed with technical experts of Aadhya Softtech Solutions, Kuppam for preparing design requirements & Project roadmap.
- Project team had worked with technical expert team of Aadhya Softtech Solutions, Kuppam to design the proof-of-concept (POC) prototype successfully.
- Demonstrated the prototype model to many industrial experts, Karthik Shekar, Manager AIC SKU and to the students in the college to know its performance of the Quad Copter.



Demonstration of Quad copter for college Students

- **Second Stage: (Prototype-to-Demo Product):** Feedback from the experts leads the project team to work on improvisation/optimizing the Design aspects



Project Team with Agri-Quadcopter

VI. Contribution of NewGen IEDC in the same

The chief-coordinator & project coordinators of NewGen IEDC, KEC have played a key role in promoting the student idea to start-up level by bridging the industries with our institution. Varies levels of support & contribution made by KEC, NewGen IEDC are;

- Provided the financial assistance to develop the prototype module of the project idea.
- Promoted the project team to participate in all innovation & Entrepreneurship activities at free of cost.
- Applied for MSME Hackathon 2020 for funding of 15 lakhs.
- Provided industrial exposure by referring student teams to various companies for Internships.
- Trying to apply for a startup after validation of the results.

VII. Future plan

- To be a successful start-up firm for providing low cost, feasible “Multipurpose Agriculture Drone “ with DGCA Standards within 1 year from the date of company registration.
- Collaborating with agriculture offices and village panchayat introducing Drones for spraying pesticides, Seeding and Crop monitoring, and educating farmers.
- Commercializing the product through different marketing channels for increasing many clients.
- Increasing customers base through market expansion.
- Training rural youths & providing employment opportunities.
- Extending R&D activities to cope with future technologies.

Best Project-3: IOT Based Smart Ripening Chamber

I. Project Title : IOT Based Smart Ripening Chamber

II. Mentors Name : Dr. G. N. Kodanda Ramaiah

III. Student team details (with contact information)

1. Purushotham
2. R. Guna Sekhar
3. S.Kalyan Kumar
4. Govardhan Reddy

IV. Brief description about the student start-up

Start-Up Status:

The Project is applied for MSME – BI for Product Development with Idea No. INC22AKR001968 entitled with “SMART RIPENING CHAMBER” A Start-up company is under process.

Objectives of the Start-up to:

- Develop as a Low cost ergonomic design with high ease of use.
- Design the smart ripening chamber using IOT
- Get uniform color and flavor with improved quality.
- Extended storage life of fruits and better marketability.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Start-ups entrepreneurial journey passed through the following two different stages with different activities undertaken to complete the project design & development process;

First Stage: (IDEA-to-Prototype)

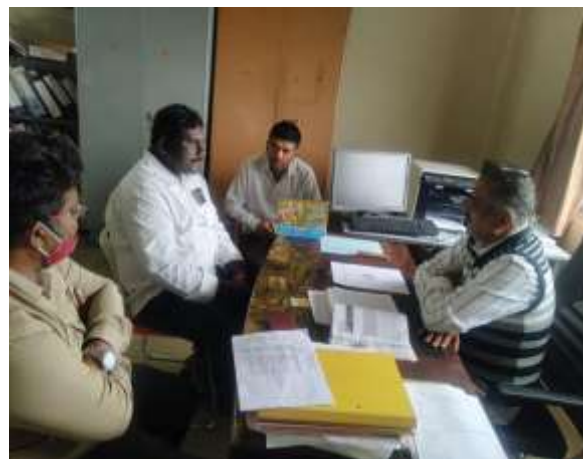
- Project team & Mentor had discussed the specific problems of the RIPENING CHAMBER idea addresses, innovations, practical feasibility, Commercial viabilities & social impact at the beginning of the year.
- Discussed with technical experts of Acenaar Technologies Private Limited, Kurnool and Technologics, Bengaluru for practical feasibility and technological implementations.
- Project team was able to develop a proof-of-concept (POC) prototype successfully, under the supervision of technical experts of Technologics, Bengaluru.

- Demonstrated the prototype model to Mr. Bhaskar, Project Manager, Agastya International Foundation, Kuppam for possible intervention to take up to the product level. The experts had given feedback to improve the design aspects.

Second Stage: (Prototype-to-Demo Product)

- MoU has been signed between **MSME-BI** and the student for developing the product and to start the startup.
- Patent filing is on process.

The team visited to cftri central food technology and research institute Mysore on, 18-2-21 and 19-2-21 and interacted scientist Vijay Anand and prof Velu and his team for improvements in prototype.



Demonstrated the prototype model to Scientists Krishna and his team at horticulture college Kolar



Demonstrated the model to B R Geetha, Assistant director, Horticulture officer, mango development board, chintamani, Karnataka.

VI. Contribution of NewGen IEDC in the same

The chief-coordinator & project coordinators of NewGen IEDC, KEC have played a key role in promoting the student idea to start-up level by bridging the industries with our institution. Varies levels of support & contribution made by KEC, NewGen IEDC are;

- Provided the financial assistance to develop the prototype module of the project idea.
- Invited many industrial experts, R&D Directors, and Successful entrepreneurs for demonstrating the project modules developed by the students & sought feedback for further improvement in the project design.
- Permitted the project team to work with the R&D team of Acennar Technologies Pvt Ltd to develop the proof-of-concept.
- Permitted the Project team to apply the project for MSME- BI.
- Encouraged the project team to demonstrate the Prototype & Demo Product model is at various departments of Horticulture.
- Promoted the project team to participate in all innovation & Entrepreneurship activities at free of cost.
- Provided industrial exposure by referring student teams to various companies for Internships.

VII. Future plan

- To be a successful start-up firm for providing low cost, feasible and Reliable product within 3 years from the date of company registration.
- Collaborating with all the MSME- BI, Atal Incubation Centre, for introducing and commercializing the product.
- Increasing customer base through market expansion.
- Training rural youths & providing employment opportunities.
- Extending R&D activities to cope with the future technologies.

Annexure-A

Details of Student Projects

Project-01: Agri-MoistioMeter: Soil & Crop Health Tracker

1. Project Title : "Agri-MoistioMeter: Soil & Crop Health Tracker"

2. Mentor Name : Mr. Santhosh B. Panjagal, (M.Tech, Ph. D.)

3. Student Team Names:

- I. Indhupriya P.
- II. Shaik Faiza Banu
- III. Rajinikanth
- IV. R. Pavan

4. Project Description:

Crop-specific Soil health management in agricultural land is a very tedious task, as there are sensors for soil moisture measurement and Tesnsiometer in the market, but they measure the soil moisture at the specific area inserted inside the land. As we know for any crop, the base of the roots is more than a foot from the soil surface. Therefore, the current devices or techniques do not provide Complete and continuous information about moisture content from the soil surface to the base of the roots. Therefore, in our proposed project we design an Agri-Moistiometer device, which keeps track of moisture levels at different levels of the soil from the surface up to the roots zone by dividing different layers of the soil from the top surface to the bottom of the crop roots. This device will give the difference in soil moisture contents at various layers from the top surface the to bottom of the roots, which in-tern makes it easy to predict the water holding capacity of the soil, and the amount of water that should be supplied, and when to supply the water. Apart from moisture contents, this device measures soil temperature and soil PH levels.

5. Project status at beginning of the Year:

Idea Level:

- Project team found the Innovation gaps in the existing products after an extensive search and survey.
- Identified the unique proposition values of the idea
- Developed the conceptual model of the Agri-Moistiometer.
- Prepared the project roadmap and technical plan of execution.

6. Interventions made:

The project team could be able to implement the design aspects of Agri-Moistimeter in two versions (AM-I & AM-II) after consulting experts from the agriculture research centres and centres of excellence.

- Firstly, the project team visited Centre of Excellence (Horticulture) for Vegetables & Flowers Kuppam, and held a discussion about various crops, their harvesting duration, root depth, and water requirement for the full cycle. Also, sought help for testing our prototype module at their centre.
- Project team was fortunate to interact (At Chennai, India, Date:17-01-2022) with Professor S.S Iyengar, Ryder Professor and Director of Computing Centre, Florida International University, U.S.A, and received advice on developing the device on the AI-Machine Learning platform for improving the accuracy of in-field parameter predictions.
- For the Advanced version (AM-II) of Agri-Moistimeter implementation, the project team visited KVK Agriculture Research Centre, Kolar to know the characteristics of various types of soil, soil properties like water holding capacity, micro and macronutrients, soil texture, etc.,
- Finally, visited many farmlands and interacted with farmers, collected information on farming methods, field watering schedules, and technology used in present farming.
- The technical design aspects of the Agri-Moistimeter have been successfully implemented by our project team seeking assistance from Mr. Harish, Embedded Engineer, Technilab Instruments, Bengaluru.

7. Current status:

- The proof-of-concept **Prototype (AM-I & AM-II)** module has been successfully designed and is currently under field test.
- Preparing the necessary documents on the proposed idea for **Patent filing**.
- Submitted the business model of the idea to MSME-BI, KEC for product development and commercialization.
- The low-cost basic version of Agri-Moistimeter (AM-I) with adequate features shows good performance in terms of measurement and prediction.

- The advanced version of Agri-Moistimeter (AM-I) with remote access and management feature is currently under field validation.
- Looking to interact with agriculture research centres for possible interventions, and also local farmers to use advanced technology for effective resource utilization and produce a good yield.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Battery Rejuvenator: Hybrid Technique to Increase Battery Life

1. Project Title : “Battery Rejuvenator: Hybrid Technique to Increase Battery Life”

2. Mentor Name : Mr. K Rasadurai, (M. Tech., Ph. D).

3. Student Team Names:

- I. B. Lokeshwari
- II. Hari Govind J.
- III. Sohan Kumar
- IV. A. Ooha

4. Project Description:

Solar electricity will fulfil the energy needs of the future. Therefore, for storing solar energy more and more demand arises for Batteries. The major issues with Batteries are sulfation, which reduces the life cycle of the battery. Therefore, Batteries fail prematurely incurring more losses. To address the battery sulfation and premature failure issues, we propose to develop a hybrid technique for Rejuvenating the battery life cycle through battery sulfation tracking and then de-sulfation by Refurbishment. This device keeps track of the sulfation process through charging and discharging cycle timing and the amount of charge held by the battery cells. The hybrid technique will increase the battery life by almost 40 to 50% more and avoids the premature failure of Batteries. With this, we can ensure the need for battery storage demand in near future.

5. Project status at beginning of the Year:

Conceptual level:

- Conducted a detailed study on battery technology and Refurbishing techniques.
- Collected the details on battery sulfation and de-sulfation process under deep discharge.
- Prepared the documents on feasible solutions (Sulfation Tracking) of the hybrid technique used in battery Rejuvenation.

6. Interventions made:

The complete prototype module design and implementation of the Battery Rejuvenator involved contribution and assistance from various sources.

- The project team successfully designed the prototype module of the Battery Rejuvenator incorporating both battery sulfation tracking and an active desulfator mechanism.
- Project team has consulted Mr. Chandra Mohan, Technical Lead, Goshakthi Renewable solutions, Bengaluru, seeking assistance for the design and testing of a battery sulfation tracking device and hybrid technique for battery rejuvenator.
- The project visited Sri Balaji Enterprises, Bengaluru, a renowned battery and UPS dealer, and service provider. Where they had hands-on experience with the Battery testing and Refurbishment process.
- For Customized Printed circuit boards (PCBs) consulted Technilab Instruments, Bengaluru.

7. Current status:

- The Battery Rejuvenator proof-of-concept **Prototype** module consisting of Battery Sulfation Tracking and Activated Desulfator has been successfully designed and is currently under real-time testing on various capacity batteries at our R&D Centre.
- Working on demonstrating the Battery Rejuvenator module to nearby battery manufacturers and investors for possible interventions.
- The team has set up the battery refurbishment unit in the NewGen IEDC Makers Space and currently working on improving the battery life cycle on poor and nearly dead/sulfated batteries.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Battery Rejuvenator

Project-03: Smart Shelf: Secure Ways of Files/Books/Documents Management

1. Project Title : “Smart Shelf: Secure Ways of Files / Books / Documents Management”

2. Mentor Name : Mrs. H V Pavithra, (M. Tech.)

3. Student Team Names:

- I. S. Swetha
- II. V. Srividhya
- III. G. T. Saikiran
- IV. Sarang M. S.

4. Project Description:

The management of files/books, which include various functions like issuing of files, receiving, adding of files, circulation, periodical management, is becoming too complex because it requires manpower. Therefore, we are going to design a system to automate this task without labor. With our system, we are going to maintain accurate data like who accessed the file, date and time using Raspberry pi. We are going to store the user data, if the user is authorized they can access the books/files, if they are unauthorized they can't access it. After taking the book/file from the shelf, they have to scan the book using a QR code scanner present in the shelf. The scanned details of the file will be stored in the database and the raspberry pi camera will maintain security. Single camera is been used to take pictures and will be used as a QR code scanner simultaneously.

5. Project status at beginning of the Year:

Conceptual level:

- Conducted detailed Study on Files, Books and Documents management in Organizations, offices, etc.,
- Prepared Innovative solutions based on existing methods.
- Developed project roadmap & Overview of the system
- Prepared the business Canvas Model of Smart Shelf idea.

6. Interventions made:

Complete setup of a smart shelf involves customized shelf and electronics module design, which has been implemented successfully with assistance from corresponding industries and experts.

- For the Customized wooden shelf making the team made a deal with Lakshmi interior wood works industry, Kuppam.
- The project team successfully implemented the electronic module for file management through secure authentication and QR technology.
- Consulted Technologies Bengaluru for QR technology incorporation and Database management.
- For electronic part implementation the project team sought help from the KEC R&D team

7. Current status:

Smart Shelf: Prototype Module

- The design and implementation of the POC Prototype module of the smart shelf was successful through a customized shelf and electronic device having secure features (QR technology, Fingerprint, and Database).
- The smart shelf module is currently under real-time testing at the NewGen IEDC facility.
- Preparing for the demonstration of the module and business model of the smart shelf idea to investors, corporate offices, organizations, and other possible customers.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Smart Shelf

Project-04: IoT Based Smart Ripening Chamber

1. Project Title : “IoT Based Smart Ripening Chamber”

2. Mentor Name : Dr. G. N. Kodanda Ramaiah (M.Tech, Ph.D)

3. Student Team Names:

- I. V Purushotham
- II. R Guna Sekhar
- III. S Kalyan Kumar
- IV. V Govardhan Reddy

4. Project Description:

In agriculture sector, IoT can play an important role for smart farming. In fruit harvesting, the ripening of fruit is expressed in terms of change in its physical, physiological & biochemical parameters. Some of the relevant parameters like Size & Shape, Color, Hardness/Softness, and Texture etc. can be treated as reference for its maturity. The final stage of fruit ripening is considered to attain a maturity level of these parameters as an indicator for harvesting the fruit crop ready to use in ripening storage units/chambers. Development of sensor-based maturity indicators can serve as important technological aid to the farmers. We design an IOT BASED SMART RIPENING CHAMBER for real time monitoring of fruit maturity in crop field and in storage. The sensing parameters in the proposed design are Color; Softness; surrounding Temperature & Humidity. An embedded program is developed based on a decision-making algorithm which compares the process values of the sensor output with the reference value of fruit maturity, and the result is displayed and conveyed to the end user.

5. Project status at beginning of the Year:

- Conducted Real-Time Survey to identify real problems.
- Prepared Project Roadmap & requirements.
- Worked on Sensing materials.
- Proof of Concept is ready.
- Prepared the complete Business Plan and analysed the marketing

6. Interventions made:

- Consulted college of Horticulture, Kolar for understanding the requirements in developing the model.

- Approach many farmers and Market Yard for problems on exporting and developing the Proof of Concept.
- For PCB design we are associated with Technilab, Bangalore.

7. Current status:

- Present the model at Kuppam Engineering College for testing and redesign purpose.
- Demonstrate the demo model at Atal Incubation Centre, SKU, Anantapur for seeking industry support.
- Present the model at NTR Market Yard, Kuppam for audience attention.
- Applied the project to MSME – BI.
- Patent filing under process,

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Ripening Chamber

Project-05: GPR Based Underground Water Detector

1. Project Title : “GPR Based Underground Water Detector”

2. Mentor Name : Mr. K. Prakash, (M. Tech.)

3. Student Team Names:

- I. M. Soniya
- II. B. V. Sreya
- III. K. Uday Kumar
- IV. B. Satheesh

4. Project Description:

Water is the most important resource to all living beings; in the current context, groundwater is the principal source of usage for about 50 percent of the Indian population. The water map tells that continuous change in aquifer water and the aquifer water is deeper than usual. Water managers need more timely and accurate data to assess ground-water conditions to manage adverse situations such as drought and loss of pump age in agriculture and domestic water supply. Currently groundwater researchers use stand-alone data logging equipment which is labour intensive and the method is not so easy to identify the water. Our Project works on ground penetrating radar (GPR) system for underground water detection. GPR is a promising technology to detect and identify aquifer water or non-metallic mines. This system detects ground water efficiently.

5. Project status at beginning of the Year:

- Conducted a Survey on identify the real problems on ground water.
- Preparing Project Roadmap & requirements
- Prepared the complete Business Plan and analyzed the marketing.

6. Interventions made:

- Consulted Chittoor Dist. Agriculture Department for understanding the requirements in developing the model.
- Approach many farmers for problems on ground water and developed the Proof of Concept.
- For PCB design we are associated with Technilab, Bangalore,

7. Current status:

- Present the model at Kuppam Engineering college for testing and redesign purpose.
- Demonstrate the demo model at Atal Incubation Centre, SKU, Anantapur for seeking industry support.
- Applied the project to MSME – BI.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Underground Water Detector

Project-06: Smart Automatic Car Cover

1. Project Title : “Smart Automatic Car Cover”

2. Mentor Name : Mr. R. Ranjith Kumar, (M. Tech.)

3. Student Team Names:

- I. N. Karthikeyan
- II. M. S. Rajendra
- III. G. Rayappa
- IV. S. Shahul Basha

4. Project Description:

According to Indian Statistics, 2.2% people of the total population have cars. A car cover will keep your vehicle much cleaner and save you a lot's of time and money on washings. No matter where you live - any city or country - your car will get very dusty without a car cover, even in your garage. Definitely. Prolonged sun exposure will damage your vehicle's paint, seats and dashboard more than virtually any other element. In order to preserve the value and condition of your vehicle, it is critical to use a car cover.

The smart automatic car cover protects your car from all conditions. This automatic deploying car cover system is controlled by a remote. It comes with a built-in car jump starter and has an anti-theft car alarm. It fits perfectly for different types of car models. The unique design and remote-control options allow authorized person to operate easily.

5. Project status at beginning of the Year:

“Analysis Level”

- A survey was conducted to identify the problems and it is shaped dependent on review.
- Designed plan of work and procedure.
- Discussed open issues and dangers.
- A strategy for business plan is created.

6. Interventions made:

- Consulted the automobile industries for understanding the requirements in developing the proof of concept.

- Consulted with Technical Instruments, Bangalore Company for looking of possibilities in reducing the size of first version device.
- For Design Module we are planning to associate with S Technologies, Bangalore.
- Plastic casing is used as casing for electric shock prevention.

7. Current status:

- First version (Ver-01) module is designed and developed.
- Presented the model at Kuppam Engineering college for testing and redesign purpose.
- Demonstrate the demo model at Atal Incubation Centre, SKU, Anantapur for seeking industry support.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Smart Car Cover

PROJECT 07: Portable Oxegen Concentrator

1. Project Title : “Portable Oxegen Concentrator”

2. Mentor Name : Ms. M. Sumalatha, (M. Tech.)

3. Student Team Names:

- I. B. Bharath
- II. K. Teja
- III. K. Dinesh
- IV. C. Jagadeesh

4. Project Description:

Oxygen concentrators also known as oxygen generators are widely used in the medical and healthcare industry to generate oxygen for people (patients). Oxygen concentrators were invented in 1970 and are used for oxygen generation from atmospheric air in various industries. In this pandemic situation, Oxygen plays a key role for COVID patients due to the effect of the virus on the lungs, the respiratory problems are arising because of the decrement of the oxygen levels in the blood. we are developing a stationary oxygen concentrator for persons who are suffering from suffocation for a longer duration. The production of oxygen from the concentrator is about 80%-90% of pure oxygen.

5. Project status at beginning of the Year:

“Analysis Level”

- Study of existing methods & Technology of oxygen concentrator
- Preparing all detailed concepts of working model.
- Preparing document for patent.
- Analysed the marketing, and Business Plan of the Model.

6. Interventions made:

- Consult PES medical college, Kuppam for understanding the requirements in developing the proof of concept.
- Consulted with Kuppam Electro Solutions Private Limited Company for looking of possibilities in reducing the size of first version device.
- For PCB design we are associated with S Technologies, Bangalore,
- The Project team has finally developed a “Demo Model” of the project.

7. Current status:

- Applied the project to MSME – BI.
- The “Demo Product model” is demonstrated at Kuppam Nursing College to draw the Teacher and Public attention for commercialization.
- Patent filing under process,

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Oxygen Concentrator

PROJECT 08: Mini Portable UPS- Self Powered Uninterrupted Power Supply for Small Electric Devices

1. Project Title : “Mini Portable UPS- Self Powered Uninterrupted Power Supply for Small Electric Devices”

2. Mentor Name : Dr. S. Nanda Kishor, (M.Tech, Ph. D.)

3. Student Team Names:

- I. S. B. Tharun
- II. N. Charan
- III. Balaji R.
- IV. S. Jayasankar

4. Project Description:

The pandemic sweeping the world, COVID-19, has rendered a large proportion of the workforce unable to commute to work, as to mitigate the spread of the virus. This has resulted in both employers and employees seeking alternative work arrangements. Due to the pandemic, work from home (WFH), has become a policy priority for most governments and corporates. Since most families in India cannot afford inverters, we propose to develop a portable UPS at a lower price. A mini portable UPS is a small-sized system that provides an uninterrupted power supply to small electronic devices in case of a power failure. It avoids any interruptions in the functioning of connected electronic devices as it maintains its power supply. Unlike a generator, a UPS immediately supplies power to the devices without any lag. It consists of a battery that stores DC power and supplies DC power to the small electric devices in the event of power outlets so that many devices can be connected to it.

5. Project status at beginning of the Year:

- Studied the literature to list out the possible requirements to develop the proof of concept.
- Prepared all detailed concepts of a working model.
- Prepared business model.

6. Interventions made:

- Approached AP Fibernet Limited company for Proof of Concept.
- For PCB design we are associated with Technilab, Bangalore,

- Consulted with Kuppam Electro Solutions Private Limited Company for looking of possibilities in design the aquarium and reduce the size of the first version.

7. Current status:

- First version (Ver-01) module is designed and developed.
- Demonstrate the demo model at Atal Incubation Centre, SKU, Anantapur for seeking industry support.
- Applied the project to MSME – BI.
- Patent filing under process,

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Mini UPS

PROJECT 09: Smart Microgreen Sprouter Unit

1. Project Title : “Smart Microgreen Sprouter Unit”

2. Mentor Name : Mr. T. H. Jayasimha, (M. Tech.)

3. Student Team Names:

I. K. S. Jagadish

II. Kupendra

III. Pandu Ranga

IV. Lasya A.

4. Project Description:

The consumption of sprouts has become a part of human day-to-day life and it is gradually increasing. As people become increasingly conscious about their health, many move towards indoor farming. Here, we are focusing on increasing indoor farming technologies with an emerging Technology: IOT. The advanced approach creates micro green sprouter unit that automatically monitor and provide ideal growing conditions with minimum human supervision and it displays the output after obtaining certain level. By providing proper light, ventilation, humidity and temperature level healthy growth of microgreen can be achieved so one can track the growth rate of sprouts using IOT and even automatic water exchange takes place twice a day.

5. Project status at beginning of the Year:

“Analysis Level”

- A survey was conducted to identify the problems.
- Prepared the Innovative solutions for the problem of sprouts.
- Analysed the marketing and preparing the business plan.
- Prototype model is ongoing.

6. Interventions made:

- Consulted with Centre of excellence (COE), Kuppam for understanding the requirements in developing the proof of concept.
- Consulted with EveZon India Private Limited Company for looking of possibilities in reducing the size of first version device.
- For PCB design we are associated with Technilab Instruments, Bangalore.
- The Project team has finally developed a “Demo Model” of the project.

7. Current status:

- The “Demo Product model” is demonstrated at Kuppam Engineering College to draw the Public attention for commercialization.
- Visited Agastya International Foundation for presented the model at Agastya Foundation Campus Road, Gudivanka, Avulathimmanapalle, Andhra Pradesh.
- Applied the project to MSME – BI.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Sprouter Unit

PROJECT 10: GSM based Automatic 3 Phase Motor Control Panel

1. Project Title : “GSM based Automatic 3 Phase Motor Control Panel”

2. Mentor Name : Mr. G. MUKESH, (M. Tech.)

3. Student Team Names:

- I. S. Jyothi
- II. K. Nithyasree
- III. Sri Hari
- IV. U. Prasanna Kumar

4. Project Description:

India is basically an agriculture country, and all its source depends upon the agriculture output. With the drastic development of agriculture in India, many automatic technologies have been introduced into agriculture field and production. As a survey, In order to get maximum yield, it is essential to supply the optimum quantity of water and maintain the correct timings of water supply. So this is possible only through a symmetric irrigation. That is the way to concentrate on that point. Farmers facing a variety of problems such as electric power supply not available 24 hours in India because of the frequent power cuts and abnormal voltage conditions.

The farm aloof from his house, hence to on and off the motor automatically using our project, is about making this system efficient and dynamic. This automatic control is for controlling the motor from a far off place, look over its operating conditions; get feedback from the motor itself. So here our target is to regulate the motor from the distant place by mobile and also get feedback by SMS while it's in ON or OFF condition. This provides the event of mobile phones as an overseas control application for the induction motor pump which is employed in agriculture.

5. Project status at beginning of the Year:

- Studied of existing methods & Technology of motor control.
- Interacted with local farmers.
- Developed detailed concepts on design & implementation.

6. Interventions made:

- Consulted local industries for the requirements in developing the proof of concept

- Approach many farmers for problems on power and water, and developed the Proof of Concept.
- For PCB design we are associated with Technilab, Bangalore,.
- The Project team has finally developed a “Demo Model” of the project.

7. Current status:

- The Model is presented at Kuppam Engineering College to draw the Public attention for commercialization.
- Visited Agastya International Foundation for presented the model at Agastya Foundation Campus Road, Gudivanka, Avulathimmanapalle, Andhra Pradesh.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Phase Motor Control Panel

PROJECT 11: AI-Powered Intelligent Device to predict AQI Levels and Health planner for Industrial Applications

1. Project Title : “AI-Powered Intelligent Device to predict AQI Levels and Health planner for Industrial Applications”

2. Mentor Name : Mr. Kiran Kumar, (M. Tech.)

3. Student Team Names:

- I. B. S. Vishnu Prasad
- II. Sebastian Paul
- III. Navitha R.
- IV. Sangireddy Vanaja

4. Project Description:

- The Air Quality is drastically deteriorating day by day due to increased industrial and human activities.
- Decreasing air quality reflects severe health effects such as pulmonary diseases (Respiratory (Lung) problems, Asthma, Chronic bronchitis, Cystic fibrosis, etc., on a human being.
- The proposed electronic device has been developed by incorporating major air quality sensors and trained by using Ai-Machine Learning algorithms.
- The device not only predicts the air quality (especially @Agarbatti industry and Cotton mills) and also classifies the AQI levels, and then takes the decision based on the category of the AQI. Finally alerting the user along with associated health impacts.
- The device can also broadcast the AQI information for remote mentoring and assessment.

5. Project status at beginning of the Year:

Conceptual Stage

- Study of health impacts of the poor and drastically reducing Air Quality on human beings.
- Identified the innovation GAPS in the existing Air Quality predicting devices in the market.
- Prepared the feasible solutions on the selected problem using effective AI-ML Algorithms.

- Discussed with many experts for possible implementation of the model at many fields of application.
- Complete technical documentation of the concept was prepared.

6. Interventions made:

- The project visited National Atmospheric Research Laboratory (NARL), Tirupathi, Andhra Pradesh, and sought assistance for air quality sensor calibration and testing
- Consulted Pantech Solutions, Chennai for Dataset generation and implementation of Hybrid Machine Learning Algorithms to predict and classify the Air Quality in real-time.
- Sought assistance from S M Enterprises (Agarabatti Industry) and RBA textiles, Kuppam for performance testing of our module.

7. Current status:

- Proof-of-Concept Prototype module E-Device built on AI-ML Algorithms that predict Air Quality Index (AQI) levels and integrates a decision-making system that assesses the Health impacts of associated AQI levels.
- Patent Filed (Application Number: 202121048339)
- The prototype module is currently under real-time testing in various test fields.
- A proposal on the idea has been submitted to the MSME-BI, KEC for fine-tuned product development and commercialization

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 12: Smart Operating Control in Hybrid E-Cycle

1. Project Title : “Smart Operating Control in Hybrid E-Cycle”

2. Mentor Name : Dr. V Sekhar, (M. Tech., Ph. D.)

3. Student Team Names:

- I. Snigdha Singh
- II. V. Yashwanth
- III. Mani Kumari
- IV. S. Sandeep Kumar

4. Project Description:

Developing countries like India are facing energy shortages in production so many researchers are concentrating on knowable energy sources. In renewable energy sources, the energy extraction is 100% not possible/not at done and in the case of transport the renewable energy position is very less and also facing a lot of problems in battery and its management system. In this article, we are proposing a bicycle that is old fashioned recreated that travels in a moderate distance the main objective of this project is to design a motor-generator set with a battery system through an appropriate controller that will give sustainable energy with which need not charge the battery frequently and less capacity of the battery we can travel more distances.

5. Project status at beginning of the Year:

“Analysis Level”

- A survey was conducted to identify the problems of e-cycle.
- Prepared the Innovative solutions for the problem of e-cycle and make it an E-cycle.
- Analysed the marketing and prepared the business plan.
- Prototype of the operating model is under development.

6. Interventions made:

- Consulted with Ramesh electrical lab for understanding the requirements in developing the proof of concept
- Consulted with Makelabs for looking at possibilities in reducing the size of the first version device.
- For PCB design, we are associated with SRI Plastic Enterprises.
- The Project team has finally developed a “Demo Model” of the project.

7. Current status:

- The “Demo Product model” is demonstrated at Kuppam Engineering College to draw the Public attention to commercialization.
- Visited for presented the model at Makelabs in Bangalore highway Krishnagiri, Tamil Nadu.
- Patent filing under process, Documents submitted for patent search and filing.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 13: IoT based Monkey Alert System

1. Project Title : “IoT based Monkey Alert System”

2. Mentor Name : Mr. Prabakaran C. B, (M. Tech.)

3. Student Team Names:

- I. Mekala Hari Babu
- II. G. Charan Theja
- III. Gangarapu Mahesh Reddy
- IV. Y. Sai Chaitanya

4. Project Description:

Agriculture is the backbone of our country. Agricultural farm security is important to protect the agricultural produce. The conflicts between human and animal become a major problem in the agriculture field and in the forest zone which leads to losing a huge quantity of resources. Troop of monkeys are one of the major problem which damages the crop. A new proposal for agricultural farmland vigilance is developed. The proposed system employs Raspberry Pi board to detect any monkey activities or motion in the farm land using image processing. Once object in the image is identified by the image processing module it plays cracker sounds and It sends an automatic alert message to the landowner also to forest officials with an image.

5. Project status at beginning of the Year:

- Conducted Real-Time Survey to identify real problems.
- Prepared Project Roadmap & requirements.
- Proof of Concept is ready.
- Prepared the complete Business Plan and analyzed the marketing

6. Interventions made:

- Approach many farmers for problems on animals and developed the Proof of Concept.
- For PCB design we are associated with Technologies, Bangalore,.
- The Project team has finally developed a “Demo Model” of the project.

7. Current status:

- Present the model at Kuppam Engineering college for testing and redesign purposes.

- Demonstrate the demo model at Atal Incubation Centre, SKU, Anantapur for seeking industry support.
- Present the model at local farmers Kuppam for improvements.
- Applied the project to MSME – BI.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 14: Poultry Racking

1. Project Title : “Poultry Racking”

2. Mentor Name : Mr. M Lakshmipathy, (M.Tech. Ph. D.)

3. Student Team Names:

- I. Singaravelu G.
- II. J. B. Poojitha
- III. Koya Satheesh
- IV. Meghana

4. Project Description:

- Keeping litter dry is a critical part of overall management in every poultry farm.
- Litter conditions influence bird performance, which in turn affects the profits of growers and integrators.
- Dry litter helps control ammonia levels, provides a healthy flock environment, and reduces condemnations due to hock and footpad burns and breast blisters.
- Therefore, we propose to fabricate Rack Easy-Poultry Racking Mechanism for racking the litter left by the chicks in the poultry farms to keep it dry all the time.

5. Project status at beginning of the Year:

- Team has interacted with the local poultry farmer to identify the problems faced in poultry operations.
- A survey has been conducted on the existing poultry litter raking mechanism.
- Proposed an advanced raking mechanism using electric power
- Prepared the technical documentation on the raking device

6. Interventions made:

- For Lithium Ion Cells spot Welding and the Battery management system, we met the NexGen Engineering Pvt Ltd. They also supported in battery packing and it's testing.
- For rotor fabrication, we consulted SV Hardware Engineering Works Ramakuppam. They also guided us in selecting the spare parts for integration of the module.

- Few spare parts for our model design have been selected from Vigneshwara Aggrotech, Kolar. They also suggested a few other components bought from an online store i.e. toolsvilla
- To collect the data about raking and testing we visited C M Rathnam Suguna Poultry Farm. Our team discussed
- Problems facing while raking.
- Advantages and disadvantages of the existing raking system.

7. Current status:

- The prototype is ready and tested on the local farm in front of three farmers.
- As per their suggestions and requirements, the module is under redesign.
- IOT integration for monitoring ammonia needs to be tested.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 15: Agri-Quadcopter

1. Project Title : “Agri-Quadcopter”

2. Mentor Name : Mr. P. Ajay Kumar Reddy, (M. Tech. Ph. D.)

3. Student Team Names:

- I. C. Shireesha
- II. K. Thrinesh
- III. C. Divya
- IV. G. Santhosh Kumar

4. Project Description:

- In India most of the farmers are small farmers (having less than 5 acres). One of the major issues in agriculture is the lack of workers.
- Many farmers are still facing problems of labor dependence, which has increased their vulnerability to the aging farming population.
- Our aim is to develop and test a Quadcopter for crop monitoring and Pesticide spraying.

5. Project status at beginning of the Year:

- Conducted Real-Time Survey.
- Understand various steps, tools, and experimental setups.
- Developing the quadcopter drone
- POC ongoing.

6. Interventions made:

- The project team has undergone two-week hand-on training at AADHYA SOFTECH SOLUTIONS, KUPPAM
- The project team has developed a Quadcopter in collaboration with AADHYA SOFTECH SOLUTIONS, KUPPAM
- The Project team has finally developed a Demo Model Drone to carry a payload ~2KGs for Quadcopter

7. Current status:

Demo Prototype Module

- Safe flight test has been carried out in Kuppam Engineering college ground that flew up to 100 meters above the ground.

- Currently the quadcopter is under real-time field test at Centre of Excellence for Horticulture, Kuppam, A.P
- Preparing the Business canvas model to present the idea to investors, collaborators and local farmers.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Pic: Agri-Quadcopter

PROJECT 16: Renewable Energy Gadget

1. Project Title : “Renewable Energy Gadget”

2. Mentor Name : Mr. S Satyanarayan, (B. Tech.)

3. Student Team Names:

- I. S. Nithin Raj
- II. M. Aparna
- III. S. Devi
- IV. Shaik Apsar Bhanu

4. Project Description:

- Current charging stations are stationary in nature and powered by conventional energy sources, and need large investment for implementation and maintenance.
- The need for low-cost, portable intelligent charging gadgets driven by solar energy.
- We propose to design a smart charging portable gadget that provides;
 - ✓ Safety and security to the users
 - ✓ Multi-point charging stations at office/organization outlets
 - ✓ QR/Digital Payment based billing system

5. Project status at beginning of the Year:

Conceptual Level:

- Studied the existing products on Gadget charging stations
- Prepared Innovative Hybrid technology for charging stations
- Working on hybrid energy Harvesting technology

6. Interventions made:

- The project team has consulted Aadhya Softtech Solutions, Kuppam, AP for developing the smart charging gadget station.
- The project team has sought assistance from Technologies Pvt. Ltd., Bengaluru for QR Technology implementation.

7. Current status:

- The Project team has successfully developed a “Demo Prototype Model” of the charging gadget station.

- The “Demo Product model” is demonstrated at Kuppam Engineering College to charge Mobile on Pay and use Service Model.
- Planning to install the Charging station at the college campus for real-time field testing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 17: Design and Fabrication of Wheel Hoe Cultivator using offset knife Attachment

1. Project Title : “Design and Fabrication of Wheel Hoe Cultivator using offset knife Attachment.”

2. Mentor Name : Mr. S. Rajesh, (M.Tech.)

3. Student Team Names:

- I. S. Rakesh
- II. T. Prasad
- III. Yashawanth V.
- IV. Bandari Umesh

4. Project Description:

Wheel hoes are excellent tools for cultivating and weeding your soils. They take all the hard work out of tilling your soils and prevent the back-breaking aches and pains you will get from weeding and cultivating with a traditional hand tool. Exceptionally light and controllable with rust-protected steel hardware and fitted with oiled ash handles, Glaser Wheel Hoes are a premium cultivation tool. Their low centre of gravity creates outstanding lateral control, stability in difficult soil, and direct transfer of power from you to the cutting attachments. Adjustable at critical joints to accommodate your individual body size and hoeing style.

The wheel hoe allows you to place your vegetable rows closer together. When gardeners are using a rototiller to keep the weeds down between rows, there's 3 feet or more of wasted garden space, and wasted fertility. On the other hand, hoeing between rows with a wheel hoe needs only about 12 to 15 inches between rows. That's just enough space for an adult to walk, making weeding and harvesting easier

5. Project status at beginning of the Year:

- Study of existing methods & Technology of Cultivators
- Investigate different types of knife attachments.
- Developed detailed concepts on design & implementation.
- Selecting suitable material for offset knife attachment.
- Studying mechanical properties of material.
- Developed detailed design concepts & implementation.

6. Interventions made:

- For developing product models met mindset engineering solutions and manufacturing companies.
- We are going to take a field survey
- Will collect farmer suggestion for improvisation.
- For proof of concept we have to meet agriculture university at GKVK, Bangalore and Atal incubation centre CEO Mr Sathish Kumar for proof of concept
- We have simplified the design also made it cost efficient and affordable to every rural farmer
- Project team was able to do knife attachments blade design
- For additional information to consult Atal incubation center, Ananthapur
- We have to go field test after completion of the prototype model.

7. Current status:

- The Demo prototype model was demonstrated at agriculture university, Kuruburu, Chintamani.
- And Atal incubation center, S.K University, Ananthapur
- Tie-up up with small-scale farmers in rural.
- Collecting feedback data from farmers and experts.
- We are going to develop proto type model to product level.
- Based on the farmer and experts suggestions, we are going to scale up the model.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:





Pic: Hoe Wheel Attachment

PROJECT 18: Automated Storage and Retrieval System

1. Project Title : “Automated Storage and Retrieval System”

2. Mentor Name : Mr. R. Bharath, (M. Tech.)

3. Student Team Names:

- I. G. Venkateswaran
- II. J. Josinpaul
- III. Shashi Ranjan Kumar
- IV. S. A. Arif

4. Project Description:

Automated Storage and Retrieval System are designed to be used in Warehouses or Storage inventory in the industry. Where the Storage materials can be handled easily by the special mechanism. It consists of the stepper motors for smooth and precision operation. It is a customized product, so the design and specification of the materials are depending on the several factors such as Available Floor Space Area, Materials to be Handled, Holding capacity of the Gripper.

5. Project status at beginning of the Year:

- Studying existing problems.
- Selecting actuation method and materials.
- The Storage Space in the industries is limited and we must use it more efficiently.
- So, we came up with a solution As Automated Storage and Retrieval System
- ASRS is a fully automated system that is operated by stepper motors controlled by Micro controller.
- The Materials are depends up on the various factors such as available work space area, material to be handled, mechanism to be used.
- Based on existing problem and customer requirement we are going to develop a prototype model.

6. Interventions made:

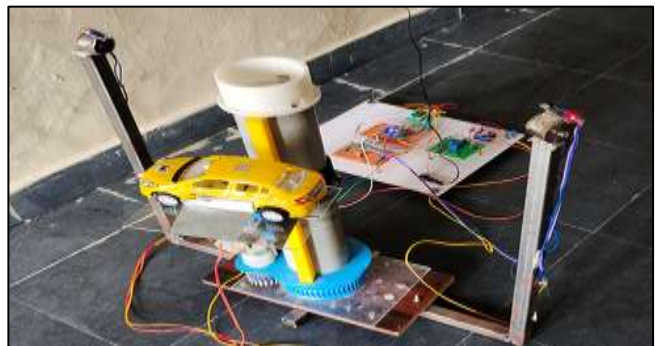
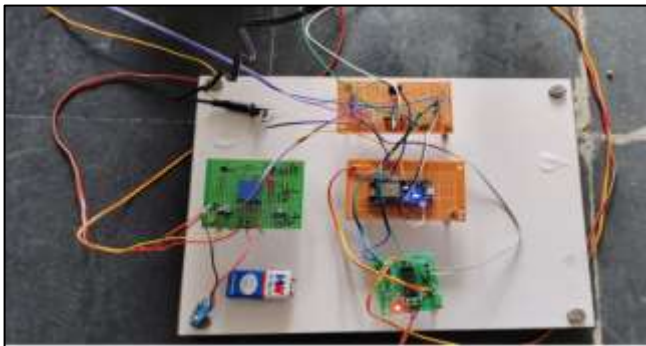
- For developing a prototype, we had a meeting with Mindset Engineering solutions and Jaya Lakshmi engineering solution and came up with a primary design

- For additional information, we consulted with experts in Bangalore.
- We have simplified the design also made it cost efficient and affordable to every customers.
- Project team was able to make a Rack and pinion mechanism design for ASRS.
- Project team has finally developed a “prototype” of low-cost ASRS.
- This ASRS helps Pick and place logistics applications.

7. Current status:

- Prototype model completed
- So that we will implement our project in local industries, post offices and warehouses
- As well as the local consultancy will provide the support that, we need to implement the project in their customer industries.
- Will collect suggestions from expertise for improvisation.
- We are going to develop product.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 19: Design and Fabrication of Automatic Coconut Copra Electric Dryer

1. Project Title : “Design and Fabrication of Automatic Coconut Copra Electric Dryer”

2. Mentor Name : Mr. Bharath R, (M. Tech.)

3. Student Team Names:

- I. T. Suresh
- II. M. Mohan Kumar
- III. M. Praveen Kumar
- IV. R. Anand Babu

4. Project Description:

In India Coconut is the major plantation crop in the states of Tamil Nadu, Kerala, and Karnataka, Kongan region of Maharashtra, and Andaman and Nicobar Islands for entire seasons. Copra is the major product of coconut cultivation earning a higher income for small and medium livelihoods. The approval of copra quality is mainly based on how well the copra got dried. Open drying or other conventional methods is the major process of making copra. Many dryers are made and used currently was affordable to medium and large scale copra producers.. An electric hand dryer is designed to dry up the coconut copra and other grains. It mainly helps the small-scale farmers as a handy dryer unit to dry up the copra, those who are using coconut as a way of income. Based on the experiments conducted the electric dryer removed high moisture content than forced convection and direct sun dryers. Improperly and unevenly dried coconut meat will result in a bad quality. Bacteria and fungi attacks are the most common problems of coconut copra in open sun drying. During monsoon, conventional method of drying will not help us drying the coconut copra within 72 hrs and saving time. Producing good quality dried coconut copra.

5. Project status at beginning of the Year:

- Study of copra processing
- Studying exiting technology and process
- Investigate on drying process
- Developed detailed design concept.
- Choosing required components

- Prototype model under development.

6. Interventions made:

- For developing product models to meet mindset engineering solutions and manufacturing companies.
- We are going to take a field survey
- Will collect farmer suggestions for improvisation.
- For proof of concept we have to meet agriculture university at GKVK, Bangalore, and Atal incubation center CEO Mr. Sathish Kumar for proof of concept
- We have simplified the design and also made it cost-efficient and affordable to every rural farmer
- Project team was able to do chassis frame design
- For additional information to consult Atal incubation center Ananthapur
- We have to go field test after completion of the prototype model.

7. Current status:

- The Demo prototype model was demonstrated at agriculture university, Kuruburu, Chintamani and Atal incubation center, S.K University Ananthapur
- Tie-up with small scale farmers in rural.
- Collecting feedback data from farmers and experts.
- We are going to develop proto type model to product level.
- Based on the farmer and experts suggestions, we are going to scale up the model.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:





PROJECT 20: Design and Fabrication of BLDC Motor

1. Project Title : “Design and Fabrication of BLDC Motor”

2. Mentor Name : Mr. K Ganesh, (M. Tech., Ph. D.)

3. Student Team Names:

I. R. Santhosh Kumar

II. S. A. Arif

III. J. Josinpaul

IV. Joseph K. Martin

4. Project Description:

The objective of the project is to design and build the prototype of a three-phase sensorless BLDC motor for railway applications. The motor is designed according to the specifications put forward by RDSO for the design of BLDC carriage fan. Traditionally, BLDC motors are commutated in six-step pattern with commutation controlled by position sensors. To reduce cost and complexity of the drive system, sensor less drive is preferred. Brushless DC motors are increasingly replacing brushed DC motors in low- to medium power servo applications. In these motors, electronic commutation is used in lieu of mechanical brushes. This reduces friction, increases reliability, and decreases the cost to produce the motor itself. Due to the absence of brushes better speed range is possible for BLDC motors and the maintenance cost will also be less. The Brushless DC motor is the ideal choice for applications that require high reliability, high efficiency, and high power-to-volume ratio. When operated in rated conditions, the BLDC motors have a life expectancy of over 10,000 hours. For long term applications, this can be a tremendous benefit and hence it is a proper choice for railway carriage fans.

5. Project status at beginning of the Year:

- Studying of existing problems & Technology of BLDC Motor
- Collected data for precision technology of motors
- Creating a CAD Model by using CATIA V5.
- Developed detailed design concepts & implementation.

6. Interventions made:

- For developing product model to meet R M Power system ,Bangalore

- For proof of concept we have to meet Suntrac energy systems Pvt Ltd., Bangalore
- We have simplified the design also made it cost efficient and affordable to every rural farmer
- We have to go for testing after completion of prototype model.
- After that our team was able to do the model setup.

7. Current status:

- Prototype model completed
- The Demo prototype model was demonstrated in front of experts from Atal incubation centre, S.K.R University Ananthapur
- Tie-up with MRS Electro Power Pvt. Ltd. Hegganahalli, Bangalore for product development.
- Will collect customer suggestion for improvisation

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 21: Design and Fabrication of Mulching Paper Laying Machine

1. Project Title : “Design and Fabrication of Mulching Paper Laying Machine”

2. Mentor Name : Mr. P. Rajesh, M.Tech

3. Student Team Names:

- I. K. Harish
- II. Love Paswan
- III. M. Ashok
- IV. Yashawanth

4. Project Description:

To improve the profitability of their farming by using more efficient materials and machinery. The use of mulching paper in agriculture is increasing day by day to growing the importance of increasing the crop yield. It is also one of the best methods to cover the soil and maintain the required atmosphere around the crop. The working and parameters of mulch paper laying machine for minimizing the human efforts and increasing productivity of crops.

- which reduces cycle time of laying mulch film
- To minimize the production time.
- To increase the production rate.
- To reduce number of workers.
- To minimize miss-operation.
- To reduce human effort and capital cost.
- To reduce the investment of small scale farmers

5. Project status at beginning of the Year:

- We are studying on existing process and technology
- problem identification
- survey for various mulching process
- Developed detailed Design of mulching machine and concept.
- Selection of materials for mulching machine
- Developed CAD model by using Catia v5

6. Interventions made:

- For developing product model to meet mind set engineering solution and Bestomech industry Pvt Ltd., Coimbatore.

- For proof of concept we have to meet agriculture university at GKVK, Bangalore, and Atal incubation centre CEO Mr Sathish Kumar for proof of concept
- We have simplified the design also made it cost efficient and affordable to every rural farmer.
- Project team was able to do plough blade design
- For additional information to consult Atal incubation centre Ananthapur
- We have to go field test after completion of prototype model.

7. Current status:

- The Demo prototype model demonstrated at agriculture university, Kuruburu, Chintamani.
- And Atal incubation centre, S.K.R University Ananthapur
- Tie up with small scale farmers in rural.
- Collecting feedback data from farmers and experts.
- We are going to develop proto type model to product level.
- Based on the farmer and experts suggestions, we are going to scale up the model.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Ramachandra College of Engineering

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Ramachandra College of Engineering, Eluru.		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. M. Muralidhar Rao		
Name of NewGen IEDC Coordinator	Mr. K. Venkatesh		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> • Mobile Number • e-Mail ID 	9553737773 newgeniedc@rcee.ac.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/02 Date: 15/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A]To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Awareness Program on Entrepreneur sustainability

- Entrepreneurship is not a responsibility it also a risk management. Entrepreneur should learn sustainable parameters by means of learning existing eco system



2. Organized 30 hours Hackthon on web designing (100 websites developed)

- Students able to Learn and practice WEB design.
- The goal of a Hackthon is to create functioning website by the end of the event. Hackthon tend to have a specific focus, which can include the programming language used, the operating system, an application



3. Training on nature fish & changes of water in Aqua culture training program by Dr. Srinivas (vasu) Doctor

- Student able to learn sustainable eco system of aqua culture and get knowledge of scope to implement engineering and technology in aqua culture

[B] To identify, develop & commercialize students' innovative ideas

1. 14-days workshop on prototype development and Technology training

- To enhance the Student and Faculty on New trend setting technologies
- To support the Project with additional Knowledge
- Updating of Traditional Analytical Method with current tool while doing the project



2. Drone pilot Technology training with association of Andhra Pradesh state skill development corporation (APSSDC). Govt of A.P.

- Student able to learn about new drone technology, pilot training



3. 30 days Artificial Intelligence & Machine Learning training program

- Able to learn recent trends and to create awareness on AI & ML technologies.



4. Field visit & establishment of Green house farming

- Program focus to inculcate the engineering technology in Agriculture and farming.
- Student able to learn to solve the problems faced in farming by using engineering technology



[C] To enhance Industry-Academia interaction

1. One week Workshop on IPR-Patent filing

- End of the day 16 patents are ready to Apply.
- It is a continuous practice to be aware about current scenario of patent publishing and filing



2. Industry Interaction program with CEO-HIEE Company

- Students able to learn ideology of successful entrepreneur, and able to learn Industry requirements



3. Industry to Academia interaction program With Team Lead Corp Team Solutions

- Able to exchange the hurdles faced and motivation of industry person.
- Help to self assess the students their self



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:
NA

3. Other important highlights (new initiatives), if any:

- a) Conducted Grand NewGen IEDC Project expo on Kreya-2022 platform

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Low cost extensive shaft Pit Water Pump

I. Project Title : Low cost extensive shaft Pit Water Pump

II. Mentors Name : Mr. B. Sudhakar Rao

III. Student team details

1. M. Tulasi Venkata Sai
2. N. Ananth Kumar
3. T. Naveen Kumar
4. N. Rushi Kumar
5. N. Rajesh
6. M. Pavan Sai

IV. Brief description of the student start-up

- In this work, a selection procedure has been devised for a particular pump having the required minimum volume flow rate (Q) and shaft rotation rate (n), to be chosen from a family of centrifugal pumps having same design and shape, defined by the Impeller diameter (DP). The pump had to be chosen in such a manner that its cost efficiency, determined by the power consumption of the pump, was enhanced as much as possible. The basic construction and working of different types of pumps and their relative advantages and disadvantages were taken into account

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

- New gen IEDC support me a lot, In future if our team reaches some heights of growth it is only because of NewGen IEDC

VII. Future plan

- Developing and optimization of pump with help of farmers and local dealers
- Redesigning the product according to Test results at various conditions and working places

VIII. Important highlights: NA

Best Project-2: Automated Duster Cleanser

I. Project Title : Automated Duster Cleanser

II. Mentors Name : Bhavanarayana.K

III. Student team details

1. Rama Koteswara rao
2. B. Harish

IV. Brief description about the student Project

- These days, teachers are getting affected by respiratory diseases and skin allergies because using a chalk for long duration. Continuous use of chalk dust also affects vision of a human being. As dust contains tiny particulates of chalk dusters are being cleaned by beating the on floor, wall or hitting dusters together which triggers above problems and causes environmental pollution. Hence, it is necessary to design the machine, which will clean chalkboard dusters and help to create dust free environment in classrooms and laboratories. fabrication of a duster cleaning machine is done in this project.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.



VI. Contribution of NewGen IEDC in the same

- New gen IEDC support me a lot, In future if our team reaches some heights of growth it is only because of NewGen IEDC

VII. Future plan

- Establish a fabrication plant
- Get orders from Educational Institutions

VIII. Important highlights: NA

Annexure-A

Details of Student Projects

Project-01: Low cost extensive shaft Pit Water Pump with LPG powered engine

1. Project Title : Low cost extensive shaft Pit Water Pump with LPG Powered engine

2. Mentor Name : Mr. B. Sudhakar Rao

3. Student Team Names:

- I. M. Tulasi Venkata Sai
- II. N. Ananth Kumar
- III. T. Naveen Kumar
- IV. N. Rushi Kumar
- V. N. Rajesh
- VI. M. Pavan Sai

4. Project Description:

In this work, a selection procedure has been devised for a particular pump having the required minimum volume flow rate (Q) and shaft rotation rate (n), to be chosen from a family of centrifugal pumps having same design and shape, defined by the Impeller diameter (DP). The pump had to be chosen in such a manner that its cost efficiency, determined by the power consumption of the pump, was enhanced as much as possible. The basic construction and working of different types of pumps and their relative advantages and disadvantages were taken into account.

Than compared to petrol, LPG gasoline engine support environment and Money due to less price

5. Project status at beginning of the Year:

- Idea with CAD Model

6. Interventions made:

- Propeller design change and pump torque increased

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: BIO Treated Aqua System

1. Project Title : BIO Treated Aqua System

2. Mentor's Name : Mr. K. Venkatesh

3. Student Team Names:

- I. S. Venkat
- II. V. Chaitanya
- III. Y. Manikanta
- IV. P. Jagadesh

4. Project Description:

Fish cultivation with Bacteria/germ killing system

- Reduce the bacteria effecting on Fish Health
- Possibility to Continues and close monitor on Fish feed and growth
- Preventive technology for sudden Oxygen drop in RAS ponds
- Developed Technology Support to develop required bacteria for fish wealth

5. Project status at beginning of the Year:

- Idea With Reverse aqua system working model

6. Interventions made:

- A new Micron size filtration drum filter with bio treated mechanism implemented

7. Current status:

- TRL-6

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Crew Green House Forming

1. Project Title : Crew Green House Forming

2. Mentor's Name : Mrs. Durga

3. Student Team Names:

- I. Yaswanth
- II. Sai pravallika
- III. Suresh Kumar

4. Project Description:

- Development of a individual system with integration of all required monitor system for farming
- Plant health Monitor technology
- Soil Moisture measuring system
- Humidity Monitor system
- Prevention of seasonal diseases by Complete observation

5. Project status at beginning of the Year:

- Idea with Demo model

6. Interventions made:

- IOT based water dispensing system developed

7. Current status:

TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Suction Oriented Neo Integrated Pump with BMS system

1. Project Title : Suction oriented Neo integrated pump with BMS system

2. Mentor's Name : Mr. Sk. Saleem

3. Student Team Names:

- I. Bhargav K.
- II. J. Chaitanya
- III. K. Srinu

4. Project Description:

- This sonic pump Runs on dc supply so no need of AC power source
- It has a self-power unit to carry any here to work
- it can operate in remote areas where power not available.
- It is also useful for agriculture nursery maintenance
- On one complete charge it will run up to 100 min and above
- It sucks water from up to 11 feet's and deliver up to 15 feet height

5. Project status at beginning of the Year:

- Design with Prototype

6. Interventions made:

- IOT based pump working analysis implemented

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Automated Chalk Powder Cleanser

1. Project Title : Automated Chalk Powder Cleanser

2. Mentor's Name : Mr. Bhavanarayana K.

3. Student Team Names:

- I. K. Rama Koteswara Rao
- II. Ch. Siva Shankar
- III. J. Vijay Kumar

4. Project Description:

- Machine developed for Extraction of chalk powder from Duster
- Recycling of chalk powder
- Reduces air pollution
- Prevents human to face different skin allergies

5. Project status at beginning of the Year:

- CAD model with prototype

6. Interventions made:

- Implemented Turbo interceptor for Micro dust particles filtration

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Multi Point silver ION dispensing sanitization chamber

1. Project Title : Multi Point silver ION dispensing sanitization chamber

2. Mentor's Name : Mrs. J. Suresh

3. Student Team Names:

- I. M. Tanuja Sri
- II. M. Prathima
- III. N. Bhavya
- IV. P. Naresh

4. Project Description:

The earlier human sanitization tunnels developed in times of covid pandemic used chemicals. Muti point injection help to balance the load when it required such as sodium peroxide for disinfection. These tunnels had 4 major problems.

- Sodium peroxide and chemicals were harmful for human skin and eyes too.
- The spray of these chemicals wasted a lot of water.
- A lot of the chemical too was used leading to recurring costs of chemical purchase.
- So many chemicals drained to sewage every day also would lead to very bad environmental impact too.

To counter the problem and find a safe yet 100% working way for human disinfection, we hereby propose a silver ion based compact disinfection tunnel. The tunnel is mace compact especially to make it cheaper and take less space at entrances. Also it is designed not to spray but to fumigate which requires a lot less chemical thus saving on costs too. The advantages of this tunnel are as follows:

- Silver ion technology is a well proven technology to kill viruses & bacteria, proof links below:

5. Project status at beginning of the Year:

- Idea with Theoretical Analysis

6. Interventions made:

- Assisted to increased high density Ion dissipation technology

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Public and Home UV Disinfection System

1. Project Title : Public and Home UV Disinfection System

2. Mentor's Name : Dr. S. Jagan Mohan Rao

3. Student Team Names:

- I. Bala Pravallika
- II. Gattim Seshunadh
- III. Gollapalli Taraka Srinivas

4. Project Description:

- Public and Home UV Disinfection System is fights all bacteria and viruses including covid-19 by using ultraviolet light (UVC) where large traffic exists
- It neutralizes the DNA of bacteria, viruses, and other pathogens, destroying their ability to multiply and cause infections

5. Project status at beginning of the Year:

- Idea with theoretical analysis

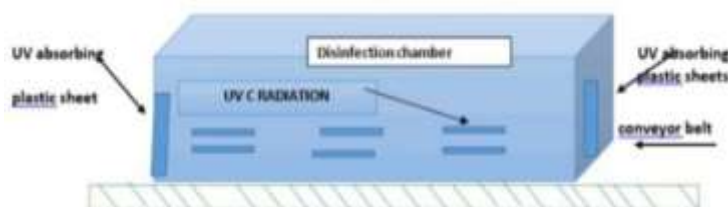
6. Interventions made:

- Voltage stabilizer added for better operation

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: IOT configured Water tank level controller

1. Project Title : IOT configured Water tank level controller

2. Mentor's Name : S. Jagan Mohan Rao

3. Student Team Names:

- I. U. Lahari
- II. M. Annapurna devi
- III. K. Naga sri
- IV. M. Jaswanth
- V. K. Manikanta

4. Project Description:

- The input to the circuit is applied from the regulated power supply. The AC input i.e., 230v. Usually, dc voltages are required to operate various electronic equipment and these voltages are 5v, 9v, or 12v. But these voltages not be obtained directly
- The output from the transformer is fed to the rectifier. It converts A.C. into pulsating D.C.
- This water tank controller track tank draining information and filling data.
- It helps to find out the estimated time of tank refilling and usage

5. Project status at beginning of the Year:

- Idea with Industrial and domestic literature survey

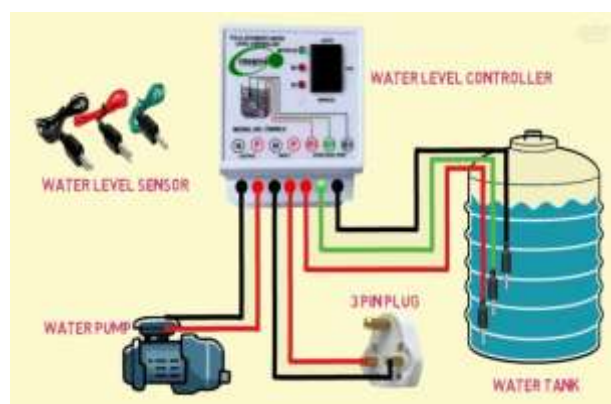
6. Interventions made:

- Alaram and Buzzer controller installed

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09:

1. Project Title : Automatic PH detection and alaram in Hydro ponic Indoor farming chamber

2. Mentor's Name : Dr. S. S. Sarma

3. Student Team Names:

- I. Ch. Veerendra
- II. B. Bharathi Rahul
- III. M. Siva Prakash
- IV. P. Harish

4. Project Description:

- Easy to Use
- Automatic Operation
- Faster Plant Growth
- The system makes use of sensors to monitor temperature, moisture and water level in the grow chamber
- The system monitors these parameters and operates the fans to maintain required temperature and moisture in the chamber

5. Project status at beginning of the Year:

- Idea with Technical analysis

6. Interventions made:

- Updated with Voltage regulator

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Self Cleaning PV powred outdoor Airpurifier

1. Project Title: Self Cleaning PV powred outdoor Airpurifier

2. Mentor's Name: Mr. Ch. Pradeep Kumar

3. Student Team Names:

- I. Ch. Veerendra
- II. B. Bharathi Rahul
- III. M. Siva Prakash
- IV. P. Harish

4. Project Description:

- Heavy Duty Purifiers
- In regular filtration filters need to clean after some interval time of working, But in this system self cleaning mechanism developed
- Automatic Operation
- Fast Purification
- Easy to Clean Removable Filters
- No External Power Supply Needed
- Heavy duty outdoor air purifier that is made for outdoor purification along and powered by solar panels so it is energy independent

5. Project status at beginning of the Year:

- IDEA with Prototype

6. Interventions made:

- System updated with fixing of micron filtration

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Multi Crop Utility AGRIBOAT

1. Project Title: Multi Crop Utility AGRIBOAT

2. Mentor's Name: Dr. S. S. Sarma

3. Student Team Names:

- I. Bhavani
- II. M. Poojitha
- III. S. Lakshmi Sai
- IV. P. Sai Kumar
- V. N. Venkata satya

4. Project Description:

- Proper method of irrigation is important because the main reason is the lack of rains & scarcity of land reservoir water
- It is a four wheeled vehicle which is controlled by ATMEGA328 microcontroller as master controller Prototype of an agricultural robot "AgroBot" is modeled for multitasking such as seeding, ploughing and harvesting with a separate irrigation system

5. Project status at beginning of the Year:

- Literature survey with case study

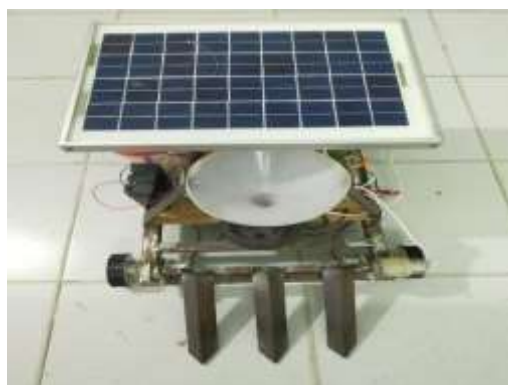
6. Interventions made:

- Redesign and modified to quick fit of arms

7. Current status:

- TRL-6

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Triple point injection Toilet Cleaner and alerting device for scavengers

- 1. Project Title:** Triple point injection Toilet Cleaner and alerting device for scavengers
- 2. Mentor's Name:** Mr. K. Raju
- 3. Student Team Names:**
 - I. Durga Bhargavi
 - II. V. Vyshnavi
 - III. K. Naga Slvani
 - IV. S. Venkata Sia teja
- 4. Project Description:**
 - Wash room Utilization Based Cleaning System
 - Saves water and Time
 - System will Alerts when higher rate of toxins release due to higher utilization
- 5. Project status at beginning of the Year:**
 - Idea with Circuit diagram
- 6. Interventions made:**
 - Developed for multi point water injection
- 7. Current status:**
 - TRL-5
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-13: A Low cost Elephant Repellent System for Forest and Railway use regarding

1. Project Title : A Low cost Elephant Repellent System for Forest and Railway use regarding

2. Mentor's Name : Dr. Satyabrata Dash

3. Student Team Names:

- I. P. Naga Satish
- II. S. Sharmila

4. Project Description:

- The present innovation will monitor and protect the elephants and keep elephants away from human settlements in interior village areas, without creating any harm to human being or any animals and also it will not create any environmental pollution
- More specifically it is relates to a low cost elephant repellent system for forest and railway department use.

5. Project status at beginning of the Year:

- Technology demonstration with case study articles reg problem

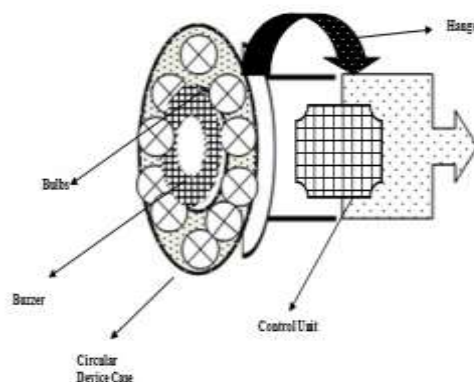
6. Interventions made:

- System very sophisticated and compactable

7. Current status:

- TRL-3

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: E-Byke

1. Project Title : E-Byke

2. Mentor's Name : Mr. K. Vinay Kumar

3. Student Team Names:

- I. G. Chiranjeevi
- II. Vijay Kumar

4. Project Description:

- Low cost Electric byke
- Own Battery Assembly unit
- Vehicle Structure Optimization and Fabrication
- New Model and Retro fitting company Lay out

5. Project status at beginning of the Year:

- Idea with technological analysis

6. Interventions made:

- Updated battery management system fixed

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Optimized Versatile hydraulic Jack System

1. Project Title : Optimized Versatile hydraulic Jack System

2. Mentor's Name : Mr. J. Srikanth

3. Student Team Names:

- I. K. Ramanjaneyulu
- II. K. N. V. G. Pavan
- III. K. Varala Babu

4. Project Description:

- Developed a compact versatile hydraulic unit that can be fitted to car chassis for rendering the tyre change operations faster and less labour-intensive. The idea is based on converting a fraction of the mechanical energy obtaining from rotating crank shaft into hydraulic actuation by virtue of which the deflated tyres can be lifted off the ground with the push of a button

5. Project status at beginning of the Year:

- Concept with Prototype model

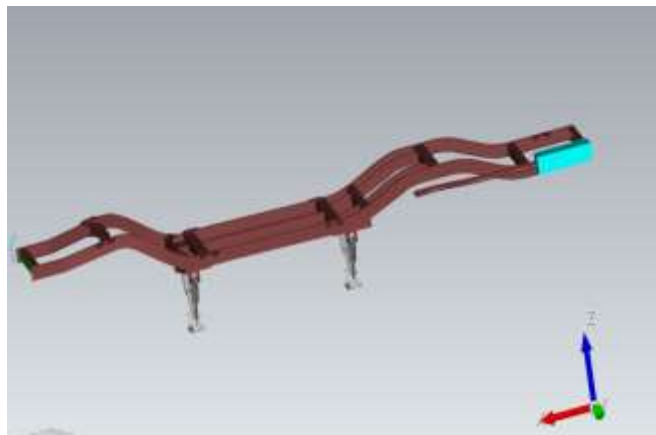
6. Interventions made:

- Equipped with flexible hydraulic actuators

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Development of PPE (personalized protection equipment's) and custom-built dazzling design crafts using Rapid Prototyping technique

1. Project Title : Development of PPE (personalized protection equipment's) and custom-built dazzling design crafts using Rapid Prototyping technique

2. Mentor's Name : Mr. P. Siddik ali

3. Student Team Names:

- I. Nalluri Ananth Kumar
- II. P. Srinadh
- III. Pamarthi Kruparao
- IV. Y. Madhu Venkat Sai
- V. Dasari Somendra

4. Project Description:

- Design and Printing of personal protection equipment (PPE) like elastic face shield strip with buttonholes, hand sanitizer holsters, ventilator valves
- Unique designs for personal protection equipment's

5. Project status at beginning of the Year:

- Concept with sample model

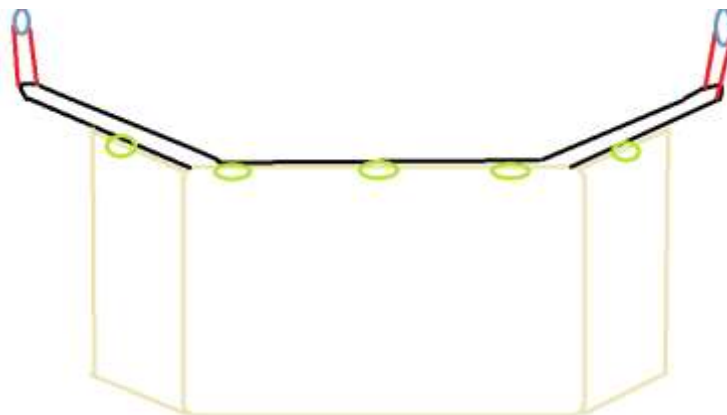
6. Interventions made:

- Optimization in design implemented after initial trails

7. Current status:

- TRL-6

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Agriculture Drone

1. Project Title : Agriculture Drone

2. Mentor's Name : Mr. A. Rahul Kumar

3. Student Team Names:

- I. K. Sai Madhan Sing
- II. B. Yaswanth
- III. M. Dinesh
- IV. D. Babji

4. Project Description:

- Developing a drone with improving endurance in performance
- Characterize the effects and operational factors of Actual Agriculture pesticide spray drone application
- Disease Identification by image processing

5. Project status at beginning of the Year:

- Basic model with new IOT technology

6. Interventions made:

- Sprinklers and Nozzles manufactured after optimization

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: MED Track system with feed back Technology

1. Project Title : MED Track system with feed back Technology

2. Mentor's Name : Mrs. Shameena Begam

3. Student Team Names:

- I. S. Rahul
- II. Uma Maheswara Rao
- III. R. China gopi reddy
- IV. U. Krishna Prasad

4. Project Description:

- Display's present time on LCD continuously.
- Provide the option to set 5 pil alert timings
- Provide buzzer alert at set timings
- Individual led indicators to each alert time to represent corresponding PIL box
- Each pil box has individual sensor to scan the status of pil usage
- Update the status of pil consumption to IoT Cloud (ThingSpeak)
- Monitor the pil consumption status through Android application

5. Project status at beginning of the Year:

- Idea with Report

6. Interventions made:

- Implemented customize setting mechanism

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Bio Treated Laundry system

1. Project Title : Bio Treated Laundry system

2. Mentor's Name : Mr. M. Vimal Teja

3. Student Team Names:

- I. G. Ratna Kumar
- II. G. Bhanu Prakash
- III. K. Revanth

4. Project Description:

- Activating laundry detergents;
- Inlet water microorganism treating system
- UV sterilized laundry to control bacteria and micro organism development
- Reducing water usage;
- Minimize the number of wash steps in the cycle;
- Drastically reducing the need for hot water as much as 85% or more
- Kills 99% Bacteria than compared to current washing machine technologies

5. Project status at beginning of the Year:

- Prototype model with concept

6. Interventions made:

- Ozone regulator implemented

7. Current status:

- TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Hydraulic Swinging Arm for Water Reservoir Cleaning

1. Project Title: Hydraulic Swinging Arm for Water Reservoir Cleaning

2. Mentor's Name: Bhavanarayana K.

3. Student Team Names:

- I. J. Chaitanya
- II. M. Anil
- III. K. Yogesh Devar
- IV. N. Surya Teja

4. Project Description:

- Mechanical removal machine effectively rids your waterfront of certain types of vegetation that ultimately hinder your ability to traverse reservoir.
- Creates a more conducive environment for swimming and irrigation.
- Effectively releases healthy nutrients back into the water that were previously trapped in the vegetation.
- Significantly improve the quality of the bottom of the body of water by reducing the volume of muck, sediment, and silt.

5. Project status at beginning of the Year: Idea with hand model

6. Interventions made:

Hydraulic swinging boom and balanced mechanism implemented

7. Current status:

TRL-5

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: SASI Institute of Technology & Engineering

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	SASI Institute of Technology and Engineering, Tadepalligudem		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. K. Bhanu Prasad		
Name of NewGen IEDC Coordinator	Dr. Krishna Chaitanya Nunna		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> • Mobile Number • E-Mail ID 	9553100007 newgeniedc@sasi.ac.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/03 Dt. 15/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Seminar Conducted for students

- Objectives of New Gen IEDC center were presented.



2. Survey meeting by individual teams

- Individual teams visited intended customer to get the feedback on ideas developed.



3. Discussion with Mrs. Ramya Undavalli on Women Entrepreneurship

- Girl students interacted with the guest and a Q&A session is conducted.



[B] To identify, develop & commercialize students' innovative ideas

1. Project Idea Competition and Exhibition

- Ideas were received from all the departments and showcased the details through idea exhibition



[C] To enhance Industry-Academia interaction

1. Guest lecture by Mr. Ramesh Koppanathi, Chief Manager, Skretting India, Hyderabad.

- Audience received the prospects of aqua tech devices and market that can be achieved



2. Participated in Hackathon 2022

- Experienced the variety of ideas that can be useful for solving societal problems.



3. Visit to Local Aqua farming fields and Cocopit Industries

- Students discussed with the entrepreneurs on various challenges faced by them



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Seminar on Patent is planned initially and cancelled due to possible Covid outbreak of three students.

3. Other important highlights (new initiatives), if any:

Three project teams participated in All India Hackathon 2022, sponsored by DST.
One Project team participated in Mistral Hackfest-22.

4. Student Projects (Please provide the following details for each student project)

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project 1: Solar Air Purifier

I. Project title : Solar Air Purifier

II. Mentor Title : R. Pavan Kumar Naidu

III. Student team details

1. Sai Vinayak
2. L. Sandeep
3. V. Sai Sudheer
4. Shaik Naseer

IV. Brief description about the student Project

Air pollution has become a serious problem these modern days. Air pollution is present outside in the environment and has become difficult to provide safety inside the house. This polluted air can cause many serious health problems in cities. If someone is suffering from breathing problems like Asthma or Sinus or suffering from any lung problem then air-purifier acts as a surviving tool. Air purifier reduces the chances of health issues caused by indoor pollutants, which directly trigger neurological problems, respiratory infection, or symptoms in asthma suffering. Hence, the fabrication of a low-cost solar-powered air-purifier made using a HEPA filter, Activated Carbon Filter, Solar Panel, and some miscellaneous components that can become a low-cost but efficient alternative for surviving in such difficult times. This air purifier uses various processes like filtering large dirt particles on the first pre-filter, then capturing dust particles and smoke molecules at the HEPA-filter, and using Carbon-filter to capture micro-particles produce clean purified air. The analysis and results conclude that the Air Purifier can produce 96 percent of clean air and can run up to 14 hours a day by a solar-powered system.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

This solar air purifier uses two-layer purification It consists of a heavy-duty suction fan that pulls air from the bottom of the purifier through a layer of filters for elimination of PM 10 and PM 2.5 pollutants as well as gases. The combination of two filter layers leads to dual filtration using a centrifugal air force to suck a large amount of air and purify it of dust particles. The suction fan is used to suck out air using high-power centrifugal force and blowing out fresh air from the top. The system also includes an air quality sensor to display the current air quality. The solar panel is used for the power supply. The panel is used to supply electricity to the battery which in turn powers the motor to run the suction fan. The machine is mounted with 4 castor wheels and a handle for easy movement. This makes the air purifier portable so it can be easily moved to school play areas, parks, residential areas, public places for efficient and instant pollution control. The air quality is measured using an IoT device. These measured values can be inspected by us whenever and when we need.



VI. Contribution of NewGen IEDC in the same

- The idea is implemented with the help of funding from New Gen IEDC and the freedom given in executing the project is outstanding. The execution is done on a timely basis and reviewed by the expert committee with in the institute.

VII. Future plan

It is planned to exhibit the prototype in E-Summit organized by IIT Hyderabad and show the market potential to investors.

Best Project-2: Seed Counting System for Aqua Farming

I. Project Title : Seed Counting System for Aqua Farming

II. Mentor Name : P. S. Durga Rao

III. Student team details

1. D. Krishnaveni
2. I. Jayasri
3. G. N. Srinivasa Rao
4. Ch Raghavendra

IV. Brief description of the student start-up:

Proposed project aims to develop a system that automatically counts the shrimp seed without any human interception. Currently, the shrimp hatchery business still plays an important role in fishery and aqua culture activities, namely hatchery, and rearing. Hatchery activities are carried out by hatchery companies, known as hatcheries. In hatchery activities there is a process of counting shrimp larvae at the time they are going to be sold to consumers. The method of counting shrimp larvae was still done manually using the sampling method by taking a cup of shrimp larvae and counting them manually. This process was time wasting and can make the result in miscalculations due to human error. Project aims to implement the algorithm for automatic seed counting using image processing technique. The method of counting shrimp larvae was still done manually using the sampling method by taking a cup of shrimp larvae and counting them manually. This process was time wasting and can make the result in miscalculations due to human error. Our proposed system contains Camera, display and processing unit

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

Currently, the shrimp hatchery business still plays an important role in fishery and aqua culture activities, namely hatchery, and rearing. Hatchery activities are carried out by hatchery companies, known as hatcheries. In hatchery activities there is a process of counting shrimp larvae at the time they are going to be sold to consumers. The method of counting shrimp larvae was still done manually using the sampling method by taking a cup of shrimp larvae and counting them manually. This process was time wasting and can make the result in miscalculations due to human error. Through New Gen IEDC, the proposed idea is developed and presented to intended customers and capitalists. Through the available fund, prototype is developed which can show the all available features and required functionality.

VII. Future plan

Many aqua farmers in India who suffered losses as the result from the sale and purchase of shrimp seeds which does not correspond to the amount agreed. Losses occur due to calculate shrimp seed manually. It is by counting the shrimp seeds with a cup, the possibility of errors is very large such as human error. Maybe the amount of the loss is not great if the amount of the purchased shrimp seed is not too much. But if the number of shrimp seed purchased in great numbers, the losses will greatly impact. In addition, the manual counting methods takes quite a long time. The proposed product is going to be a brand new innovation with respect to the application and has full potential to get into the market in less time.

VIII. Important highlights

The results are shown in the form figures and anybody can be easily understood count which is also available in number form.

Annexure-A

Details of Student Projects

Project-01: Automatic object identification for physically blind people

1. Project Title : Automatic object identification for physically blind people

2. Mentor Name : Ch. Pavan

3. Student Team Names:

- i. Kandhi Monisha Sindhu
- ii. Indana Lakshmi Tulasi
- iii. Kamisetti Anantha Satyavani
- iv. Jampana Jaya Lakshmi

4. Project Description:

This project presents a novel system to help blind people detect and identify objects. From the survey of WHO, 39 million people are blind all over the world. It is a quite miserable statement. The peoples who are all suffered from these visual difficulties can use this project to overcome their situations. The ultrasonic sensor used in this project plays a vital role. It detects the object in front of this with a certain range. When object is detected a buzzer sound is given to the user as an indication. While they hear this sound they can know an obstacle in front of them.

5. Project status at beginning of the Year:

Idea is developed and compared against any existing systems.

Idea Level: Idea is **developed**

6. Interventions made: Equipment is purchased and implementation is done.

7. Current status:

- Project Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Smart Watering System for Terrace Garden

1. Project Title : Smart Watering System for Terrace Garden

2. Mentor Name : V. Pradyumna

3. Student Team Names:

- i. Katta Geeta Devi
- ii. Ramiseti Kavya Sri
- iii. Mogala Harshini
- iv. Manku Naveen Kumar Manikanta

4. Project Description:

Irrigation system is a method of allowing water to drip slowly to the roots of plants, either onto the soil surface or directly onto the root zone, through solenoid valve. The implemented design for smart home garden irrigation system that implements ready-to-use, energy-efficient, and cost effective devices. Raspberry Pi, which is implemented in this system is integrated with multi-sensors such as soil moisture sensors, ultrasonic sensors, and light sensors. This proposed system managed to reduce cost, minimize waste water, and reduce physical human interface. The relay is utilized to control the switching of solenoid valve. The system also managed to measure moisture of the soil and control the solenoid valve according to human's requirements. It is conducted with Graphical User Interface (GUI) using Android application to activate watering activity. An experimental setup has been tested and it is proven that the system can intelligently control and monitor the soil moisture levels in the experiment field.

5. Project status at beginning of the Year:

Idea is proposed and compared against existing systems.

Idea Level: Idea is developed.

6. Interventions made: Equipment purchased and implementation is done.

7. Current status: Project is completed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Robotic Vehicle for water quality monitoring with food dispensing mechanism for Aquaculture applications

1. Project Title : Robotic Vehicle for water quality monitoring with food dispensing mechanism for Aquaculture applications

2. Mentor Name : T. V. Reddy

3. Student Team Names:

- i. A Mohan Venkata Krishna
- ii. D Uma Venkata Babu Rao
- iii. R Chandra Sekhar
- iv. B. Satyasree

4. Project Description:

Aquaculture is an important business activity that can complement a marginal farmer's income. But there are a lot of factors that influence the aqua habitat, and if not taken care of will wipe-out the complete habitat with huge potential loss. The small and marginal farmers use the traditional method of feeding in which a small boat loaded by solid/liquid feed is navigated by persons manually and the feed is put in the aqua-tank/pond. The basic limitation of this method is that the nook and corner of the pond/tank cannot be reached and the feed is not uniformly distributed. The proposed work presents a solution in which the boat can be navigated from remote/ manual operation. The boat is having automatic feed dispensing mechanism such that the feed will be distributes in entire required area of the pond including every corner. It also consists of sensors for testing pond water quality and surrounding climate for proper health condition of the pond. Whenever pond data is available, precautions have to be taken for proper growth of the shrimps.

5. Project status at beginning of the Year: Idea Stage: Developing

6. Interventions made:

- IoT based remote monitoring of the pond water and climate conditions are included for proper shrimp growth.

7. Current status: Blue print idea is ready, hardware under prototype stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Farm Automation System

1. Project Title : Farm Automation System

2. Mentor Name : P. Mahidhar

3. Student Team Names:

- i. K Usha Divya Rani
- ii. P. Lakshmi Prasanna
- iii. M. Prasanth
- iv. M. Yamuna

4. Project Description:

The main objective of the work is to reduce the manual operations in farms and increasing the yield of the crop by adding technology with-out putting any pressure in the farmer. The proposed system (design) consists of two modules, first one having simple setup with different sensors and controlling actuators for automatic monitoring and controlling of various parameters of plant growth. The second module is a central node that integrates the all the single setups which are distributed in entire the farm for data logging and user controlling purpose centrally and also having facility that the logged data will be available in cloud for remote monitoring controlling purpose by the user.

5. Project status at beginning of the Year: Idea Stage

- Idea Level: Developing

6. Interventions made:

- Remote monitoring and controlling of farm parameters for proper plant growth is included using IoT based technology

7. Current status:

- Idea finalized hardware under prototyping stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Joy Stick based Commuter for Physically Handicapped People

1. Project Title : Joy Stick based Commuter for Physically Handicapped People

2. Mentor Name : Sk Salman Basha

3. Student Team Names:

- i. Gopiseti Chandra Sekhar
- ii. Kommireddy Yamuna Sindhu
- iii. Maturu Vaishnavi Sri Syamala
- iv. Nimmalapudi Lakshmi Narayana

4. Project Description:

Physically handicapped persons especially single handed persons face difficulty riding bicycles or scooters. Joy stick based moment is very convenient for moving the direction when compared to steering. In this project movement is controlled by joystick targeting minium speed of 2-30 KMPH range.

5. Project status at beginning of the Year:

- Idea proposed and studied existing technologies available.
- **Idea Level:** Idea is in the development stage.

6. Interventions made:

- Available vehicles in the market were studied for movement problems identification. Equipment is purchased.

7. Current status:

- Prototype is 70% completed and needs modification in motor specs based on the accuracy of braking system.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Seed Counting Machine for Aqua Farming

1. Project Title : Seed Counting Machine for Aqua Farming

2. Mentor Name : P. S. Durga Rao

3. Student Team Names:

- i. D. Krishnaveni
- ii. I. Jayasri
- iii. G. N. Srinivasa Rao
- iv. Ch. Raghavendra

4. Project Description:

Shrimp seed counting machine is used to count shrimp larvua while buying from vendors. It is very much to avoid miscalculation by vendor and unnecessary burden on aqua farmers.

5. Project status at beginning of the Year:

- It is in the idea stage
- **Idea Level:** Idea is developed and updated as per the feedback from intended customers.

6. Interventions made:

- Equipment is identified and purchased as per the requirement. Most of the modules are prepared and test with basic usage.

7. Current status:

- Project is completed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: An Automatic Driver Drowsiness detection system

1. Project Title : An Automatic Driver Drowsiness detection system

2. Mentor Name : Y. Sainadh

3. Student Team Names:

- i. Bh. Akhila Devi
- ii. B. Sumanth
- iii. K. Sandeep
- iv. K. Sateesh

4. Project Description:

Hence with the help of infrared sensor controlling the brake during emergency this problem can be addressed. The idea is to incorporate infrared sensor that measures the distance between the obstacle and the vehicle, and thereafter gives an alarm to driver as well as stops the vehicle by applying Brake if the distance between the vehicle and the obstacle is less than some predefined.

5. Project status at beginning of the Year:

- Equipment purchased as per requirement.
- **Idea Level:** Developing stage

6. Interventions made:

- Using Open CV open ware for computer vision problem.

7. Current status:

- Purchased and installed all the hardware and software requirements for the project.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Design of a boost type Vienna Rectifier & Battery Management System

1. Project Title : Design of a boost type Vienna Rectifier & Battery Management System

2. Mentor Name : Dr. Damodhar Reddy

3. Student Team Names:

- i. G. Ganesh Kumar
- ii. Avula Venkata Vinay
- iii. Ch. Nagendra
- iv. J. Pawan Kalyan

4. Project Description:

In this project, a robust controller based Vienna rectifier is proposed for the Off-Grid Wind-Battery Hybrid Energy System (WBHES). The Vienna Rectifier circuit configuration is of less complexity with only three switches and three gate driver circuits (One switch and one gate driver for single phase) at low cost and also high efficiency. The three level characteristics can reduce the voltage stress across the power switches as well as the input current ripple. The wind energy conversion system (WECS) is the most popular and wide range installed renewable energy system in the power sector, due to rapid developments in low cost and high efficient wind turbines design, generators and power conversion units. Similarly, it's a clean, eco-friendly and zero-emissions energy generation from the renewable energy resources.

5. Project status at beginning of the Year:

- Work has been scheduled for the implementation.
- **Idea Level:** Developing stage.

6. Interventions made:

- Equipment is purchased as per the requirements. Working for the improvements in the accuracy.

7. Current status: Under developing and basic testing is completed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Solar Air Purifier

1. Project Title : Solar Air Purifier

2. Mentor Name : R. Pavan Kumar Naidu

3. Student Team Names:

- i. A. Sai Vinayak
- ii. L. Sandeep
- iii. V. Sai Sudheer
- iv. Shaik Naseer

4. Project Description:

Air pollution has become a serious problem these modern days. Air pollution is present outside in the environment and has become difficult to provide safety inside the house. This polluted air can cause many serious health problems in cities. If someone is suffering from breathing problems like Asthma or Sinus or suffering from any lung problem then air-purifier acts as a surviving tool. Air purifier reduces the chances of health issues caused by indoor pollutants, which directly trigger neurological problems, respiratory infection, or symptoms in asthma suffering. Hence, the fabrication of a low-cost solar-powered air-purifier made using a HEPA filter, Activated Carbon Filter, Solar Panel, and some miscellaneous components that can become a low-cost but efficient alternative for surviving in such difficult times. This air purifier uses various processes like filtering large dirt particles on the first pre-filter, then capturing dust particles and smoke molecules at the HEPA-filter, and using Carbon-filter to capture micro-particles produce clean purified air. The analysis and results conclude that the Air Purifier can produce 96 percent of clean air and can run up to 14 hours a day by a solar-powered system.

5. Project status at beginning of the Year:

- Idea has been prepared and the procedure of the project completed.
- **Idea Level:** Idea is in developing stage

6. Interventions made:

This solar air purifier uses two-layer purification. It consists of a heavy-duty suction fan that pulls air from the bottom of the purifier through a layer of filters for elimination of PM 10 and PM 2.5 pollutants as well as gases. The combination of two filter layers leads to dual filtration using a centrifugal air force to suck a large amount of air and purify it of dust particles. The suction fan is used to suck out air using high-power centrifugal force and blowing out fresh air from the top. The system also includes an air quality sensor to display the current air quality. The solar panel is used for the power supply. The panel is used to supply electricity to the battery which in turn powers the motor to run the suction fan. The machine is mounted with 4 castor wheels and a handle for easy movement. This makes the air purifier portable so it can be easily moved to school play areas, parks, residential areas, public places for efficient and instant pollution control. The air quality is measured using an IoT device. These measured values can be inspected by us whenever and when we need.

7. Current status:

- 95% of the project Completed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Coconut Juice Vending Cart

1. Project Title : Coconut Juice Vending Cart

2. Mentor Name : Dr. R. B. Choudary

3. Student Team Names:

i. D. Haritha

4. Project Description:

Tender Coconut Water is low in calories and fat-free. Real Coconut Water packs natural nutrients and is the best drink to quench thirst in summer. A common problem that many people are facing in a developing country like India is punching the tender coconut. Present tools and trends used are unsafe as well as the risk of injury is high. From past years the tender coconut is being opened and cut by completely manual effort by using a hard knife. The tools used are unsafe, messy and need skill and training. Some machines for paring coconut are available, but until now no household tool exists to punch hole in tender coconut and split it open safely. This project aims to develop a coconut punching machine to make a hole in tender coconut easily and safely. The machine comprises of opener, two varieties of splitters, strainer, cooler, dispenser, coconut storage unit, waste storage bin. The cart is mounted on wheels to give mobility.

5. Project status at beginning of the Year:

- In idea developing stage and studied existing available products for improvement.
- **Idea Level:** Developing stage.

6. Interventions made:

- Basic wheel mechanism is studied and implemented in a foundary. All necessary machinery is purchased as per the requirements

7. Current status:

- Project completed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Design & Fabrication of Electric Scooter For Physically Challenged

1. Project Title : Design & Fabrication of Electric Scooter For Physically Challenged

2. Mentor Name : Dr. G. Naveen Kumar

3. Student Team Names:

- i. P. Sandeep
- ii. M. Subrahmanyam
- iii. P. Sai Kumar
- iv. T. Bala Venkata Satish

4. Project Description:

Our day-to-day life is impossible without transportation, but the point is fossil fuels depletion rate is higher than the nature replaces it and fossil fuels price hikes constantly. Pollution level caused by the vehicles has greater impact in the environment. So, there is an urgent need for an alternative. Recent days electric vehicles play a major role in transportation so developing hybrid vehicles will enable peoples to drive electric in traffic and fuel at highways will increase efficiency.

5. Project status at beginning of the Year:

- To purchase good conditioned non-gear second hand two-wheeler vehicle.

6. Interventions made:

- Surveyed about the capacity and performance of the lithium-ion batteries which burning in different incidents and found that lithium ion ferro phosphate batteries over comes those conditions.

7. Current status:

- Second hand two-wheeler vehicle with non-gear has purchased and Few Components with Suitable Specifications and size has finalized and ordered for Retrofitting.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Remote health monitoring system for Elder people

1. Project Title : Remote health monitoring system for Elder people

2. Mentor Name :

3. Student Team Names:

- i. G. Chandra Sekhar
- ii. P. Janardhan
- iii. D. Jyothi Swarupa
- iv. Ch. Durga Bhavani

4. Project Description:

Monitoring health for elderly people is an important task for any family due to their personal care requirements. In this project, idea is proposed to monitor the basic health conditions such as BP, heartbeat etc using sensors and measuring them from the remote location.

5. Project status at beginning of the Year:

- Idea is proposed and surveyed available products in the market.
- **Idea Level:** Developed and submitted for customer feedback.

6. Interventions made:

- Equipment is purchased and few parameters are tested for basic need.

7. Current status:

- Project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Smart Ventilator

1. Project Title : Smart Ventilator

2. Mentor Name : M. Ravi Shankar

3. Student Team Names:

- i. Maneesha
- ii. G. Durga
- iii. A. Harika

4. Project Description:

During the COVID19 pandemic situations, ventilators played important role in saving the lives are basic level. In hospitals, health care workers need to check the ventilator status at the patient's bed manually and need to take measures. Remote monitoring helps in such critical situations in handling crowded patients. In this project, remote monitoring of Ventilator is proposed for monitoring the patient's condition

5. Project status at beginning of the Year:

- Idea is compared with any existing similar products.
- **Idea Level:** Idea is developed.

6. Interventions made:

- Equipment is purchased and prototype is implemented.

7. Current status:

- Project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Floating waste detector and cleaning system

1. Project Title : Floating waste detector and cleaning system

2. Mentor Name : B. Kiran Kumar

3. Student Team Names:

- i. B. Uday Kiran
- ii. K. S. Satya Sudheer
- iii. G. K. V. Rahul
- iv. A. Jyoshna Sri

4. Project Description:

It is very common in villages and towns throwing trash in to drainage and rivers. This will stop the flowing the water and also contaminate the water if it persists for long time. In this project, an idea is proposed to remove the floating trash from the river beds using moving miniature vehicle.

5. Project status at beginning of the Year:

- Idea is proposed and compared with any existing products.
- **Idea Level:** Idea is developed.

6. Interventions made:

- Equipment is purchased and implementation is started.

7. Current status:

- Project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Green house automation system through wireless protocol

1. Project Title : Green house automation system through wireless protocol

2. Mentor Name : M. Satya Srinivas

3. Student Team Names:

- i. M. Gowri Shankar
- ii. R. V. Srinivas
- iii. G. Malavika
- iv. A. Rani

4. Project Description:

Maintaining a green house is profitable only when the expenditure is reduced by using smart methods. In this project, a system is proposed to implement the basic greenhouse analytical needs using IoT.

5. Project status at beginning of the Year:

- Idea is compared against the existing systems and updated accordingly.
- **Idea Level:** Idea is prepared and submitted for customer feedback.

6. Interventions made:

- Equipment is purchased and implementation started.

7. Current status:

- Project is Completed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Data monitoring of structural Health monitoring using IOT

1. Project Title : Data monitoring of structural Health monitoring using IOT

2. Mentor Name : E. V. Sandeep

3. Student Team Names:

- i. K Jnaneswari
- ii. MDNS Sravanti
- iii. KPVNP Padmavati

4. Project Description:

Analysing the health of bridges and buildings is a challenging task in real-time scenario. In this project, a system is developed by identifying cracks in the building structure using IoT and reporting the same to authorities for precautionary measures.

5. Project status at beginning of the Year:

- Idea is proposed based on the available systems and compared against them.
- **Idea Level:** Idea is developed.

6. Interventions made:

- Equipment is purchased and algorithm is developed by studying different crack sizes and their impact.

7. Current status:

- Project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Industrial Air Pollution Monitoring system

1. Project Title : Industrial Air Pollution Monitoring system

2. Mentor Name : U. Srinadh

3. Student Team Names:

- i. B. Tarun Teja
- ii. G. G. Siddhardha
- iii. E. Adisatyhyasai

4. Project Description:

Measuring hazardous gases in the industrial locations is a vital objective for the safety of workers and also nearby residents. The proposed system will measure gases and report to local authorities.

5. Project status at beginning of the Year:

- Idea is developed and verified for existing systems.
- **Idea Level:** Idea is developed.

6. Interventions made:

- Equipment purchased and implemented is completed

7. Current status:

- Project is completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Patient monitoring system using Ocular Communication

1. Project Title : Patient monitoring system using Ocular Communication

2. Mentor Name : Dr. G. L. Chowdary

3. Student Team Names:

- i. T. Jyothi Chaitanya
- ii. T. Geetha
- iii. B. Srinu
- iv. B. Tarun Sai

4. Project Description:

Communication for the patients who are suffering from paralysis like chronic diseases is crucial as they cannot move their body and face but eyes only. The proposed system identifies the movement of eyes and develops signs for basic needs.

5. Project status at beginning of the Year:

- Idea is developed based on the discussions with doctors.
- **Idea Level:** Idea is developed

6. Interventions made:

- Equipment is purchased and implemented

7. Current status:

- Project is completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Voice Controlled Wheelchair with an Automatic Toilet system

1. Project Title : Voice Controlled Wheelchair with an Automatic Toilet system

2. Mentor Name : Dr. N. K. Chaitanya

3. Student Team Names:

- i. E. Bala
- ii. J. Sai Babu
- iii. S. Chaitanya Sri Satya
- iv. K. Uma Nagendra

4. Project Description:

Assisting wheelchair patients is helpful particularly for oldage homes. The proposed system detects the basic needs such as toilet and sends the commands to workers for immediate assistance.

5. Project status at beginning of the Year:

- Idea is proposed and surveyd for existing systems.
- **Idea Level:** Idea is developed.

6. Interventions made:

- Equipment is purchased and implementation is done.

7. Current status:

- Project is completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Face Recognition Based Attendance System

1. Project Title : Face Recognition Based Attendance System

2. Mentor Name : G. Pulla Rao

3. Student Team Names:

- i. Badeti Ramya
- ii. Karri Jyothi Sri Satya Sindu
- iii. Bolla Prazna

4. Project Description:

Biometric attendance system is very usefull but needs physical touch which is an issue in COVID19 situations. The proposed idea is to detect the people using face recognition to mark the attendance.

5. Project status at beginning of the Year:

- Idea is verified against the existing systems with respect to algorithm.
- **Idea Level:** Idea is developed.

6. Interventions made:

- Equipment it purchased and implemented is started

7. Current status:

- Project is under progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: L. J. Institute of Engineering & Technology

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	L. J. Institute of Engineering & Technology		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. Viral Shah		
Name of NewGen IEDC Coordinator	Ms. Debopriya Chakroborty Mr. Bhushan Mehta		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	Mobile No: 096207 27297 E-mail: dchakroborty@ljinstitutes.edu.in Mobile No: 9033096486 E-mail: bhushan@ljinstitutes.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/04 Date: 15/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the:

[A]To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Demo Day by Mr Bhushan Mehta, Project Manager, Antrapreneur The Business Incubator, L. J. K. University. Held on 25th September, 2021

- Demo Day Is An Accelerator Industry Term That Equates To “Showcase”.
- The Day Can Help To Increase Exposure, Expand Networks, Facilitate Connections With Potential Partners And Unlock Additional Resources.
- In This A Startup Focuses On Introducing The Product As Well As Evaluating The Brand. Demo Day Can Also Be Either Empanelled By Investors Or Even Planned Without Their Intervention
- The domains ranged from Healthtech, Edtech, Foodtech, Alternative medicine, Waste treatment and Edutainment.
- The event was attended by 120+ students, faculties and aspiring innovators.
- The special features of the event includes the audience card polling and the startup quiz arranged for the audience.



2. Start-Up DOC Talk by Mrs Debopriya Chakroborty, Incubation In-charge, Antrapreneur the Business Incubator, L. J. K. University. Held on 13th October 2021 and 14th October 2021.

- Start-Up doc talk is a clinic for idea generation, idea validation and brain storming observations of student innovators.
- We setup a camp at the institute open for all to come and discuss their ideas with us.

- Till now we have catered around 200 innovators during the last two startup doc talk sessions.
- Freely accessible event without any filtration or criteria



3. Sensitisation Series by Mr Bhushan Mehta, Project Manager and Mrs Debopriya Chakroborty, Incubation In-charge, Antrapreneur The Business Incubator, L. J. K. University. Held on 5th February, 2022.

- They also met one of the projects (medilist), which was mentored under the incubation centre during their diploma studies. They explained the entire process of incubation from idea generation to commercialisation and then emphasised on how the government has been instrumental in building the start-up ecosystem in India.
- This is a carpet bombing method wherein we sensitise students and faculties from different domains In L.J University.
- This is one of the strongest sensitisation tool as far as internal sensitisation is concerned



4. Antra Tech Rides by Mr Jigar Thakkar, Sr. Technical Trainer, Zoom webinar. Held on 16th September, 2020

- Technology being one of the backbone of any business or Start-up, Antra Tech Ride was initiated.

- In this, we invite experts from the emerging fields of technology to address the aspiring innovators/entrepreneurs.
- Till date we have done 8 TECH rides sessions facilitated by eight TECH experts.



5. Antra Tech Rides by Mrs Debopriya Chakroborty, Incubation In-charge, Zoom Webinar. Held on 10th October 2022

- For growing an ecosystem connecting and scaling up your vision with all the stakeholders of the ecosystem is much needed, therefore we started the antra series.
- Herein we conduct one to one discussions with different stakeholders of the startup ecosystem ranging from investors, startups, business owners, experts, mentors, public policy makers and so on.
- Till now we have catered over 50 ecosystem stakeholders including couplepreneurs, solo entrepreneurs, investors impact makers, experts and many more



[B] To identify, develop & commercialize students' innovative ideas

1. Antra Quest by Mrs. Debopriya Chakroborty, Incubation Incharge and Mr Bhushna Mehta, Project Manager, L. J. K. University. Held on 1st October 2021

- As the name suggests, it's a quest for different ideas with respect to problem solving and need identification.
- We keep registering students on day to day basis and onboard their ideas with us.
- We screen, analyse and then call them for a final pitch in front of a panel of external experts.



2. Antra Pitch by Mrs Debopriya Chakroborty, Incubation In-charge, L. J. K. University. Held on 31st July, 2021

- A platform for speed dating and funding for early-stage startups
- The usp of antra pitch 2.0 is, that each start-up got an opportunity to present its elevator pitch five times to a different set of investor's i.e 180 seconds at each table.
- Within 15 minutes, they pitched to 25 different investors.
- The start-ups were ranked based on the investor's interest.
- The start-ups were given additional five minutes to present their pitch decks.
- 20 minutes of pitching compiled the entire event.



[C] To enhance Industry-Academia interaction

1. **Women Investing in Women** by Mrs. Debopriya Chakroborty, Incubation In-charge, L. J. K. University .Held on 23rd December, 2022.

- A platform wherein women entrepreneurs of different levels (ideation, prototype, seed fund seekers) were brought together in three different event formats i.e mentor mixer, demo day and pitch for funds.
- The usp of the event was that all the stakeholders of the event were women.
- Another notable program which was commenced during this event was the launch of skill development and training centre by antrapreneur the business incubator in association with FICCI FLO – startup cell.
- Establishment of Training Centre for Women Entrepreneurs.
- 30 ideas got validated by experts from various domains.
- Seven businesses with a prototype got an opportunity to display their product and get market feedback.
- Six startups got an opportunity to pitch in front of potential women investors, out of which, two are in talks for further meeting rounds with the investors



2. **Antra Skill Up** by Mrs. Debopriya Chakroborty, Incubation In-charge and Mr Bhushan Mehta, Project Manager, L. J. K. University. Held on 10th February, 2022

- Antra SkillUp Series is an initiative by Antrapreneur The Business Incubator where in we bring together different capacity building training modules and workshops which builds up the profile of an individual and their future prospects of building a venture or taking up a job. Antra SkillUp aims towards giving a platform for young people to learn before entering the market.



3. Antra Start-up Jobs.

- Antra Startup Jobs is a platform where any startup/ new business can promote jobs and search for befitting individuals for their team.
- A modern name for an online job board that helps applicants find jobs and aids employers in their quest to locate ideal candidates.
- Also from a candidate point of view, If you are working at a startup, you are less likely to be constrained to a specific role since there are fewer employees, meaning you may pivot between different positions and leverage one another's talents when leading various projects

4. Antra Fair by Hiral Desai, L. J. K. University, Ongoing till now.

- Internship Program brings together multiple cohorts of learning-minded students for community building & learning from startups and Incubators, founders and experts. Throughout the process we host talks, discussions and events, giving them more insight into industry and what it takes to build a startup.
- Startup internships give the individual a chance to see if this fast-paced part of the tech world is for him/him/them. Some startup entry level jobs require prior startup experience, because the environment is very different from corporate offices. Interning at a startup is a great way to bridge the gap between what you think you need to know, and what you really need to know to succeed in small and nimble companies. A potential intern will be able to help them grow by working on essential projects in the startup, while learning skills that are applicable to many other industries.



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

- i. There was a major disconnect between the students and the innovation cell as studies went from in the campus to google meets and thus the task of changing student mindset got even more challenging.
- ii. Students in the last 3 years have opted for computer science branches rather than core physical studies, thus the flow of physical product based projects was also hit.
- iii. Product is often left unfinished due to students option for abroad studies more than ever before.
- iv. It takes 2 years for a project to continue and covid has interrupted the momentum that was built in 2018-2019-2020. Thus it is taking a lot of efforts to build back the momentum to those levels.

3. Other important highlights (new initiatives), if any:

- i. Through the help of NEWGEN IEDC, we have been able to develop an ecosystem wherein the ideology of project to product got a chance for it's implementation. From the same ecosystem, one of our startup Homeversity has raised an undisclosed funding round from Shuru-up.
- ii. One more start-up news reach has been listed in the forbes under 30 asia 2022.
- iii. A tie-up with FICCI flo for the establishment of a skill development centre for women entrepreneurs.

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Plastic Waste Digester

- I. **Project Title:** Plastic Waste Digester
- II. **Mentor Details:** Mr. Bhushan Mehta
- III. **Student team details:**
 - i. Aditya Shah

Educational and professional experience:

- Project proponent for the plastic waste digester project.
- M. E. Thermal Engineering (BITS-Pilani, 2015)
- GE, JFWTC, Global R&D Center Bangalore (2015-19)

- a. Edison Engineering Development Program (EEDP)
- b. Advanced Courses of Engineering (ACE)
- c. GE Analytics Engineer
- Training students and professionals in Data Science, Machine Learning, Deep Learning(Since 2020)
 - a. 200+ students trained
 - b. Visiting faculty at CEPT university
- Professional Interests: Waste Management, Computational Fluid Dynamics

IV. Brief description about the start-up:

The 'Plastic Waste Digester' attempts to solve this problem by treating the waste locally in a decentralized manner. To digest the plastic waste, first it is shredded into small pieces and then the waste is put into the digester along with proprietary catalyst. Furthermore, the digestion (waste decomposition) is started by heating the waste inside the digester in an oxygen deficient environment. This process is called pyrolysis. This process gives a high calorific value clean burning gas as a product which through proper mechanism is again fed to the system to reduce the fuel consumption as well as to speed up the process of decomposition

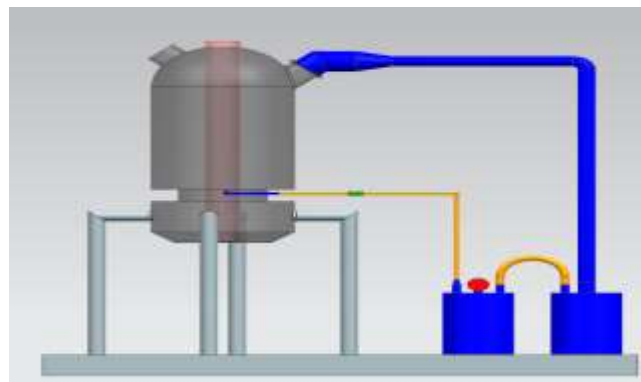


Figure 1 Product prototype CAD model

V. **Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.**

- Currently, the product is at the prototype stage.
- The genesis of the project lies in an assignment from VIKAS, an NGO to resolve the problem of domestic plastic waste as part of solid waste Management Project being implemented in 30 villages of Dahjei SEZ, Vagra Taluka, Bharuch, Gujarat (2019)

- Since 2019-2022 SAVE limited a technical services organization has supported the project by providing resources for the development of the various level of prototypes and solid residue testing.



Figure 2 First prototype



Figure 3 Plastic waste digestion process setup with the first prototype

- The plastic digested gets converted into a high calorific value gas as shown in the below figure



Figure 4 Gas generated from the digestion of the plastic

- In the case of certain plastics there will be a solid residue left as shown in the below figure. The composition of this solid residue was tested for various combinations of the plastics at ATIRA which is a NABL accredited lab.



Figure 5 Solid residue post digestion of the plastic

- In 2020, an design was updated with the learning from the previous experiences which is as shown in the below figure. Further, the process was optimized to produce more gas and less of solid residue.



Figure 6 The updated prototype

- For the majority of the duration from March 2020- September 2021 due to the COVID-19 the operations proceeded in an intermittent manner.

VI. **Contribution of NewGen IEDC in the same**

- Since, September 2021 the project is incubated at LJ NewGen IEDC. They have contributed significantly to the project by allowing on site testing and providing necessary resources for the analysis of the gas generated from the digestion of the plastic.
- Below video shows the gas generated from the plastic waste digestion process.
- https://youtube.com/shorts/m5A_Eangg1g?feature=share
- On 14th May 2022, the gas composition was analysed by SGS, Pune and a composition certificate was provided.
- Provided industrial exposure by referring student teams to various companies for Internships.

VII. **Future plan**

The future plan includes the following:

- Improving the design to incorporate the learnings from the tests.
- Focusing on developing an urban friendly design.
- Setting up a pilot plant for plastic waste digestion. This will be useful in collecting operational data points and will help in developing future designs.

VIII. **Important highlights**

- No landfills
- No incineration,
- No uncollected waste,
- Non-recyclable thermos-plastic also treated
- No segregation
- Reduced climate change impact
- High calorific value gas generated

Best Project-2: Fabrication of Solar Structure on Palm Tree

I. Project Title: Fabrication of Solar Structure on Palm Tree

II. Mentors Details: Mr. Bhushan Mehta

III. Student team details:

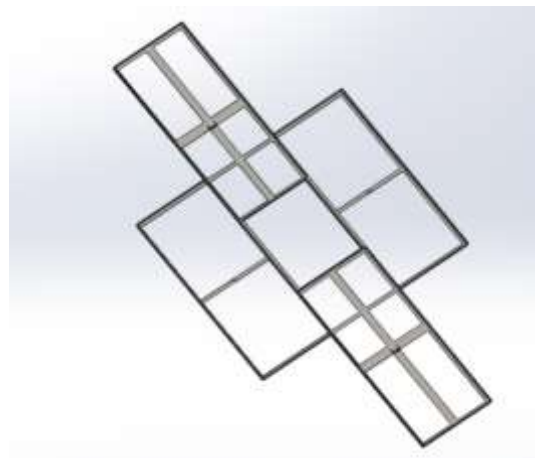
i. Dhrumit Rami

ii. Dhruvit Mehta

IV. Brief description about the student Project

The main objective of solar power tree is to bring visibility towards solar technology and awareness as well as understanding about renewable energy .Another purpose of using solar energy is to think in the direction of saving our environment. The solar tree is designed in such a way that all the panels can get the maximum amount of solar energy with the least amount of shadow. To use the maximum amount of solar energy we have used bifacial panels which are more efficient than monofacial solar panels. Bifacial panels can produce electrical energy when illuminated both at the surface, front and rear. The structure will be implemented on the palm tree such that a minimum amount of load acts on it. The structure is mainly an assembly of three major parts: Clamp, Rectangular frame and square sectioned supports. First is Clamp which is the base of the structure and holds the structure with a tree. Second is a rectangular frame on which solar panels will be mounted and third is square sectioned supports which directly transfer large amounts of load to the ground and also support the whole structure.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.





VI. Contribution of NewGen IEDC in the same

NewGen IEDC plays an important role in helping the startup for designing, mentoring and connecting the startup to the expertise of the field.

VII. Future plan

- Fabrication of Solar Structure On Palm Tree main aim is to get an healthy ecosystem to live with expanding PAN India and increase their business idea.

Annexure-A

Details of Student Projects

Project-01: Team Express AI

1. **Project Title** : Team Express AI

2. **Mentor Name** : Mr. Alok Manke

3. **Student Team Names:**

- i. Yaksh Thakar
- ii. Mihir Bhatt

4. **Project Description:**

Team express AI focuses majorly on image processing solution to detect various parameters of covid protocol like social distancing, wearing masks and other

5. **Project status at beginning of the Year:**

- Idea Stage

6. **Interventions made:**

- We will be connecting them with various airport authorities and numerous gathering places for their commercialisation

7. **Current status:**

- Prototype is ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-02: Track My Sport

1. Project Title : Track My Sport

2. Mentor Name : Ms. Debopriya Chakroborty

3. Student Team Names:

- i. Koonal Hastwala
- ii. Simran Chauhan
- iii. Saket Sharma

4. Project Description:

We aspire to bring evolution in the field of sports and fitness with a seamless amalgamation of Science, technology and inclusive development, initiating from the grassroots of an individual. One of our prime motto is to organise the kids athletes of India and get them ready for the Olympic throne, bringing diversity in the field of sports & athletics

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- Connected with numerous institutions for clients.

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Accident Alert System

1. Project Title : Accident Alert System

2. Mentor's Name : Mr. Rahul Savaliya

3. Student Team Names:

i. Neel Patel

4. Project Description:

An automatic system designed to cater to any accidental emergencies. This device will detect any mishap and send its location to the nearest hospital and police station.

5. Project status at beginning of the Year:

- Idea Stage

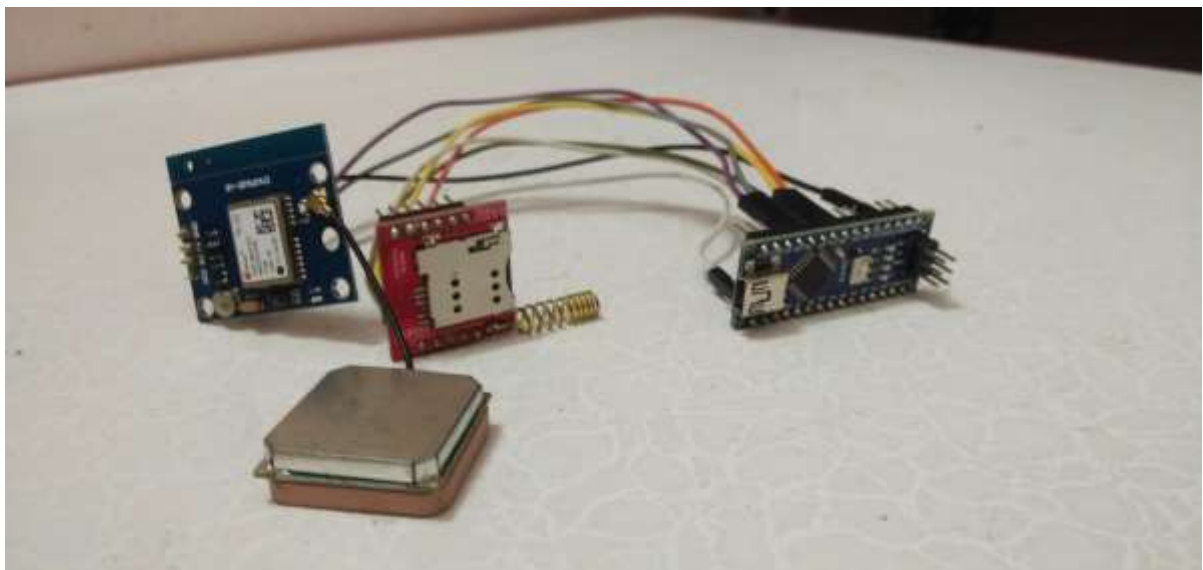
6. Interventions made:

- We will push them through our robust network of automakers like ashok leyland, tata motors and ford motors so that they can commercialise their product

7. Current status:

- Idea Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Bread Fermentation

1. Project Title : Bread Fermentation

2. Mentor's Name : Mr. Viral Shukla

3. Student Team Names:

- i. Brahmksatriya Ayushi H
- ii. Patel Jaykumar Vishnubhai
- iii. Kalal Rohit Arvindkumar

4. Project Description:

During fermentation, carbon dioxide is produced and trapped as tiny pockets of air within the dough. This causes it to rise. During baking the carbon dioxide expands and causes the bread to rise further. The alcohol produced during fermentation evaporates during the bread baking process. Therefore, to understand QA/ QC involved in this process and optimize the same while producing a better quality product at a market competitive pricing, the team has come up with a process to make the same.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will connect them with various gruh udhyogs and retail stores so that they can get a shelf space for their product

7. Current status:

- Prototype is ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Wheel Puncture Care

1. Project Title : Wheel Puncture Care

2. Mentor's Name : Mr. Sagar Thesiya

3. Student Team Names:

i. Salif Alvi

4. Project Description:

Have you ever experienced a flat tire when you least wanted it to happen? this happens to almost everyone, but what if this happens to women at night. so this project has been designed just for that. a guide for the flat tire, which will help you to the nearest service station

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will help them with their final product and also connect them with automotive companies for commercialization

7. Current status:

- Prototype is ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: AllotiQ

1. **Project Title** : AllotiQ

2. **Mentor's Name** : Mr. Jignesh Doshi

3. **Student Team Names:**

i. Shrutika Kisan Dhuma

4. **Project Description:**

As per our knowledge and research, there is no such a solution available who can offer end-to-end consolidated distribution solution along with real-time tracking, costing, capacity planning, resources allocation and management.

5. **Project status at beginning of the Year:**

- Idea Stage

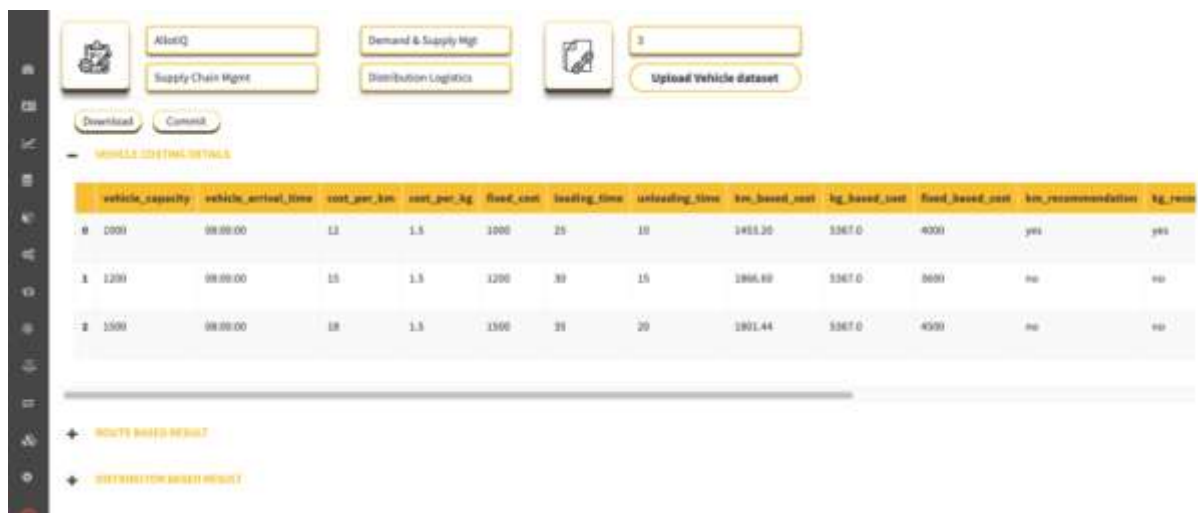
6. **Interventions made:**

- As per our knowledge and research, there is no such a solution available who can offer end-to-end consolidated distribution solutions along with real-time tracking, costing, capacity planning, resources allocation and management.

7. **Current status:**

- Prototype is ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



The screenshot displays the AllotiQ web application interface. At the top, there are navigation buttons for 'AllotiQ', 'Demand & Supply Mgt', 'Supply Chain Mgmt', 'Distribution Logistics', and 'Upload Vehicle dataset'. Below these, there are 'Download' and 'Commit' buttons. The main section is titled 'VEHICLE COSTING DETAILS' and contains a table with the following data:

	vehicle_capacity	vehicle_arrival_time	cost_per_km	cost_per_tg	fixed_cost	loading_time	unloading_time	km_based_cost	tg_based_cost	fixed_based_cost	km_recommendation	tg_recommendation
0	2000	08:00:00	12	1.5	1000	25	10	2455.20	5367.0	4000	yes	yes
1	1200	08:00:00	15	1.5	1200	30	15	2866.80	5367.0	5000	no	no
2	1500	08:00:00	18	1.5	1500	35	20	2801.44	5367.0	4000	no	no

Below the table, there are sections for 'ROUTES BASED RESULT' and 'DISTRIBUTION BASED RESULT', both of which are currently collapsed.

Project-07: Automation of apparatus for Los angeles machine and Standard Proctor Test through IOT

1. Project Title : Automation of apparatus for Los angeles machine and Standard Proctor Test through IOT

2. Mentor's Name : Mr. Vismay Shah

3. Student Team Names:

- i. Vinus Panchal
- ii. Neel Patel

4. Project Description:

A device to automate the existing los angeles machine. this has immense potential in the lab testing segment as it helps to minimize efforts to conduct the test

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will help them implement their product in our lab and then take it further

7. Current status:

- Idea Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Development of Automated Output Generator for Civil Engg. Lab Tests using IOT

1. Project Title : Development of Automated Output Generator for Civil Engg. Lab Tests using IOT

2. Mentor's Name : Mr. Timir Choksi

3. Student Team Names:

- i. Pathan Amankhan Salimkhan
- ii. Shah Dev Ajaykumar

4. Project Description:

An automated output generator not only helps in getting accurate results, but it also minimizes efforts. the main purpose of doing it is to provide

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will provide them mentoring and lab testing facility

7. Current status:

- Prototype Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: IOT based Office Automation System

1. Project Title : IOT based Office Automation System

2. Mentor's Name : Mr. Nimesh Prabhakar

3. Student Team Names:

- i. Pruthvi Patadiya
- ii. Javadhra Darshil Manubhhai

4. Project Description:

Automation is becoming an essential part of everyone's life nowadays. This office automation project works both offline and through the internet. The major highlight of it is that it can operate multiple appliances at a time and it can also be operated from an app.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will provide them mentoring and connect them to various corporates to push their product

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Automated BMI Machine For Health Monitoring

1. Project Title : Automated BMI Machine For Health Monitoring

2. Mentor's Name : Mr. Ketan Bhavsar

3. Student Team Names:

- i. Samarth Mukeshbhai Patel
- ii. Karmit Dilipbhai Patel

4. Project Description:

This pandemic has taught us all to be more focused on our health and fitness. BMI is an important parameter to gauge body fitness. This project aims to automate this machine so that a user can have their data tested from anyone around the world. it also makes data analytics easy

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will push them through our huge network of healthcare professionals. this will help them to bootstrap their startup

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Extraction of Liquid Fertilizer using organic waste and its analysis

1. **Project Title** : Extraction of Liquid Fertilizer using organic waste and its analysis
2. **Mentor's Name** : Mr. Nimish Das
3. **Student Team Names:**
 - i. Mehta Manan Vijaybhai
4. **Project Description:**

We all discard waste and then it becomes a pile from nothing. What if this waste could be utilized by numerous people for producing liquid fertilizer? This can also add to their income. Here we are developing a bin which will help multiple users to generate liquid fertilizer and all the NPK parameters will be collected and processed on the web.
5. **Project status at beginning of the Year:**
 - Idea Stage
6. **Interventions made:**
 - We will connect them with farmers around the city and help them start their business
7. **Current status:**
 - Prototype Stage
8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-12: Air Ozonizer

- 1. Project Title** : Air Ozonizer
- 2. Mentor's Name** : Mr. Bhushan Mehta
- 3. Student Team Names:**
 - i. Himani Ramwani
 - ii. Tanvi Hemani

4. Project Description:

COVID-19 can easily spread between people, especially indoors and poorly ventilated spaces. When an infected person coughs, sneezes or speaks loudly, up to millions of invisible virus particles are released into the surroundings via respiratory droplets, where they can remain infectious for days. While the larger droplets settle on all nearby surfaces, smaller droplets can remain suspended for up to 20 minutes in the air or up to 48 hours on surfaces indoors. Others can catch COVID-19 when these infected droplets get into their mouth, nose or eyes. Thus to help understand the requirements and solve the issues of polluted air at a domestic level, the team has come up with an instrument for air purification. The instrument is easy to install, plug and play device, real time protection, no chemicals, no side effects.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will provide them connects with manufacturers and connect them with hospitals

7. Current status:

- Prototype Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: UPSHYC

- 1. Project Title** : UPSHYC
- 2. Mentor's Name** : Ms. Debopriya Chakroborty
- 3. Student Team Names:**
 - i. Divyanshu Purohit

4. Project Description:

One of the fastest growing waste is the denim waste. We at upshyc collect these and turn them into fashionable products like laptop bags, shirts and many more. Not only is this a sustainable way of parting away from the unwanted.

5. Project status at beginning of the Year:

- Prototype

6. Interventions made:

- We will help them with digital marketing and gain customers

7. Current status:

- Product is ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Hybrid Gaming

- 1. Project Title** : Hybrid Gaming
- 2. Mentor's Name** : Mr. Naren Desai
- 3. Student Team Names:**
 - i. Anagha Chakroborty

4. Project Description:

Esports (also known as electronic sports, e-sports, or eSports) is a form of competition using video games. Esports often takes the form of organized, multiplayer video game competitions, particularly between professional players, individually or as teams. Although organized competitions have long been a part of video game culture, these were largely between amateurs until the late 2000s, when participation by professional gamers and spectatorship in these events through live streaming saw a large surge in popularity. By the 2010s, esports was a significant factor in the video game industry, with many game developers actively designing and providing funding for tournaments and other events. The most common video game genres associated with esports are multiplayer online battle arena (MOBA), first-person shooter (FPS), fighting, card, battle royale and real-time strategy (RTS) games. Popular esports franchises include League of Legends, Dota, Counter-Strike, Overwatch, Street Fighter, Super Smash Bros. and StarCraft, among many others. Tournaments such as the Fortnite battle royal, Rainbow Six Siege, the fighting game-specific Evolution Championship Series (EVO) and Intel Extreme Masters are among the most popular in esports. Many other competitions use a series of league play with sponsored teams, such as the Overwatch League. Although the legitimacy of esports as a true sporting competition remains in question, they have been featured alongside traditional sports in some multinational events in Asia, with the International Olympic Committee also having discussed their inclusion into future Olympic events.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will help them build the hybrid gaming ecosystem. We will also push them in organizing various gaming events.

7. Current status:

- Idea Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: KAREKARO

1. **Project Title** : KAREKARO

2. **Mentor's Name** : Mr. Bhushan Mehta

3. **Student Team Names:**

- i. Janesh Fultariya
- ii. Nikhil Makwana

4. **Project Description:**

A system to organize one of the most unorganized industries. The after sales segment, especially for the heavy appliances like air conditioners, refrigerators and others is highly competitive, yet a headache for the customers. With this system, the customer will have the recent updates about when his AC services or when is the next service due.

5. **Project status at beginning of the Year:**

- Ideation

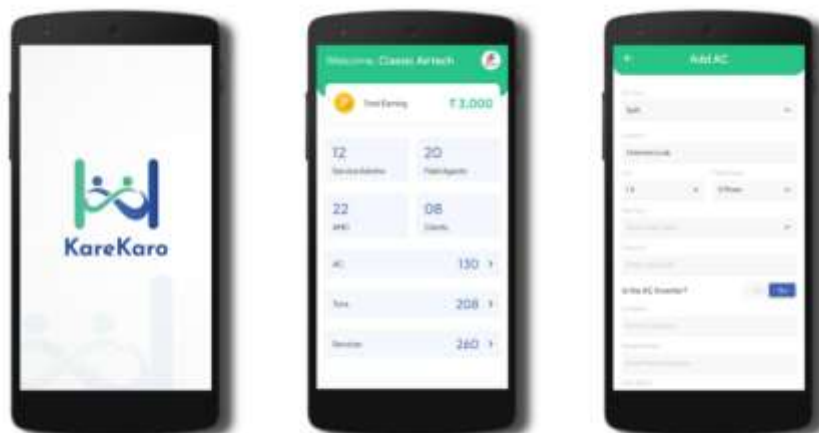
6. **Interventions made:**

- We will connect them with various distributors of AC and other heavy applications.

7. **Current status:**

- Prototype is ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-16: Roti Maker

- 1. Project Title** : Roti Maker
- 2. Mentor's Name** : Mrs. Prexa Parikh
- 3. Student Team Names:**
 - i. Nandini Patel

4. Project Description:

There are numerous machines to produce rotis in mass, but even the greatest of companies have failed to develop automatic roti makers for households. This machine will be an economic version of a roti maker along with features like automatic cut off and heating pad. This will enable the house maker to produce ready to eat rotis.

5. Project status at beginning of the Year:

- Idea Stage

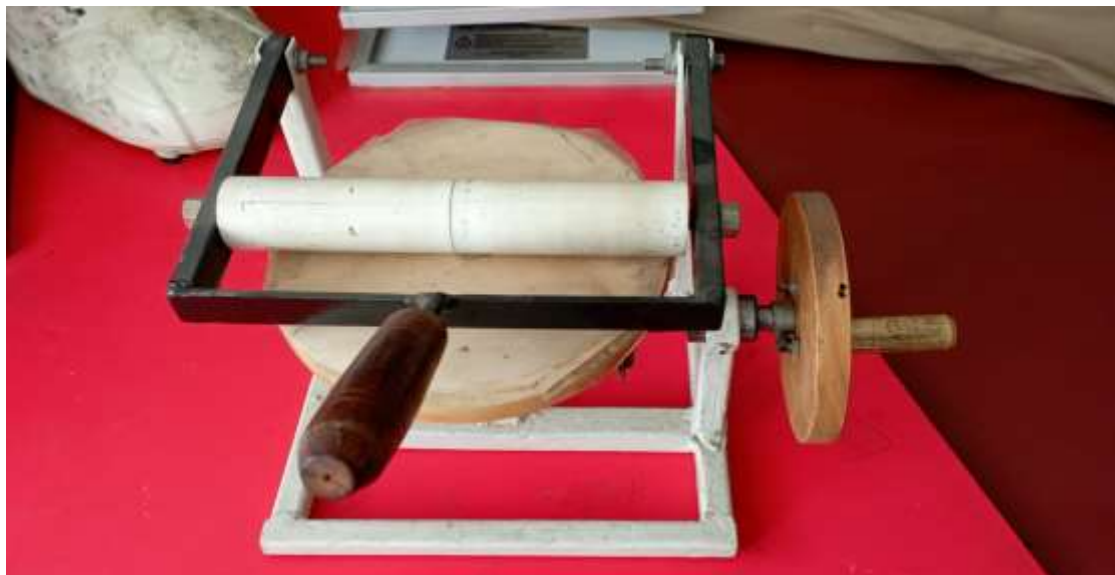
6. Interventions made:

- We will help them with mentoring and manufacturing of the machine

7. Current status:

- Prototype is ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Smart Energy Meter

1. Project Title : Smart Energy Meter

2. Mentor's Name : Mr. Rahul Savaliya

3. Student Team Names:

- i. Nitya Pragneshbhai Parikh
- ii. Parth Vijay Soni

4. Project Description:

With the energy sector reforming into a digital one, many smart energy meters have hit the market but most of them operate either through GSM, wi-fi or Ethernet protocol. This energy meter will provide individual reading of upto two appliances and thus enable the customer to separately monitor usage of each appliance. Along with this, the user will have remote access to operate the appliance.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- Provided Designing and Development Support

7. Current status:

- Product Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: SPEC Mask

- 1. Project Title** : SPEC Mask
2. Mentor's Name : Ms. Debopriya Charoborty

3. Student Team Names:

- i. Aayush S. Trivedi
- ii. Jaydeep S. Yadav

4. Project Description:

There are many types of masks you can use to protect yourself and others from getting and spreading COVID-19. Cloth Masks can be made from a variety of fabrics, and many types of cloth masks are available. Look for multiple layers of tightly woven, breathable fabric and Nose wire. One of the problems with conventional masks is that it creates friction in the ear lobes. To address the issue, the team has come up with a unique design of mask which serves the problem without compromising the quality.

5. Project status at beginning of the Year:

- Basic Prototype

6. Interventions made:

- We will connect them with manufacturers and also connect them with hospitals for commercialisation

7. Current status:

- Prototype is ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Industrial Road Cleaner

1. Project Title : Industrial Road Cleaner

2. Mentor's Name : Mr. Sagar Thesiya

3. Student Team Names:

- i. Nirmal Patel
- ii. Rajvi Nayan Mehta

4. Project Description:

Road dust is one of the unattended things which leads to major chronic problems in the long run. Many road cleaners have been developed to collect major garbage from surfaces but very few of them have been developed to actually absorb the dust lying on roads.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will push them through AMC for commercialisation

7. Current status:

- Design ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Drainage Monitoring System

1. Project Title : Drainage Monitoring System

2. Mentor's Name : Mr. Rahul Savaliya

3. Student Team Names:

- i. Hemil Panchal
- ii. Aniket Sharma

4. Project Description:

Drainage blockage and overflow are one of the most recurring troubles in India and this device is meant to reduce that. This IoT device can be installed in each drainage and it will continuously monitor the status and send the data on a portal. It will also indicate where the blockage is.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- Helped in making industrial connection for implementation

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-21: New Soap Bar

- 1. Project Title** : New Soap Bar
- 2. Mentor's Name** : Mrs. Shruti Raval
- 3. Student Team Names:**

- i. Majid

- 4. Project Description:**

This project is about manufacturing soaps which can last longer and is slip free. yes we have all experienced slippage of soaps from our hands and that is really a headache. also this soap will come into packaging which can be reused.

- 5. Project status at beginning of the Year:**

- Idea Stage

- 6. Interventions made:**

- We will connect them with various FMCG companies

- 7. Current status:**

- Idea Stage

- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-22: Advance Biometric Lock System

1. Project Title : Advance Biometric Lock System

2. Mentor's Name : Mrs. Debopriya Chakroborty

3. Student Team Names:

- i. Pathan Shazeb

4. Project Description:

A biometric lock is what we all have used. what's unique about this lock is that you don't have to place your finger everytime you want to lock and unlock it. it comes with a touch sensor which when activates allows you to unlock it via registered biometrics.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- We will connect them with various builders for the implementation of their product

7. Current status:

- Prototype is ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-23: Waste Water Regeneration System

1. Project Title : Waste Water Regeneration System

2. Mentor's Name : Mr. Rahul Savaliya

3. Student Team Names:

- i. Rachit Thakker
- ii. Karan Shah

4. Project Description:

With continuous depletion in groundwater levels, and the exponential increase in water demand. there has to be an equilibrium between them. so this product aims to provide an automated system, which can ensure judicious use of water.

5. Project status at beginning of the Year:

- Idea Stage

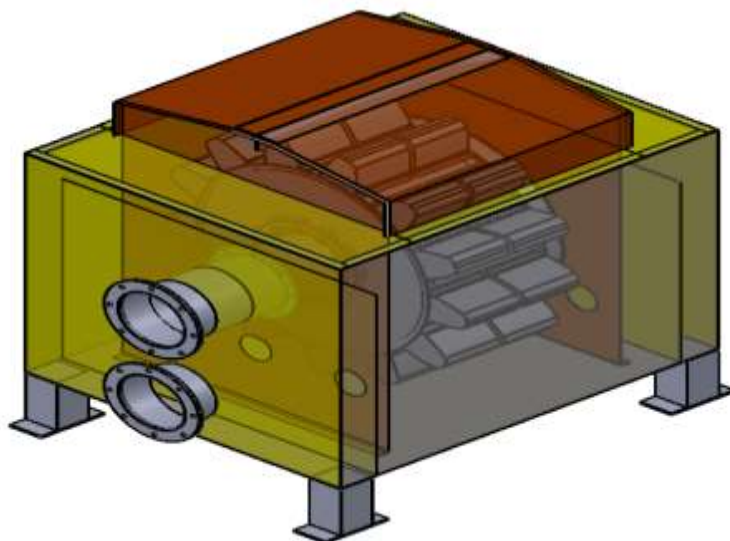
6. Interventions made:

- We will connect them to AMC for large scale implementation of water regeneration system

7. Current status:

- Prototype is ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-24: CFD Analysis of fluid flow for Solar Cleaning System

1. Project Title : CFD Analysis of fluid flow for Solar Cleaning System

2. Mentor's Name : Mr. Bhushan Mehta

3. Student Team Names:

i. Ruhulamin Kagdi

4. Project Description:

The most crucial part of any water project is knowing the behavior of it. so this project aims to understand and predict numerous parameters of a fluid flow system in order to minimize the trial and errors during the project implementation phase

5. Project status at beginning of the Year:

- Idea Stage

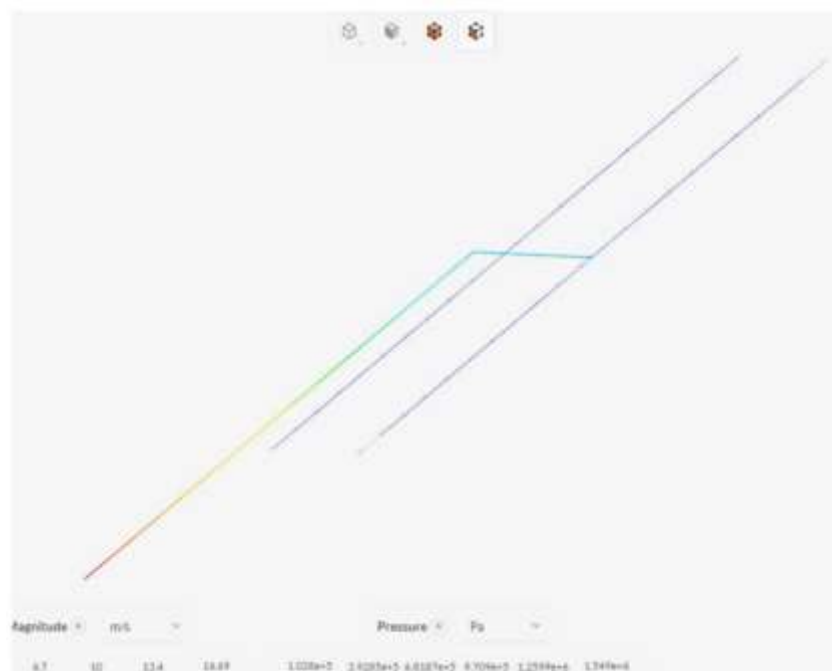
6. Interventions made:

- We will push them through various solar manufacturers and try to get their solution implemented through OEMs

7. Current status:

- Idea Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-25: Eco Care

- 1. Project Title** : Eco Care
- 2. Mentor's Name** : Mr. Bhushan Mehta
- 3. Student Team Names:**
 - i. Aaditya Shah

4. Project Description:

Removing plastic waste from earth is one of the most challenging tasks and this project does exactly that. This machine melts plastic through a process that converts plastic to 1/10th of its original waste and does not produce any harmful gases. It can have wide applications in waste processing and making our cities free from plastic dump.

5. Project status at beginning of the Year:

- Product Ready

6. Interventions made:

- Got their effluent gas testing done through SGS

7. Current status:

- Ready For Production

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-26: Evacuated Tube Solar Still

1. Project Title : Evacuated Tube Solar Still

2. Mentor's Name : Dr. Prexa Parikh

3. Student Team Names:

i. Dr. Prexa Parikh

4. Project Description:

The main aim of this product is to generate portable water from saline water. It uses solar radiation to purify the water and separate salt from it. The USP of this project is the use of forced cooling to improve the efficiency

5. Project status at beginning of the Year:

- Product ready

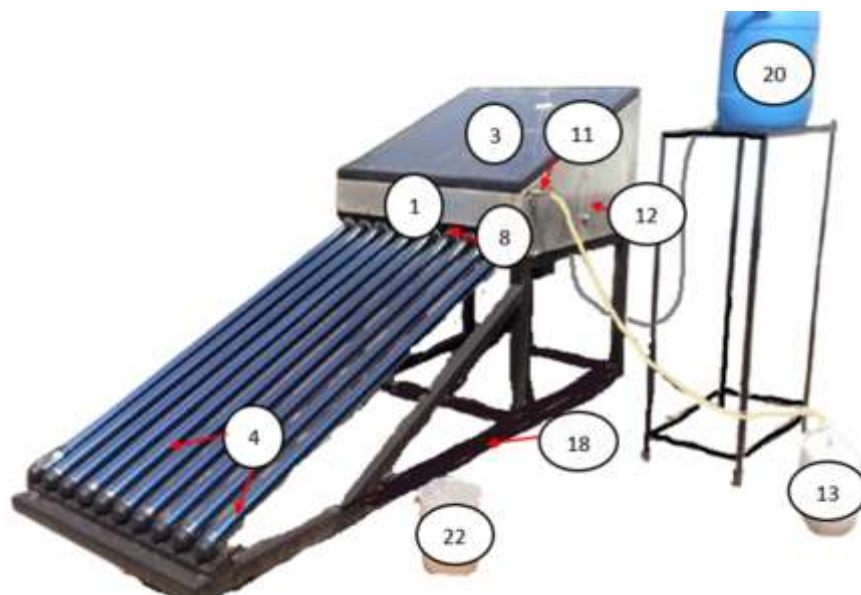
6. Interventions made:

- Got their patent filed and also helped them in designing

7. Current status:

- Active

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-27: Fabrication of Solar Structure on Palm Tree

1. Project Title : Fabrication of Solar Structure on Palm Tree

2. Mentor's Name : Mr. Milan Trivedi

3. Student Team Names:

- i. Dhruvit Rami
- ii. Dhruvit Mehta

4. Project Description:

The solar tree is designed in such a way that all the panels can get the maximum amount of solar energy with the least amount of shadow. To use the maximum amount of solar energy we have used bifacial panels which are more efficient than mono-facial solar panels. Bifacial panels can produce electrical energy when illuminated both at the surface, front and rear. The structure is implemented on the palm tree such that a minimum amount of load acts on it. The structure is mainly an assembly of three major parts: Clamp, Rectangular frame and square sectioned supports. First is Clamp which is base of the structure and holds the structure with a tree. Second is a rectangular frame on which solar panels will be mounted and third is square sectioned supports which directly transfer large amounts of load to the ground and also support the whole structure.

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- Helped in Designing and Execution

7. Current status:

- Active

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-28: Performance Monitoring of Off Grid Solar System

1. Project Title : Performance Monitoring of Off Grid Solar System

2. Mentor's Name : Mr. Milan Trivedi

3. Student Team Names:

- i. Henil Keyurbhai Patel
- ii. Krunal Dantoliya

4. Project Description:

The day to day performance monitoring system helps us to evaluate effective performance of bifacial off grid systems. For measurement and harvesting we use Off-Grid Type PV Inverter, Junction Box, Charge Controller, Lead Acid Battery, Protection, isolation, earthing, and interconnection equipment. This system is 30-40% more efficient than mono-facial solar panel in a off-grid solar system

5. Project status at beginning of the Year:

- Idea Stage

6. Interventions made:

- Helped in designing and connected with fabricators

7. Current status:

- Active

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-29: Folklore Foods

1. **Project Title** : Folklore Foods

2. **Mentor's Name** : Mr. Bhushan Mehta

3. **Student Team Names:**

- i. Aaditya Thakkar
- ii. Mit Chavda

4. **Project Description:**

The team is making a special chutney for vada pav and also working on various other products. Their USP is the taste and the wide usability of their product and their long term vision is to enter into the FMCG sector.

5. **Project status at beginning of the Year:**

- Idea Stage

6. **Interventions made:**

- Helped them to form a company and launch in the market

7. **Current status:**

- Active

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



NewGen IEDC: Manav Rachna International University

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

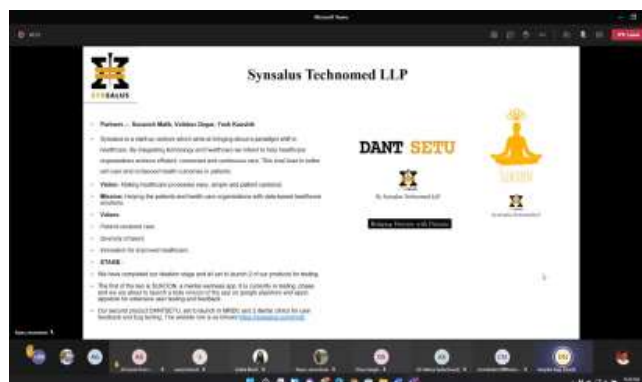
Name of the College/Institution hosting NewGen IEDC	Manav Rachna International University, Faridabad		
Year of starting NewGen IEDC	2017		
Name of the Head/Principal of the Institution/College	Dr. Sanjay Srivastava		
Name of NewGen IEDC Coordinator	Dr. Monika Goel		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> Mobile Number e-Mail ID 	9899876331 monika.fcbs@mriu.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/05 Dated: 20/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Central orientation 2k21

- 150 Students from all different streams participated in this One day session held with Mr Kartik Rampal. The objective was to create awareness and prepare students to start their journey as entrepreneurs



2. Entrepreneurship Awareness Camp

- A three day event, where 80 students from technical background participated and learned about the complete lifecycle of a startup.



3. Startup lifecycle – Ideation to MVP

- One day event where experts from India Accelerator imparted knowledge to more than 100 students from various backgrounds



4. Design Thinking

- One day event where experts from India Accelerator imparted knowledge to more than 100 students from various backgrounds.



5. Challenge Covid 19

- A one week event was planned where seven student teams showcased their ideas in front of the Jury. The motive was to identify the teams/ideas who were actively working in the field of fighting the pandemic. Two projects were offered Newgen IEDC support

6. Journey towards startups: Success and failures

- The students of MRU and MRIIRS were briefed about entrepreneurship and the support provided by NewGen IEDC

[B] To identify, develop & commercialize students' innovative ideas

1. Call for Ideas

- Five student Teams from various departments presented their ideas in front of the jury members.
- Two were selected for funding round.

2. Review Committee

- One day meeting with the startups to understand and review the development stage

3. Call for Ideas

- Six student Teams from various departments presented their ideas in front of the jury members.
- Three were selected for funding round

4. Call for Ideas

- Four student Teams from various departments presented their ideas in front of the jury members.
- Three were selected for funding round.

5. Call for Ideas

- Six student Teams from various departments presented their ideas in front of the jury members.
- Four were selected for funding round

6. Review Committee

- Two day meeting with the startups to understand and review the development stage.

7. Call for Ideas

- Two student Teams from various departments presented their ideas in front of the jury members.
- Two were selected for funding round.

[C] To enhance Industry-Academia interaction

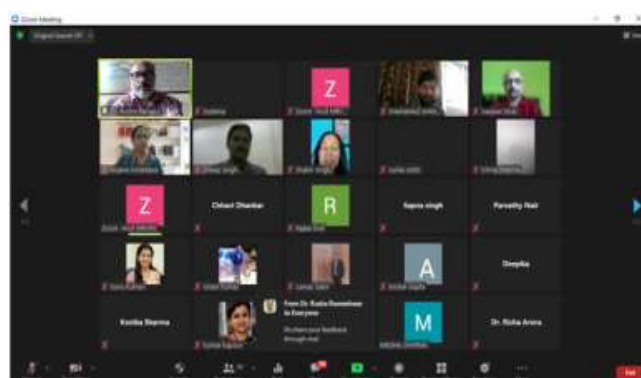
1. Faculty Development program

- A Two week FDP of 42 Sessions for 34 participants from all over India is being organized by Manav Rachna NewGen IEDC and it is sponsored by National Science and Technology Entrepreneurship Development Board, Department of Science and Technology, Govt Of India under DST-NIMAT Scheme and Entrepreneurship Development Institute of India. Resource persons shared the insights of business and how to promote it among the upcoming students.



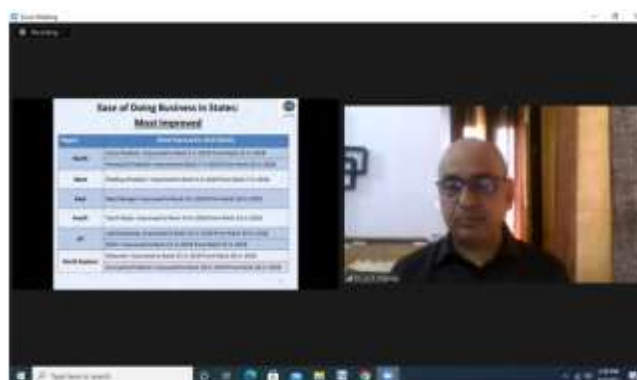
2. Faculty Development program – AICTE

- New-Gen IEDC Manav Rachna & Faculty of Management Studies, MRIIRS organized the Two-Week Faculty Development Program on 'Entrepreneurship Development' from April 5 – 17, 2021.
- AICTE, New Delhi sponsored the program and the FDP was designed to train and motivate the faculty members involved or likely to be involved in the promotion of entrepreneurship-related activities. The program was attended by 46 participants from reputed institutions from pan India, which helped the organizing team build the blocks for the program's success. Due to the pandemic, the program was conducted through online mode with innovative pedagogy



3. Faculty Development program – AICTE

- A two Week FDP, in collaboration with the FMS department of MRIIRS was conducted in the month of May 2021. Participants from various institutes participated and were trained by Industry professionals to inculcate the spirit of Entrepreneurship



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

The major deviation faced was due to Covid, The events planned were shifted to online mode. The structure and duration of the events was changed in some cases looking at the requirement of the situation.

3. Other important highlights (new initiatives), if any:

- MoU with India Accelerator for investor connect, deep dives and industry mentorship.
- Organized two events under DST Nimat scheme for entrepreneurship promotion and development.
- Two events under AICTE with another department to spread awareness for Entrepreneurship.
- Few initiatives under pipeline to connect with the placement team to get interns to the startups working with the NewGen IEDC centre

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Trufit Kitchen LLP (Formely Smart Rasoi)

I. **Project Title** : Trufit Kitchen LLP (Formely Smart Rasoi)

II. **Mentors Name** : Ms. Sunita Joshi

III. Student team details

- Mr. Ashutosh Kumar
- Mr. Pawan

IV. Brief description of the student start-up

- Trufit Kitchen LLP is a startup developed by students of BCA which focuses on development of smart kitchenware like height adjustable slabs, smart dustbin for waste segregator.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

- With its proof of concept ready, the team is now developing the prototypes which could be sourced as MVP and commercialized.



VI. Contribution of NewGen IEDC in the same

- Team got the best technologies as desired that include hardwares like Rpis, 3D printers and much more

VII. Future plan

- The Team is focused on deploying the prototype on a faster level. And also to apply for patent
- The team plans to expand by adding new members to boost up the development process.
- Getting incorporated and trademark filing.

VIII. Important highlights: NA

Best Project-2: ShuttleExpress Pvt. Ltd.

I. Project Title : ShuttleExpress Pvt. Ltd.

II. Mentors Name : Ms. Sunita Joshi

III. Student team details

- Mr. Udit Tiwari

IV. Brief description about the student Project

- The team envisioned developing a smart one stop platform for complete management of corporate events.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

- The Team has developed one stop solution for complete management of corporate events which includes travel, hotel booking and more.



VI. Contribution of NewGen IEDC in the same

- Team was supported with mentorship in the field of business development, financial model, Infrastructural support.

VII. Future plan

- The Team is focused on deploying the services on a faster level across India.
- The team plans to expand by adding new members to boost up the development process

Annexure-A

Details of Student Projects

Project-01: TruFit Kitchen LLP

1. **Project Title** : TruFit Kitchen
2. **Mentor Name** : Ms. Sunita Joshi
3. **Student Team Names:**
 - I. Pawan Dixit
 - II. Ashutosh

4. **Project Description:**

About: The team is developing smart equipment for the daily households like adjustable slab, smart dustbins and more.

5. **Project status at beginning of the Year:**

Idea Level:

- Ideation and Designing

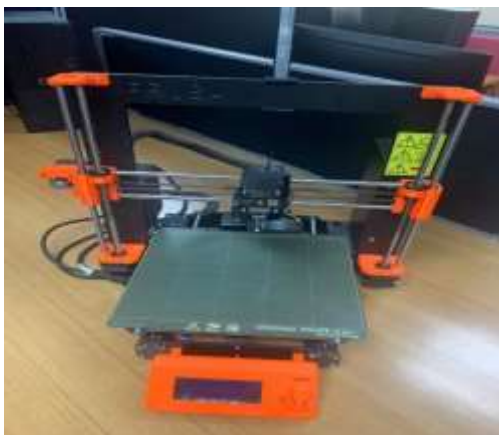
6. **Interventions made:**

- Supported in concept refinement, USP identification, prototype Development and business Model preparation.

7. **Current status:**

- Basic prototype is ready. Working on the final prototype to be market ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-02: Shuttle Express

1. Project Title : Shuttle Express LLP

2. Mentor Name : Ms. Sunita Joshi

3. Student Team Names:

I. Udit Tiwari

II. Shubham

4. Project Description:

About: The team envisioned developing a smart one stop platform for complete management of corporate events.

5. Project status at beginning of the Year:

Idea Level:

- Commercialisation

6. Interventions made:

- Supported in concept refinement, USP identification, prototype Development and business Model preparation.

7. Current status:

- The team is working on signing MOUs and development of platform

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Second life inning

1. **Project Title** : 2nd lifeinning.com

2. **Mentor Name** : Dr Amit Seth

3. **Student Team Names:**

- I. Jyoti Tanwar
- II. Anurag Gupta

4. **Project Description:**

About: Integrating various services through technology to provide all solutions to senior citizens needs under one umbrella.

5. **Project status at beginning of the Year:**

Idea Level:

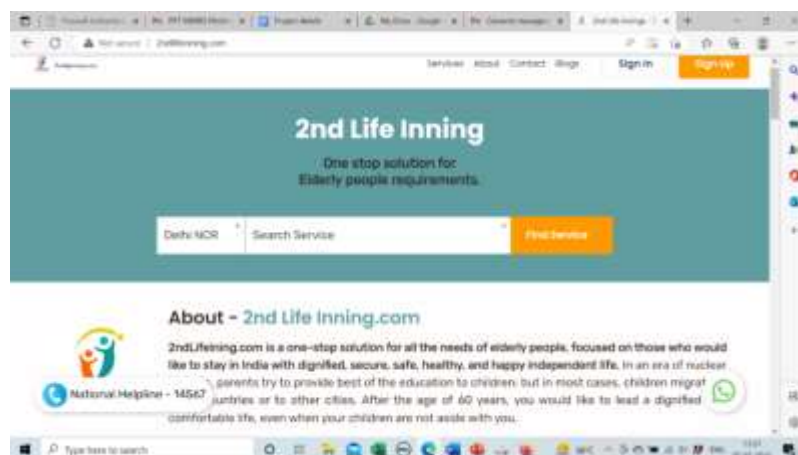
- Development

6. **Interventions made:**

- Supported in concept refinement, USP identification, prototype Development and business Model preparation.

7. **Current status:** Basic design of Web Portal is ready. Working on the final prototype to be market ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-04: Asset reclaimers

1. **Project Title** : Asset Reclaimers

2. **Mentor Name** : Dr Vineet Sikka

3. **Student Team Names:**

I. Vishal Gupta

4. **Project Description:**

About: Asset Reclaimers is a group of share recovery experts having a vast knowledge of recovering unclaimed assets. We offer a specialized solution for recovery of shares, IEPF claim, transmission of shares, transfer of shares, lost share certificates, name change, recovery of mutual funds, etc. Asset Reclaimers is a master at recovering your funds.

5. **Project status at beginning of the Year:**

Idea Level:

- Development

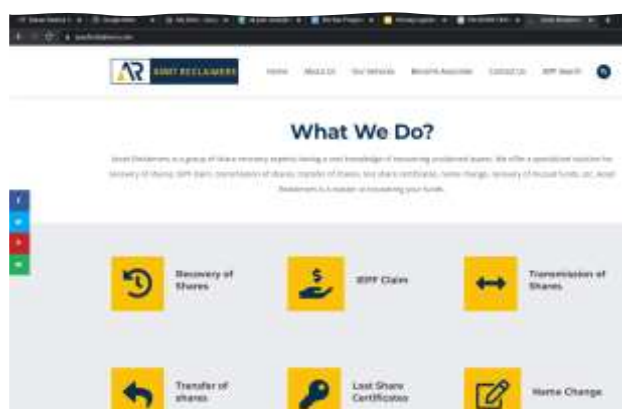
6. **Interventions made:**

- Supported in concept refinement, USP identification, prototype Development and business Model preparation.

7. **Current status:**

- Basic prototype is ready. Working on the final prototype to be market ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-05: RaiserSharp

1. **Project Title** : Raiserssharp

2. **Mentor Name** : Dr Yogita

3. **Student Team Names:**

I. Sarthak Rastogi

4. **Project Description:**

About: Web platform for children suffering from neurodevelopmental disorders.

5. **Project status at beginning of the Year:**

Idea Level:

- Development

6. **Interventions made:**

- Supported in concept refinement, USP identification, prototype Development and business Model preparation.

7. **Current status:**

- Basic prototype is ready. Working on the final prototype to be market ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-06: FIN HORSE

1. **Project Title** : FIN HORSE FINANCIAL ADVISORY PVT. LTD.

2. **Mentor Name** : Dr Vinit Sikka

3. **Student Team Names:**

I. Shubham Adhlakha

4. **Project Description:**

About: One-stop-shop for all aspects of financial management. Throughout the entire process of building and managing portfolio, everything has been taken care of. As your financial doctor monitoring financial health and restore it if necessary.

5. **Project status at beginning of the Year:**

Idea Level:

- Ideation

6. **Interventions made:**

- Supported in concept refinement, USP identification, prototype Development and business Model preparation.

7. **Current status:**

- Working on the final prototype to be market ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-07: Centralized Vulnerability management system

- 1. Project Title** : VIEH PVT LTD
- 2. Mentor Name** : Maj. Gen. R K Anand
- 3. Student Team Names:**
 - I. Manish Kumar
- 4. Project Description:** The team is developing a platform by which we can help organizations to find and fix vulnerability onto their systems.
- 5. Project status at beginning of the Year:**

Idea Level:

 - Ideation, working experience in the sector
- 6. Interventions made:**
 - Supported in concept refinement, USP identification, prototype Development and business Model preparation.
- 7. Current status:** Portal is almost ready and functioning very well, Currently working on adding more functionality
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-08: Scalable Production of Thermally Stable VLP Vaccine against foot and mouth disease virus

1. Project Title : Scalable Production of Thermally Stable VLP Vaccine against foot and mouth Disease virus

2. Mentor Name : Dr. Kanchan Bhardwaj

3. Student Team Names:

I. Rahul Saini

II. Ashish

4. Project Description:

To develop a vaccine against FMDV

5. Project status at beginning of the Year:

Idea Level: Preliminary work done

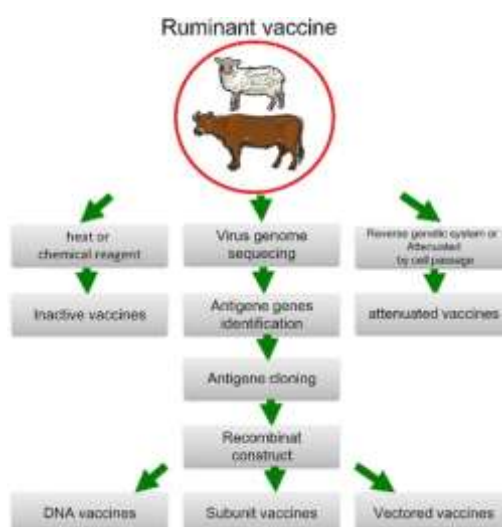
6. Interventions made:

- Supported in concept refinement, USP identification, prototype Development and business Model preparation.

7. Current status:

- The team is working on developing prototype.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Abhedya , Rudra and IPS

1. Project Title : Abhedya, Rudra and IPS

2. Mentor Name :

3. Student Team Names:

- I. Akash Pandey
- II. Aniruddha

4. Project Description:

Abhedya is an indigenous GUI-based Firewall as well as it has its unique features like IP block, Region wise block, and Country-wise block traffic. It also shows the location of the Attacker by IP LOOKUP, Abhedya gives protection against bad bots then, IP whitelisting, Bad word Protection, Scammer IP Protection, Live Traffic of Website, and many more feature

Secure Framework Rudra -: It is a framework that protects the site against some high-risk attacks like SQL Injection, XSS, HTML Injection, XFS

Indigenous IPS -: Currently Indian IT companies are not in this field. HP, CISCO, etc are major players in the field of IDS and IPS. Basically, we are making a Smart IPS system that will change its architecture when attackers try to attack on the server.

5. Project status at beginning of the Year:

Idea Level: Preliminary work done

6. Interventions made:

- Supported in concept refinement, market linkages and business Model preparation.

7. Current status:

- For Rudra Basic prototype is ready. Working on the final prototype to be market ready
- For Abhedya Final Prototype is partially ready, adding functionalities as per market requirements
- For IPS working on Basic Prototype

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Chitrabhoomi

1. Project Title : Chitrabhoomi

2. Mentor Name : Dr. Y. K. Awasthi

3. Student Team Names:

I. Aditya Singh

4. Project Description:

The idea of the project is to fill the current gap between the content consumer and the content provider and provide mature animated content for the age group 13 to 24 years.

At the initial stage, the project is focusing mainly on comic books to provide the content for animation, animated content which is one of services as well as a revenue base model, and live-action like music videos, reels, etc.

5. Project status at beginning of the Year:

Idea Level: Idea Stage

6. Interventions made:

- Supported in concept refinement, market linkages and business Model preparation.

7. Current status:

The team is trying to broaden service area and making content like personalizing animated rhymes for kids, list our copyrighted characters on the blockchain(as NFT), enter into the advertisement industry to provide animated ads (Used by companies like Cred, etc),.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: B. N. M. Institute of Technology

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	B. N. M. Institute of Technology		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. Krishnamurthy G N		
Name of NewGen IEDC Coordinator	Dr. L. Vijayashree		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	Mobile No: 9980356098 E-mail: vijayashreel@bnmit.in		
Financial Details	Sanction Order No./ Date		Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NEWGEN IEDC/17-18/06 Dated:15/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year (also provide two/three photograph on each activity):

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. AI Breakthroughs, Technology and Breakthroughs: A technical talk on AI Breakthroughs, Technology and Breakthroughs on 18.11.2021 by Dr. Ragoth Sundararajan, Head – Data Science, Niche Soft Inc., Bangalore organized by Department of AI & ML

- A technical talk on AI Breakthroughs, Technology and Breakthroughs on 18.11.2021 by Dr. Ragoth Sundararajan, Head – Data Science, Niche Soft Inc., Bangalore organized by Department of AI & ML. The sessions were dealt with experts covering the basics, research gaps and key focus areas in AI.



2. My Story – A motivational Session by Successful Entrepreneur: A motivational talk by Ms. Neetu Purba, Software Engineer, MiQ Digital India, Bangalore on 11.12.2021 organised by Department of Information Science

- A motivational talk by Ms. Neetu Purba, Software Engineer, MiQ Digital India, Bangalore on 11.12.2021 organised by Department of Information Science. This workshop was an opportunity for the pre-final year students to enrich their knowledge and skills in various engineering solutions.



3. Entrepreneurship and Innovation as Career Opportunity: A workshop on Entrepreneurship and Innovation as Career Opportunity on 14.12.2022 conducted by Hycube Works Pvt Ltd., organised by Department of Electronics and Communication Engineering

- A workshop on Entrepreneurship and Innovation as Career Opportunity was conducted on 14.12.2022 by Hycube Works Pvt Ltd., and organised by Department of Electronics and Communication Engineering. Students of ECE Department and ED cell were given lecture about the importance of People, process, programme, policies and passion in their Entrepreneurship career.



4. Energy conservation and awareness practices on 14.12.2021

- On account of Energy conservation day, college along with ED Cell conducted a college level programme. The speakers of this programme were from different walks of life who have thrived to protect the energy. The students were able to understand the importance of energy conservation and also came to know about the process which they need to adopt in conserving the same.



5. Importance of Design Thinking and problem solving for mechanical engineers – Department of Mechanical Engineering – 14.12.2021

- A technical talk on Importance of Design Thinking and problem solving for mechanical engineers was conducted to Department of Mechanical Engineering students on 14.12.2021 to impose the importance of design thinking among the students of engineering.



6. Be Unique and Be Remembered – A motivational talk by Successful Innovator. A motivational talk by Mr. Hosakere L Narendra Bhatta on 15.12.2021 conducted by MBA department

- Be Unique and Be Remembered – A motivational talk by Successful Innovator regarding the importance of protecting the student's ideas. He mainly concentrated on the IPR issues and spoke about the idea to patent process. He also advised the students to always think of unique ideas and how the protection helps them to excel in life.



7. Problem Solving and Ideation: An online talk by Mr. Guru Prasad, Credit Assessment Specialist, ANZ Bank on 16.12.2021 conducted by MBA Department

- An online talk by Mr. Guru Prasad, Credit Assessment Specialist, ANZ Bank on 16.12.2021 conducted by MBA Department. Students were immensely benefitted by the talk as the talk was mainly concentrated on problem solving and ideation which they need to implement right from the first day of their career



8. Topic : Achieving Problem – Solution Fit and Product – Market Fit:

- A session on Achieving Problem – Solution Fit and Product – Market Fit attended by Mr. Shreyas S P and Mr. Reethan D L, Co-Founders Hycube Works Pvt Ltd, Mr. Sridhar Venkannachar – Techno Entrepreneur and Dr. L. Vijayashree – Professor and Head – NewGen IEDC on 24.12.2021 organized by Department of AI & ML. Students were benefitted immensely to know more about the importance of solution fit and market fit products importance



9. A talk on How to be Industry Ready was organized by Department of Mechanical Engineering on 5th March 2022. It was attended by Mr. Karthik Y- Senior Design Engineer – Mechanical, Schneider Electric India Pvt Ltd.



10. Electric Vehicle Battery Management System: Hardware and Software Design

- A Student Development Program (SDP) was organised by the Department of Electrical and Electronics Engineering from 18th to 22nd April 2022, in association with M/s Decibels Lab Pvt. Ltd. This was open to all 6th Semester students. As students were interested to know more about EV technology this SDP was very useful in understanding the nuances of EV technology



11. IoT with Raspberry Pi & Python:

- A Student Development Program (SDP) was organised by the Department of Electronics & Communication Engineering from 11th to 13th April 2022 and 18th and 19th April 2022 in association with Cranes Varsity Pvt. Ltd, Bengaluru. The students were eagerly participated in this workshop and learned a lot of techniques in IoT and Python.



[B] To identify, develop & commercialize students' innovative ideas

1. **Prodathon 2021:** A event called prodathon was held on 14.12.2021 organized by the college to enhance the project experience of 1st year students in BNMIT

- College organized a mega product related event Anveshan 2021. Various event including Prodathon 2021 was organized to promote product based event. This event prodathon was held on 14.12.2021 organized by the college to enhance the project experience of 1st year students in BNMIT. Students were thrilled to experience the hands on training and project experience in the initial days of the college itself.



2. **TechnoHabba – 21:**

- TechnoHabba – 21, NewGen IEDC in collaboration with CSI Chapter and ISE Department conducted Technohabba 21 for the students of ISE on 17th and 18th December 2021. Students were very happy to be a part of Habba and felt that they can implement the learning's in their engineering stream. This 2 days Techno Habba made many coders to cross check their capability.



[C] To enhance Industry-Academia interaction

1. Dept of ECE organised a Webinar on How Automation can boost your career by Mrs. Kalpana Narayanaswamy, R&D Senior manager, Keysight Technologies on September 29, 2021.

- Dept of ECE organised a Webinar on How Automation can boost your career by Mrs. Kalpana Narayanaswamy, R&D Senior manager, Keysight Technologies on September 29, 2021. This webinar by the speaker helped the students to understand various paths ahead of them in the career. Mrs. Kalpana spoke very interestingly about her career path and laid a concrete path to students as well.



2. BNMIT celebrated Innovation Week virtually between 10th to 16th January 2022.: A Faculty Development Program was organized by Department of Mechanical Engineering from 20.07.2020 to 24.07.2020 with 82 faculty members attending the same.

- A Faculty Development Program was organized by Department of Mechanical Engineering from 20.07.2020 to 24.07.2020 with 82 faculty members attending the same. One week entrepreneurship programme conducted by ME department was an eye opener for many Faculty members. The speakers who were called for the programme instilled the spirit of entrepreneurship among them and assured the faculty members that they will hand hold them in case they are starting the business on their own.



3. To celebrate **National Technology Day** BNMIT organized a Technical Talk on **Electric Vehicle Technology** Date : 11th May 2022

- To celebrate **National Technology Day** BNMIT organized a technical Talk on **Electric Vehicle Technology** on 11th May 2022. Both the speakers were notable persons in EV sector and the talk they gave on this sector was very useful for both faculty members and students.



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Nil

3. Other important highlights (new initiatives), if any:

1. Dr. L. Vijayashree, Head – NewGen IEDC was invited for Guest Lecture on “Commercially Viable Innovative Products:

- Exploring Process from Lab to Market” on 08.04.2022 Department of Mechanical and Automobile Engineering at Christ University Bangalore. Students of MAE at Christ University gave a feedback by saying that the talk was very useful for them by throwing the light on TIFAC 2035



2. Dr. Sejal S N, IPR Ambassador – IIC conducted an IPR workshop on 4th May 2022 for the students of NewGen IEDC of 4th year funding. Other college faculty members and students too participated in this workshop.



- This is a IIC activity and as a mentorship programme we, (Dr. L. Vijayashree president IIC and Dr. Sejal , Ambassador-IPR) conducted this programme for colleges under mentorship.

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Fire Drill procedure in VR

I. Mentors Name: Dr. Sejal S. N

II. Student team details

- i. Suraj S. H.
- ii. Samarth R. Gowda
- iii. Somaiah K. M.
- iv. Yashas R. Rao.

III. Brief description of the student start-up

This is a VR application that explains and trains the user on all the safety procedures to be followed in an event of fire in the building. The user will be educated with the steps by placing him/her in an immersive VR environment of the building and the user will be able to navigate around the building as they can in the real world.

Stage1: In this phase of development the user will be shown around the building and the fire escape routes in the building. They will be explained on all the safety procedures in a step by step manner by taking them along the escape routes. This will include narration, sound fx, fx, VR building and associated graphics.

Stage2: In this phase of development the user will be able to apply all the learning to escape from a scenario simulated in the building. The user will be placed randomly at some place in the building and he has to find the shortest escape route in the shortest time. Every time the user plays, he will be randomly positioned at a different place.

IV. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



V. Contribution of NewGen IEDC in the same

- Initial funding and designing was mentored by NewGen IEDC

VI. Future plan

Students in association with the company Ray Vector have designed and developed this Fire Drill Project keeping in the view of Fire Mock Training given as a mandatory Training given in Colleges / Institutions. The virtual Reality shown in this project can be applicable not only for colleges because of its customized nature it can be extended to any places like house, apartments, malls, theatres, companies, etc. The students and the mentors are planning to extend this project as product alongwith the company Ray Vector.

VII. Important highlights: NA

Best Project-2: Design and Development of ARIA-I an IoT based processing line for Acrylic Bending

I. Mentor Name: Dr. B. S. Anil Kumar

II. Student team details

- i. Pranav S. V.
- ii. Abhay Sharma
- iii. Nihal M. Sheik
- iv. Sneha Sarika Gowda

III. Brief description about the student Project

We see acrylic parts everywhere we go. For example, signages of various brands, mobile display stands, product showcases, mini-LED product advertisement stands, snacks display, bakery display stands and so on. Traditionally, these products are laser cut after which it is sent to workers where they heat it and bend it manually or using semi-automatic heating coils that assist in bending. Currently in the market there is a high demand for precise laser cut components and precise bending of laser cut components and so far, it is being done manually or using semi-automatic bending machines. Providing a fully automatic acrylic bending machine which will not only give precise output but also that will have unique UI and UX features for machine operation will be a huge add on to the acrylic processing industry. Hence, to bridge the gap between customer requirement and easing of work for the industries, a fully automatic IoT based processing line for Acrylic Bending will surely play a vital role.

IV. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.



V. Contribution of NewGen IEDC in the same

- Initial funding and designing was mentored by NewGen IEDC

VI. Future plan

Students who are a part of this project got immense training in the nuances of acrylic bending which is highly needed in industries. Keeping the cost effective quality process machines this team is planning to start their company in acrylic bending and cutting. The college is providing enough support to start this company inside the campus under the preincubation policy.

Best Project-3: Design and Development of a Compact Waste Shredder Machine

I. Mentor Name: Dr.Hemanth Kumar

II. Student team details

- i. Akash R S
- ii. Sanjay B Y
- iii. Santosh M
- iv. Srinivasan H

III. Brief description about the student start-up

The unwanted solid waste materials obtained from human activities in residential, industrial or in commercial areas adversely affect environmental ecosystem due to inappropriate disposal of solid waste which pollutes soil, air and water. In this regard, for effective solid waste processing, waste shredders can be utilised in recycling applications. These machines can considerably reduce the volume of wastes that differ in dimensions, weight and composition to uniform shape and sizes for efficient processing, storing and ease transportation issues. The objective of this project is to design and develop a compact waste shredder machine with high reliability and efficiency for shredding the solid waste viz. plastics, thin metal strips, twigs and wood ranging from macro to micro size and thereby to reduce the transportation and further processing (recycling) issues.

IV. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.



V. Contribution of NewGen IEDC in the same

- Initial funding and designing was mentored in NewGen IEDC

VI. Future plan

- Students are already a part of startup and want to establish this machine as one of their company product and want to sell to small manufacturers and colleges

Annexure-A

Details of Student Projects

Project-01: TAGALONG: An Assistive Device for Alzheimer Patients

1. Project Title : "TAGALONG: An Assistive Device for Alzheimer Patients"

2. Mentor Name : Smt. Ashwini S Savanth

3. Student Team Names:

- I. Harshit Mimani
- II. K. Sowmya
- III. Merlin Andriana Lobo

4. Project Description:

This proposed system aims to achieve higher accuracy towards sending emergency alerts and current health condition of patients such as heartbeat, blood pressure and sugar level, to the caretakers or family members and doctors likewise. By using the facilities that the Internet of Things can provide, it can help achieve decrease in the extra expenses and provide timely response to these patients.

5. Project status at beginning of the Year:

- Proof of concept

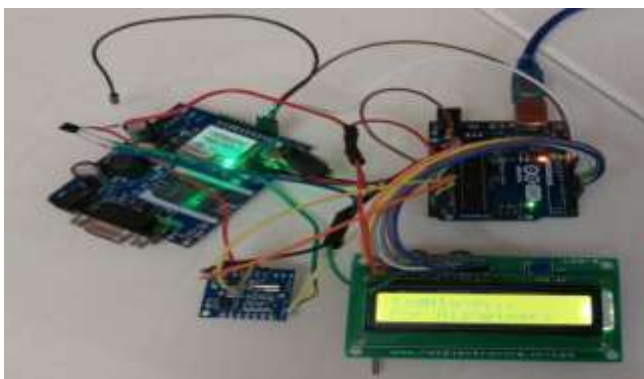
6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Solar Smart Bench

1. Project Title : “Solar Smart Bench”

2. Mentor Name: Smt. Champa P N

3. Student Team Names:

- I. Aishwarya M.
- II. Gomathi S. N.
- III. Hrishikesh Bhat
- IV. Madhukeshwar Maalige

4. Project Description:

It is a smart-designed bench that enables all people to charge their devices. Anyone can relax on this bench, enjoy 4G Internet and simultaneously charge their phone or tablet. It functions solely on clean solar energy; this energy gets stored and is available to you 24/7. Working, studying, or just relaxing, it can all be done on this modern bench that features both wireless chargers and USB ports.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Design and Development of a Bio Catalytic Devise for Air Pollutant Adsorption

1. Project Title: “Design and Development of a Bio Catalytic Devise for Air Pollutant Adsorption”

2. Mentor Name: Smt. Shwethashree, Dr. Prathibha

3. Student Team Names:

- I. Adesh Mohan
- II. Devika G. Urs
- III. Dhavalith Chandra
- IV. Ruthvik R Shirolkar

4. Project Description:

The objective of this project is to design a catalytic chamber to house the bio-catalytic material which is obtained from bamboo residue converted into activated charcoal and doped with MgO Nanoparticles. The designed model is then fabricated to test the prototype’s adsorption efficiency for different gases which are emitted from the exhaust system of automobiles.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Automated driver-assistance systems (ADAS) for Truck

1. Project Title: “Automated driver-assistance systems (ADAS) for Truck”

2. Mentor Name: Mr. A. Kumar

3. Student Team Names:

- I. Asheesh Malviya
- II. Sahil Sinha
- III. Shreya Singh
- IV. Sheetal R. Swamy

4. Project Description:

This project will guide a truck driver to identify any vehicle in the blind spot, raise an alarm when the driver feel a sleep and provide automatic breaking in an emergency condition

5. Project status at beginning of the Year:

- Proof of concept

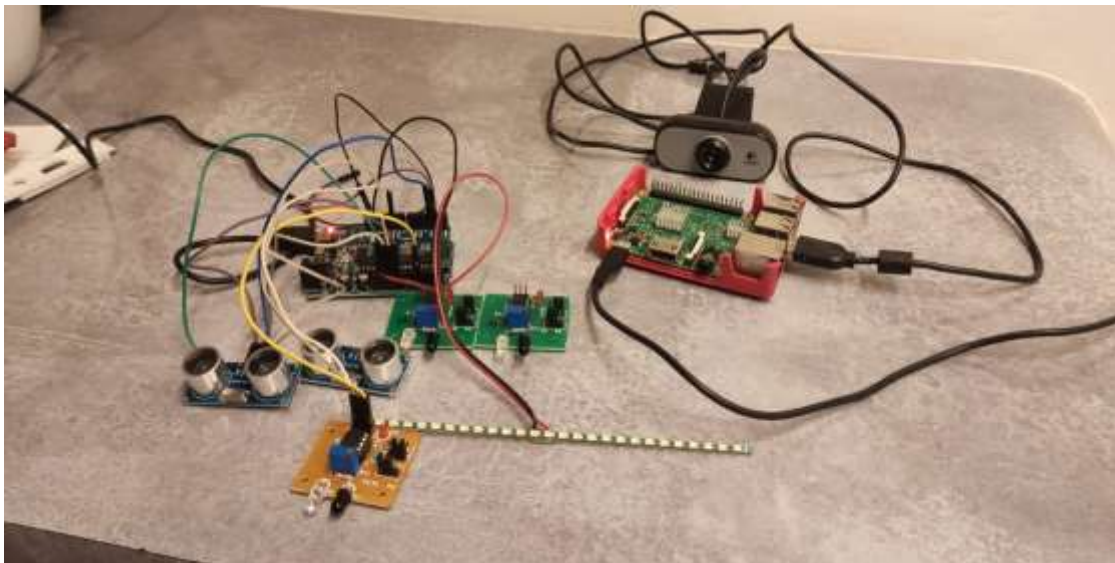
6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Smart Electrical Bi-Cycle

1. Project Title: “Smart Electrical Bi-Cycle”

2. Mentor Name: Dr. Venkatesha K

3. Student Team Names:

- I. Jadesha K
- II. Karthik S
- III. M U Somashekar
- IV. Puneeth K

4. Project Description:

The main objective of the project is to develop a smart electric bi-cycle for range coverage of twenty kilometers. The Smart E-Bike Monitoring System (SEMS) can monitor location, rider control data and other custom sensor input in real time. SEMS is designed to run from the e-bike battery, and requires no intervention from the rider.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Solar-Powered Vaccine Refrigerator

1. Project Title: “Solar-Powered Vaccine Refrigerator”

2. Mentor Name: Smt. Ashwini A

3. Student Team Names:

- I. Anushree N. S.
- II. Kaushik Srinivas
- III. Ramya K. G.
- IV. Varshini Nataraj

4. Project Description:

With the increasing awareness of environmental degradation, thermoelectric cooling has emerged as a very suitable alternative. This is because it can convert waste electricity into useful cooling. The electrification of the vaccine refrigerator is achieved by a photovoltaic system which consists of a PV device connected to the power electronic converter.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 07: Smart Water Purification Using Bio Adsorbant

1. Project Title: “Smart Water Purification Using Bio Adsorbant”

2. Mentor Name: Dr. Bindu S & Dr. Prathiba

3. Student Team Names:

- I. Mohammed Ishaq Sharieff
- II. Jayalakshmi D. G.
- III. Reetha G. P.
- IV. Shaik Riyaz
- V. UR Roshan

4. Project Description:

Lack of sufficient clean drinking water is a growing challenge in many countries. Most surface and groundwater bodies are contaminated and are not directly safe for consumption without being treated. The main objective of this work is to remove contaminants in the water, or reduce the concentration of such contaminants so the water is fit for use.

The objective of this work is to

- To reduce the impurities to a certain level that does not cause harm to health.
- To reduce the objectionable colour, odour, turbidity and hardness.
- To make water safe for drinking.
- **To eliminate the corrosive nature of water affecting the pipe.**
- To make it suitable for a wide variety of industrial purposes.
- **Planning to patent the this idea.**

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 08: Development of Hybrid Motor Bike

1. Project Title: “Development of Hybrid Motor Bike”

2. Mentor Name: Dr. Kumaraswamy

3. Student Team Names:

- I. D. S. Pranav
- II. Gouthami Manthena
- III. Udit Veerendra Bagdai
- IV. Vaidehi Maiya G R

4. Project Description:

“To develop a cost-effective and efficient Hybrid Bike” is a project that intends to innovate a hybrid motorbike that runs on conventional IC engine powered by petrol or on a electric transmission based on the user requirement. We do realise the presence of electric vehicles, but currently there are many problems with respect to the EV’s like insufficient range and excess charging time. So we intend to bridge this gap between the upcoming Electric vehicles and our current fuel powered vehicles. The main innovation is to provide the user a seamless experience in transiting from one driving mode to another; this will be done by implementing an Auto switch Rideology to assist the driver. In addition to this we intend to use solar panels to increase the efficiency and range of the electric system. Further, to accommodate for remote monitoring and control we will incorporate an IoT system

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 09: High Precision CNC Machine

1. **Project Title:** “High Precision CNC Machine”
2. **Mentor Name:** Dr. Chaitra N & Dr. Anil Kumar B. S.
3. **Student Team Names:**
 - I. Surya K
 - II. Pranav S V

4. **Project Description:**

Machining is an important manufacturing process that is used in a wide range of applications. Numerical control is a programmable automation in which process is controlled by Numbers, Letters, and symbols. **CNC Machining is a process used in the manufacturing sector that involves the use of computers to control machine tools like lathes, mills and grinders.** For each component, we created a detailed engineering working drawing that helped to shape and construct all the operations and procedures that must be undertaken and controlled to attain component machining without any breakdown or failure. Through hands-on machining, we discovered many different factors involved in milling, drilling, and the effects they exhibited on the tolerance and surface finish of a part. The main relevant factors that we examined were tool selection, speeds, feeds, and material selection. The extent to which these factors can influence machining is presented. **The project establishes new ways to systematically perform machining in a safe and stable manner without impacting the quality of the surface finish having high precision and accuracy.**

5. **Project status at beginning of the Year:**

- Proof of concept

6. **Interventions made:**

- Prototype Development, Business Analysis & Product Design

7. **Current status:**

- To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 10: Smart Dustbin with Automatic Segregation and Collection

1. Project Title: “Smart Dustbin with Automatic Segregation and Collection”

2. Mentor Name: Ms. Manjushree K.

3. Student Team Names:

- I. Aashritha L.
- II. Aditi B. Prahalad
- III. Akshay M. S.
- IV. Anusha B. K.

4. Project Description:

The project is to build a system which automatically separates wet, dry and metallic waste based on moisture sensor as well as metallic sensor and collected in different bins. Automatic Segregation will simplify the process for pedestrians to identify the type of bin they need to throw the garbage in. The Waste Management system in smart cities with garbage bins will also have an ultrasonic sensor to sense the level of garbage along with GPS Module to get the real time location of bin, together be sent to cloud through internet and will be analyzed to give utility based android application for the truck driver. The continuously sensed data from garbage bins are stored in cloud server and can further be used by both Waste Management Authority as well as the Truck Drivers. This helps in collecting the garbage in regular intervals by garbage collectors which is monitored by software.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 11: IoT based Smart Farming

1. Project Title: “IoT based Smart Farming”

2. Mentor Name: Dr. Krishnamurthy G. N. & Prof. Raghavendra

3. Student Team Names:

- I. Keerthana M.
- II. Lalana Nagraj
- III. Lavanya U.

4. Project Description:

To design and develop a product which will help farmers automatize the farming processes. our product results in high quality yield by close monitoring of the crops and providing assistance if needed. IoT based smart farming technique to reduce human dependency and increase the yield of the produce. It works as below:

- 1) Remote agriculture: making use of the sensors to collect information like soil moisture, temperature and soil status.
- 2) Notification Systems: alerts are sent to the phone if any abnormalities are faced. Other modules like: crop monitoring, pest detection, fertilizer management

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 12: Lungxometer

1. Project Title: “Lungxometer”

2. Mentor Name: Dr. Krishnamurthy G. N. & Dr. Chayadevi

3. Student Team Names:

- I. Sathwik C. Gowda
- II. Tejas S. Koundinya

4. Project Description:

Lungxometer is a device to identify the abnormalities and intensity of the abnormality through the analysis of sound generated in the lungs and heart. A less complex and accurate model has been designed to be well suited for a tiny smartwatch, smartphone, or any smart health care device. The stethoscope is one of the modes in which sounds generated in the lungs and heart is captured. The same technology in stethoscopes is today embedded in a smart device. The processed sound wave is analyzed to extract the features such as Max Frequency recorded, the time taken for a cycle, and many more. Along with-it general info about the patient is also collected such as age, sex, and patient. The extracted feature set is fed as an input to our algorithm where later Lungzometer makes the diagnosis and the result is passed to patients, doctors, and local authorities. All done without any supervision of any doctor in place.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 13: Design and Development of ARIA-I an IoT based processing line for Acrylic Bending

1. Project Title: “Design and Development of ARIA-I an IoT based processing line for Acrylic Bending”

2. Mentor Name: Dr. B. S. Anil Kumar

3. Student Team Names:

- I. Pranav S. V.
- II. Abhay Sharma
- III. Nihal M. Sheik
- IV. Sneha Sarika Gowda

4. Project Description:

We see acrylic parts everywhere we go. For example, signages of various brands, mobile display stands, product showcases, mini-LED product advertisement stands, snacks display, bakery display stands and so on. Traditionally, these products are laser cut after which it is sent to workers where they heat it and bend it manually or using semi-automatic heating coils that assist in bending. Currently in the market there is a high demand for precise laser cut components and precise bending of laser cut components and so far, it is being done manually or using semi-automatic bending machines. Providing a fully automatic acrylic bending machine which will not only give precise output but also that will have unique UI and UX features for machine operation will be a huge add on to the acrylic processing industry. Hence, to bridge the gap between customer requirement and easing of work for the industries, a fully automatic IoT based processing line for Acrylic Bending will surely play a vital role.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 14: Thermosiphon Water Purification System

1. Project Title: “Thermosiphon Water Purification System”

2. Mentor Name: Prof. Vishnu P.

3. Student Team Names:

- I. Bharana B. R.
- II. Guru Gagan R.
- III. K. R. Priyajith Gowda
- IV. Sagar A. Kulkarni

4. Project Description:

A Thermosiphon system basically works on the principle of Natural Convection, i.e, differences in the densities of Water. The Hot Water being lighter will rise up and cold water being heavier goes down. This system is designed to provide pure water which is fit for drinking at an affordable price. This system can be mainly used in places where there is lack of rain and scarcity of water. Thermosiphon water purification includes two aspects; first aspect is sediment removal using carbon filter then, pathogen elimination in the manifold due to heat generated by natural convection due to parabolic trough. Initial filtration is carried by carbon a filter. Carbons filtration is a method of filtering that uses a bed of activated carbon to remove contaminants and impurities using chemical adsorption. Carbon filters are very effective at removing chlorine, benzene, radon, solvents trihalomethane compounds, volatile organic chemicals such as pesticides and herbicides and hundreds of other man-made chemicals that may come into contact with tap water as it proceeds through the system.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 15: Development of a Low Cost Dual Nozzle FDM Printer

1. Project Title: “Development of a Low Cost Dual Nozzle FDM Printer”

2. Mentor Name: Mr. Madhu & Dr. AnilKumar B. S.

3. Student Team Names:

- I. Gourav R. Kumar
- II. Harsha R.
- III. Mehul Lunked
- IV. Sumukh Shenoy

4. Project Description:

3D printing (3DP), also known as additive manufacturing (AM), refers to the process of making or creating a three-dimensional object wherein multiple layers are laid upon one another to create an object under the control of a computer system. One of the basic types of these printers are the Fused Deposition Modelling (FDM) printers which are most widely available due to its low cost and easy use also. We are planning to develop this same type of a printer but with dual nozzle capacity which will improve the printing speed to the machine and also it'll be able to print multiple colors simultaneously. The market price of such a printer is comparatively high, therefore our aim is to achieve this.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 16: Design and Development of a Compact Waste Shredder Machine

1. Project Title: “Design and Development of a Compact Waste Shredder Machine”

2. Mentor Name: Dr. Hemanth Kumar

3. Student Team Names:

- I. Akash R. S.
- II. Sanjay B. Y.
- III. Santosh M.
- IV. Srinivasan H.

4. Project Description:

The unwanted solid waste materials obtained from human activities in residential, industrial or in commercial areas adversely affect environmental ecosystem due to inappropriate disposal of solid waste which pollutes soil, air and water. In this regard, for effective solid waste processing, waste shredders can be utilised in recycling applications. These machines can considerably reduce the volume of wastes that differ in dimensions, weight and composition to uniform shape and sizes for efficient processing, storing and ease transportation issues. The objective of this project is to design and develop a compact waste shredder machine with high reliability and efficiency for shredding the solid waste viz. plastics, thin metal strips, twigs and wood ranging from macro to micro size and thereby to reduce the transportation and further processing (recycling) issues.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 17: Efficient Drip Irrigation System using IOT sync to Web Server

1. Project Title: “Efficient Drip Irrigation System using IOT sync to Web Server”

2. Mentor Name: Mr. Sankalp Bailur

3. Student Team Names:

- I. Srikar M.
- II. Samanth N.
- III. Sampreeth S.

4. Project Description:

This work focuses on efficiently managing an agricultural field without human intervention by making use of an IoT based system. This setup includes a servo motor which is used to regulate the water flow, based on the input from the option selected by the user on the webpage pertaining to the type of soil and the corresponding crop. The input is generated from the webserver hosted on the microprocessor which is further then processed to the microcontroller based on the temperature of the surroundings

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 18: Wireless Robotic Arm

1. **Project Title:** “Wireless Robotic Arm”

2. **Mentor Name:** Dr. Rekha P.

3. **Student Team Names:**

- I. Srikar M.
- II. Samanth N.
- III. Sampreeth S.

4. **Project Description:**

Challenges faced by the people with the disabilities or problems of not having a limb are either birth anomaly or a very unfortunate accident which the person faced. The amputation caused is irreversible. An individual might lose his mental and physical motivation because of the inability to do anything on his own. Hence there is a need to address challenges faced by such people and contribute to elevating day-to-day pursuit of such individuals. This project aims to develop a wireless prosthetic-arm. Sensors, Microcontroller, wireless module are some of the important components used. A glove with flex sensors and other electronics is used on one hand. The Wi Fi module transmits information from the healthy hand to prosthetic hand and guides it further.

5. **Project status at beginning of the Year:**

- Proof of concept

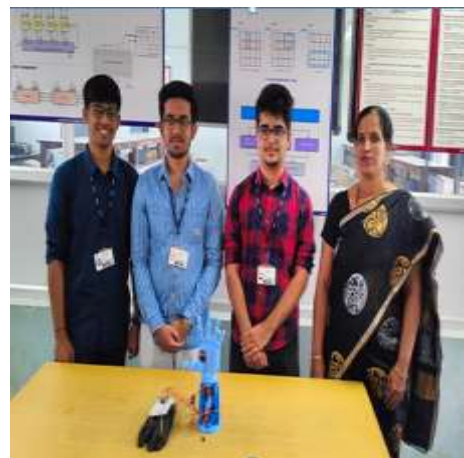
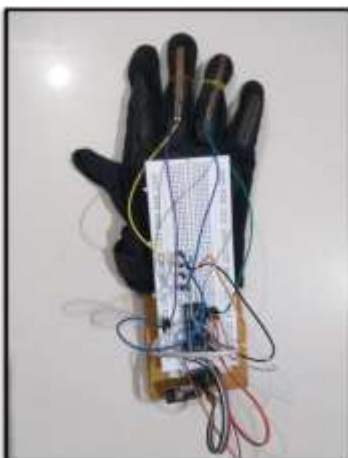
6. **Interventions made:**

- Prototype Development, Business Analysis & Product Design

7. **Current status:**

- Prototype Developed

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



PROJECT 19: Know Your Plants

1. **Project Title:** “Know Your Plants”

2. **Mentor Name:** Ms. Sumathi A.

3. **Student Team Names:**

- I. Tejas S. Koundinya
- II. Surya Kaushik P. K.
- III. R. Chinmayee

4. **Project Description:**

Know your plant is a mobile crop advisory app for farmers, extension workers and gardeners using which you can monitor your crop and plant growth. Know your plant uses farm level data to predict ideal growth conditions and resource requirements and notify farmers to take informed decisions, below the soil parameters, crop stage, crop growth. Know your plant provides real-time insight into daily progress of your crops and activities, manages sales, expenses and cash flow to ensure the health of your finances.

5. **Project status at beginning of the Year:**

- Proof of concept

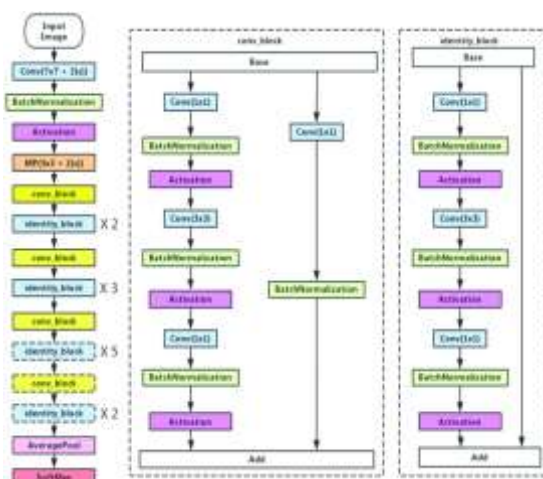
6. **Interventions made:**

- Prototype Development, Business Analysis & Product Design

7. **Current status:**

- Prototype Developed

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



PROJECT 20: Smart Distribution System

1. Project Title: “Smart Distribution System”

2. Mentor Name: Dr. P. A. Vijaya

3. Student Team Names:

- I. Nikhil Kumar Singh
- II. Prateeksha K. A.
- III. Shreya Shenoy K.
- IV. Vaishnavi Bhatt

4. Project Description:

Automated Ration Distribution System’ is an Arduino-based project that aims to digitize and automate the ration distribution system. The project focuses on the biased distribution of ration by eradicating the classical way of ration distribution which is prone to malpractices. It aims at reducing malpractices, minimizing human errors, and ensuring proper systematic distribution of the commodities without any human aid.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 21: Brain Computer Interface Robotic Arm

1. Project Title: “Brain Computer Interface Robotic Arm”

2. Mentor Name: Mrs. Keerti Kulkarni

3. Student Team Names:

- I. Namrata Kolkar
- II. Suman G. S.
- III. Sushmitha M.

4. Project Description:

This project is based on Brain-Computer Interface with an objective of actuating a robotic arm with the help of device commands derived from EEG signals. This system unlike any other existing technology is purely non-invasive in nature, cost effective and is one of its kinds that can serve various requirements such as prosthesis. This suggests a low-cost system implementation that can even serve as a reliable substitute for the existing technologies of prosthesis like BIONICS.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 22: Design and Development of ARIA-II: An IOT based processing line for Acrylic Cutting

1. **Project Title:** “Design and Development of ARIA-II: An IOT based processing line for Acrylic Cutting”
2. **Mentor Name:** Mr. Vyasraj
3. **Student Team Names:**
 - I. Surya K
 - II. Balaji S
 - III. Shreyas R
4. **Project Description:**

Automated and Robotics with Industrial Application (implementation on Acrylic) project is to create fully automatic Smart Processing Lane for small scale industries, but this project currently deals with processing of acrylic. And it also deals with the machine being able to learn its work by implementing neural network within the machine so that the machine can complete its next job faster, and also this machine can be running without any human intervention as the name fully automatic. Here primarily the sheets are stacked into the sheet accepting drawer of the machine, and the sheet is pulled into the section where the sheet is laser cut and the registry is done based upon the current job given to the machine, here using the camera the expected image given by the software is compared by the actual image, i.e. cutting operation performed on the acrylic sheet and here the machine learns where the errors have been made and hence when next time the job is given to the machine the cutting operation would be made with more accuracy.
5. **Project status at beginning of the Year:**
 - Proof of concept
6. **Interventions made:**
 - Prototype Development, Business Analysis & Product Design
7. **Current status:**
 - Prototype Development To Product In Process
8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



PROJECT 23: Electric Wheel Chair

1. **Project Title:** “Electric Wheel Chair”

2. **Mentor Name:** Dr. Venkatesha K, Dr. R. V. Parimala & Dr. S. Sudalai Shanmugam

3. **Student Team Names:**

- I. Guranna Gouda
- II. Mahesh S.
- III. Nikhil Bhargava S.
- IV. Pavan Bhat
- V. S. Vivek Subramanya

4. **Project Description:**

The main objective of the project is to develop an Electrical powered wheel chairs which runs with electric power. However manual operation is required to operate the joystick for the movement of the chair by an attender. The Wheel chair can be stretched flat using controller for the patient to lie down comfortably for scanning or further diagnosis by doctor. The patient can give alarm signal to attender in case of an emergency.

5. **Project status at beginning of the Year:**

- Proof of concept

6. **Interventions made:**

- Prototype Development, Business Analysis & Product Design

7. **Current status:**

- Prototype Developed

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



PROJECT 24: Fire Drill procedure in VR

1. Project Title: “Fire Drill procedure in VR”

2. Mentor Name: Dr. Sejal S. N.

3. Student Team Names:

- I. Suraj S. H.
- II. Samarth R. Gowda
- III. Somaiah K. M.
- IV. Yashas R. Rao

4. Project Description:

This is a VR application that explains and trains the user on all the safety procedures to be followed in an event of fire in the building. The user will be educated with the steps by placing him/her in an immersive VR environment of the building and the user will be able to navigate around the building as they can in the real world

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 25: Plant Simulator –V

1. Project Title: “Plant Simulator –V”

2. Mentor Name: Dr. Sejal S. N., Dr. L. Vijayashree & Prof. Pavithra H. C.

3. Student Team Names:

- I. Niharika J.
- II. Sachitha C.
- III. Vibha R. Siddeshwar
- IV. Yashashwini Pai

4. Project Description:

This is a VR application that teaches an user on how to plant and grow different plants. The aim is for the user to understand how all the important factors like moisture, soil, manure, sunlight etc. affect the growth of different plants.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 26: Intergration of 25 point bilinear leveling for AM System

1. Project Title: “Intergration of 25 point bilinear leveling for AM System”

2. Mentor Name: Dr. L. Vijayashree & Dr. Sejal S. N.

3. Student Team Names:

- I. Amrutha A.
- II. Susanna John

4. Project Description:

Integration of 25 point Bi- Linear levelling for AM Systems to make uniform bed levelling and the perfect first level while manufacture in the AM System, there by increasing the surface quality at the platform. This increases the Quality of the product and surface roughness of the object .

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 27: Industry 4.0 connectivity and controlling for AM system

1. Project Title: “Industry 4.0 connectivity and controlling for AM system”

2. Mentor Name: Dr. L. Vijayashree & Dr. Sejal S. N.

3. Student Team Names:

- I. Siddhant Priyadarshi
- II. Subrat Pandey

4. Project Description:

Connected AM Systems reduces the time taken by the operator to control multiple systems working together, there by having connectivity and control on a single device enables faster operations and to achieve better outputs.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 28: Smart Heat Dissipation using 3D Scanning and processing of CFM for servers (3D Scanner)

1. Project Title: “Smart Heat Dissipation using 3D Scanning and processing of CFM for servers (3D Scanner)”

2. Mentor Name: Dr. L. Vijayashree & Dr.AnilKumar (Mech.)

3. Student Team Names:

- I. Mahesh V. R.
- II. T. Sai Prathyush

4. Project Description:

Making use of a 3D Scanner which can be used to identify the depth in a product, we make use of this data to optimize the air flow path by making use of a Mac's AI & ML Tool to produce the required data.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 29: FITQUA : Digital Water Bottle

1. Project Title: “FITQUA : Digital Water Bottle”

2. Mentor Name: Prof. Jamuna Murthy

3. Student Team Names:

- I. Saif Ali Zaidi
- II. Madem Naga Akshai
- III. Mohammed Kaif
- IV. Abhay R.

4. Project Description:

Water is an essential nutrient for human health. However, individuals may ignore drinking enough water due to the rush of everyday life. We present a conceptual smart bottle to encourage users to drink water regularly. Our concept utilizes bottle cap as main component of product connected with application. The product is combination of application operated from smart phone and a hardware present inside the cap of water bottle.

Application will take input from the user for example body weight, calories intake of day, calories burn in a day or the medicine to be taken (approximate value), the input data will be converted into useful information regarding the amount of water individual need to intake in a day with the time notification and reminder to take medicine.

Hardware will be placed inside bottle cap having required components like Bluetooth chip, digital clock, battery etc whenever the user will close the cap of the bottle the timer will start inside the clock chip, after reaching the time limit generated from the given input in application, a notification will pop to the connected the mobile phone with a light blinking on the cap of the bottle.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 30: Wet Waste Management Unit for households

1. Project Title: “Wet Waste Management Unit for households”

2. Mentor Name: Dr. L. Vijayashree

3. Student Team Names:

I. V. Madhuri

II. Nallamalli Srilatha Chahna

4. Project Description:

The project concentrates on resolving the issues that are concerned with disposal of everyday household wet-waste that is becoming challenging to collect and dispose everyday in Metropolitan cities. Hence, this project is aimed at manufacturing an small and robust appliance that can fit on a shelf wherein it can shred and dry the wet waste so that it can be stored for longer period of time and can be sold as manure or can be disposed in an efficient manner (eg., weekly once) which will reduce the stress on government agencies and also on users.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 31: Food Serving Robot for canteens and Hotels

1. Project Title: “Food Serving Robot for canteens and Hotels”

2. Mentor Name: Dr. L. Vijayashree & Dr. Shashikala

3. Student Team Names:

I. Vyshnavi G. Rao

II. Vyshnavi Y. Naik

4. Project Description:

This project concentrates on designing the the most efficient battery powered food delivery bot. That can automatically deliver the food to tables and deliver packages inside the campus. The current system in the market cost around 3-5 lakh going upwards of 20 lakh. Hence this project is aimed to build the bots under 2 lakh that are industrial standard and are highly sophisticated in terms of path tracking and motion.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PROJECT 32: 3D Orthopedic Reconstruction and development

1. Project Title: “3D Orthopedic Reconstruction and development”

2. Mentor Name: Dr. L. Vijayashree & Mrs. Keerthi Kulkarni

3. Student Team Names:

- I. Mridula R.
- II. N. Varsha
- III. Sanjana Bhat
- IV. Shravya M.

4. Project Description:

3D printing is the process of creating a three-dimensional object by layering the material into the desired shape. The printer dispenses liquefied building materials as if they were ink. The method uses less material than so-called subtractive manufacturing, in which an object is cut out of a larger piece of material. The beauty of the technology in orthopedics is that a 3D printer can create custom implants and patient-specific surgical instrumentation based on imaging of a patient's affected limb.

5. Project status at beginning of the Year:

- Proof of concept

6. Interventions made:

- Prototype Development, Business Analysis & Product Design

7. Current status:

- Prototype Development To Product In Process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: University Science and Technology

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	University Science and Technology, Meghalaya		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Prof G. D. Sharma, Vice Chancellor +91 7987333308/ 9406218401 vcustm@gmail.com		
Name of NewGen IEDC Coordinator	Dr. Amit Choudhury		
Contact Details of NewGen IEDC Coordinator • Mobile Number • e-Mail ID	8761007133, 09854453170 sbusdean@gmail.com		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NEWGEN IEDC/17-18/07 Dated: 20/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Entrepreneurship Awareness Camp



2. Brainstorming Among Faculty of USTM and other members of the E-Club



3. Industry Visit



4. Motivational Talk by Successful Entrepreneurs/ Speakers



[B] To identify, develop & commercialize students' innovative ideas

1. Sensitization on Entrepreneurship among newly enrolled students of USTM

- Entrepreneurial discussion led to promote projects directed towards prototype development

2. Brainstorming of Project development

- Project Idea generated

3. Initializing of projects

- 22 project groups shortlisted and Prototype development initiated.



[C] To enhance Industry-Academia interaction

1. Interaction and visit to CIPET
2. Interaction and visit to Incubation Center – IIFPT
3. Interaction and visit to TBI-IITG
4. Visit to NRL (BPCL) Incubation Facility by Potential Groups interested in Start-up
5. Industry Visits Conducted Speakers invited for talks, from Industry & Financial Institutions

- Speakers involved during EAC to sensitize students on Entrepreneurship and motivate



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

NA

3. Other important highlights (new initiatives), if any:

- Awareness on IPR
- 38 IPR Applications made till date, and Novelty report had for 22 applications which are undergoing further modification as suggested in Novelty Report.
- Participation in
 - NEATEHUB's Hackathon,
 - NECTAR's Exhibition,
 - MSETC Science Awareness Camp cum Business Exhibition
 - One Student Group Secured special mention among top 10 Business Idea at North East Research Conclave organized by IIT Guwahati.
 - ABI Sprout organised by Agri Business Incubation Center, ICAR where **one student group bagged the Runners up Prize.**



4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Smart Urban Tree: A Road Side Air Pollution Control

I. Project Name : Smart Urban Tree: A Road Side Air Pollution Control

II. Mentors Details : Dr. Mautushi Das

III. Student team details

- i. Anuradha Boruah
- ii. Chinmayee Kashyap
- iii. Sarder Sabrina Zaman
- iv. Eldad Ngurienkhum Riengsete
- v. Nguri Raja

IV. Brief description of the student start-up

The proposed project aims to fight air pollution using an artificial tree structure and different lower groups of organisms. They can be used in high-traffic areas, transportation terminals, where you can't just plant a hectare of trees. The system isn't going to end air pollution completely though it can alleviate the problem in high-traffic areas, smoky bars, clubs or can be used in old age homes to supply sufficient oxygen to elderly people. The towering metal structure will use microalgae/macroalgae to clean carbon dioxide and other contaminants from the air, returning pure oxygen to the environment. The device will look something like a cross between a tree and a post-modernist high-rise, with a steel trunk that radiates rising bands of concentric metal. This system will inhale air pollution and use biology to carry out the natural process (of photosynthesis), just like a tree and in return will give sufficient amount of oxygen in the environment. Artificial 'robot' trees which can do the work of an entire small forest. The trees, which use organic algae to replicate the processes of natural trees, could be one way of improving air quality in areas lacking in green spaces. The basic process of photosynthesis is plants and other organisms to convert light energy, normally from the sun, into chemical energy that can be later released to fuel the organism activities and thus release oxygen as a by- product. Most plants, most algae, and cyanobacteria perform photosynthesis, and such organism is called photoautotrophs. Microalgae are sunlight-driven cell factories that convert carbon dioxide to potential biofuels, foods, feeds and high value bio-actives. Hence, in the process algae will be used to reduce air pollutant such as sulfur dioxide,

nitrogen dioxide and converting carbon dioxide into oxygen by process of photosynthesis. Various types of pollutants continuously causing damage to the environment and after a long-term observation it is found that there is a best option of using microalgae in different techniques for reducing environmental pollutants. Since, versatile species of microalgae has been a part in reduction and removal of environmental pollutants as we observed in different bioremedial techniques such as in waste water treatment plants, heavy metal removal techniques, bio-degradation of azo-dyes, phenol and other organic aromatic compounds which are dangerous to the environment. Keeping this in view, algae will be the test material to remove the pollutants from the air. Artificial light, air flow sensors will be added to the system. Additionally, the tree will be covered by pollution-sapping qualities of moss with remote technology and smart-enabled sensors to direct air flow, monitor pollution levels and reduce the amount of contaminants in the air. By literally eating nitrogen dioxide and particulate matter out of the atmosphere, this artificial system can help to boost the air that urban dwellers breathe and offset many tonnes of carbon-equivalent emissions each year. Cultured microalgae will be incorporated in the system. With inbuilt irrigation and ventilation systems, the units require minimal maintenance (just a handful of hours every year) but can provide a long-lasting solution to air pollution. Few air purifying plants which can reduce particulate matter significantly and other pollutants and give oxygen in return will be added to this smart urban tree so that the artificial structure looks green which will beautify the public places as well. People are always astonished to find something natural and beautiful in the middle of a big city. So, this smart urban tree will be a complete solution for air pollution both indoor and outdoor and will additionally beautify the area.

- The start-up cost of “Smart urban tree” will consist primarily of equipment and inventory, plants, algal culture, sensors.
- Market Analysis Summary
- Govt. is looking for cost effective solution for air pollution in highly polluted cities like Delhi, Mumbai, Kolkata, Hyderabad, Chennai etc. Many public enterprises, offices, malls, smoky bars and restaurants also require remedy for air pollution so to keep their employees and customers healthy. Additionally, the bio structure with different plants will enhance the beauty of public places and indoors. The cost effective minimum maintained structure will be a complete solution for fighting air pollution.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

The ideation of the project came from the idea of lack of any equipment for air pollution control in any traffic signals.

A lot of people cannot stand a polluted environment. They try their best to make sure that their environment is safe to live in. They try to reduce the excess release of harmful chemicals into the atmosphere. Basically, people use it to: Prevent smog dangers: This is one of the most important reasons why people use the air pollution control. Smog can be very hazardous, which is why air pollution control should be installed at an early stage to prevent smog. Protect health: This is part of the reason why most people install the air pollution control. Most of these chemicals could damage the lungs. Improve their indoor air quality: People use it to improve the air when they are indoors.

So, our product will be beneficial for the mass population inhaling poisonous chemicals on daily basis. This can be utilized both outdoor and indoor to provide sufficient amount of oxygen and in turn capturing carbon dioxide and other air pollutants from the highly polluted areas. Moreover, production of microalgae in large quantities can be initiated by local inhabitants in minimum investment and training. This will generate an income alternative for the rural people of the area.

The proposed project aims to fight air pollution using an artificial tree structure and different lower groups of organisms. They can be used in high-traffic areas, transportation terminals, where you can't just plant a hectare of trees. The system isn't going to end air pollution completely though it can alleviate the problem in high-traffic areas, smoky bars, clubs or can be used in old age homes to supply sufficient oxygen to elderly people. The towering metal structure will use microalgae/macroalgae to clean carbon dioxide and other contaminants from the air, returning pure oxygen to the environment. The device will look something like a cross between a tree and a post-modernist high-rise, with a steel trunk that radiates rising bands of concentric metal. This system will inhale air pollution and use biology to carry out the natural process (of photosynthesis), just like a tree and in return will give sufficient amount of oxygen in the environment. Artificial 'robot' trees which can do the work of an entire small forest. The trees, which use organic algae to replicate the processes of natural trees, could be one way of improving air quality in areas

lacking in green spaces. The basic process of photosynthesis is plants and other organisms to convert light energy, normally from the sun, into chemical energy that can be later released to fuel the organism activities and thus release oxygen as a by- product. Most plants, most algae, and cyanobacteria perform photosynthesis, and such organism is called photoautotrophs. Microalgae are sunlight-driven cell factories that convert carbon dioxide to potential biofuels, foods, feeds and high value bio-actives. Hence, in the process algae will be used to reduce air pollutant such as sulfur dioxide, nitrogen dioxide and converting carbon dioxide into oxygen by process of photosynthesis. Various types of pollutants continuously causing damage to the environment and after a long-term observation it is found that there is a best option of using microalgae in different techniques for reducing environmental pollutants. Since, versatile species of microalgae has been a part in reduction and removal of environmental pollutants as we observed in different bio-remedial techniques such as in waste water treatment plants, heavy metal removal techniques, bio-degradation of azo-dyes, phenol and other organic aromatic compounds which are dangerous to the environment. Keeping this in view, algae will be the test material to remove the pollutants from the air. Artificial light, air flow sensors will be added to the system. Additionally, the tree will be covered by pollution-sapping qualities of moss with remote technology and smart-enabled sensors to direct air flow, monitor pollution levels and reduce the amount of contaminants in the air. By literally eating nitrogen dioxide and particulate matter out of the atmosphere, this artificial system can help to boost the air that urban dwellers breathe and offset many tonnes of carbon-equivalent emissions each year. Cultured microalgae will be incorporated in the system. With inbuilt irrigation and ventilation systems, the units require minimal maintenance (just a handful of hours every year) but can provide a long-lasting solution to air pollution. Few air purifying plants which can reduce particulate matter significantly and other pollutants and give oxygen in return will be added to this smart urban tree so that the artificial structure looks green which will beautify the public places as well. People are always astonished to find something natural and beautiful in the middle of a big city. So, this smart tree will be a complete solution for air pollution both indoor and outdoor and will additionally beautify the area

VI. Contribution of NewGen IEDC in the same

- New Gen IEDC funded the whole project till prototype development and given the exposure to the students.

VII. Future plan

“Smart urban tree” will focus on becoming the leading provider of natural air purifier and centre of attraction in public places.

Our target customers know that consumers want to use products that are natural and cost effective. More importantly, high risks associated with air pollutants are very well known to Government and common people. Additionally, beauty of the product in different sizes for outdoor and indoor activities will attract the customers.

Product will be approached to govt of different states to install in different traffic signals and other public places as well.

VIII. Other important highlights: NA

Best Project-2: Development of a cosmetic and nutraceutical formulation from selected fruits' peels of NER, India

I. Project Name : Development of a cosmetic and nutraceutical formulation from selected fruits' peels of NER, India

II. Mentors Details : Dr. Sudarshana Borah & Mr. Aditya Bora

III. Student team details:

- i. Gouranga Boruah
- ii. Samima Nasrin Rahman
- iii. Dipankar Sarkar
- iv. Mamun Rashid Barbhuyan
- v. Sarfaraj Ahmed
- vi. Wahidul Alom Choudhury
- vii. Azaharul Islam
- viii. Phulan jyoti Dutta

IV. Brief description about the student Project

Our prominence on this research would be on recycling, reviving and reformulating. This proposal has been intended with the purpose of designing a cosmetic and a nutraceutical formulation. Natural drugs are having a major remedial role due to its multiple therapeutic outcome and lesser side effects. We have planned to develop an anti-cholesterolemic, anti-obesity nutraceutical formulation for 10 varieties of fruits collected from different zones of Northeast India. Besides, an anti-acne cum beauty product cum cosmeceutical would be developed from the essential oil of these fruits due to their antioxidant, antimicrobial properties.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

- Obesity is a major metabolic disorder leading to PCOD, Diabetes, Hypercholesterolemia.
- This supplement would have a high nutritive value, rich in Vitamin C, minerals and would be cost-effective
- These products would conserve the traditional knowledge of the people of Northeast India





VI. Contribution of NewGen IEDC in the same

- We have received the adequate fund to start up the Project

VII. Future plan

- Standardization and validation
- Start-up Linkage
- Patent

VIII. Other important highlights: NA

Annexure-A

Details of Student Projects

Project-01: Development and standardization of “kulfi” blended with locally available variety of Banana & Pineapple in NER

1. Project Title : Development and standardization of “kulfi” blended with
Locally available variety of Banana & Pineapple in NER

2. Mentor Name : Dr. S. Alamdar Hussain

3. Student Team Names:

- i. Miniswring Basumatary
- ii. S Dhole Key
- iii. Phami Islary
- iv. Phaimaidi Bathari
- v. Somaina Basumatary
- vi. Jubilee Rani Brahma
- vii. Pranamika Deka
- viii. Hachilo I ezung
- ix. Tracy Lukinliu
- x. Hironya Kumar Gogoi
- xi. Sweety Das
- xii. Mousham Talukder

4. Project Description:

India is among the world’s largest and fastest growing market for milk and milk products. Kulfi is an indigenous frozen milk product which is particularly popular in the northern part of India. Kulfi is good source of the carbohydrate, protein, vitamin A, C and minerals. Being seasonal and highly perishable fruits, banana, and pineapple cannot store for a long period. Therefore, the development appropriate processing technology and product standardization will definitely help in better utilization of banana, pineapple fruits during the seasonal glut. So far, no research work is conducted on utilization of banana & pineapple local variety are conducted on utilization of banana & pineapple pulp in kulfi. Considering health benefits, delicious taste of pineapple & banana, it is proposed to study on preparations & standardization of kulfi blended with local varieties of pineapple & banana.

The packaging of product has a great role in increasing the shelf life. Well, packaged products also attract the consumer too. Therefore, the developed products will be packaged in various packaging materials and shelf-life studies will be done. The products can be marketed throughout the year both in small scale and large scale based on the requirement of the consumer.

5. Project status at beginning of the Year:

- Brainstorming, project ideation, design, online collection of information related to the project (literature)

6. Interventions made:

- Equipment purchased & Collection of raw materials, preparation of various treatment combinations, sensory evaluation of all the trials & Chemical Analysis at laboratory level

7. Current status:

- Final product testing performed, standardization and FSSAI Regd Applied

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Supplement having Anti Diabetic & Immunity Boosting Food Supplement

1. Project Title : Supplement having Anti Diabetic & Immunity Boosting Food Supplement

2. Mentor Name: Dr. Bedabati Chowdhury

3. Student Team Names:

- i. Bishal Hazarika
- ii. Salma Ridhwaanah
- iii. Faruque Abdulla Sk.
- iv. Arupjyoti Konwar
- v. Nureja Akhtar

4. Project Description:

Diabetes mellitus is a global health concern. It is a metabolic disease with severe socio-economic importance. Proper diet and exercise is an important factor to combat this disorder. When diet is concerned consumption of glucose should be controlled and the diabetic people have to rely on alternate foods which have low carbohydrate content but having good nutritional values.

Now the whole world is looking for the foods which have immune-boosting properties because of the period of corona pandemic around the world. North eastern region of India is rich in flora and fauna and is the home land of many tribal communities. The peoples of this region have tremendous knowledge of many herbal plants. They also regularly use many wild fruit and vegetables in preparation of their many dishes in their traditional way. In many areas the tribal people don't depend on the popular market health drinks but maintain their health and nutritional status in a traditional way. For treating many diseases also, the tribal people rely on their herbal remedies. Therefore, our project targets to produce nutritional supplements at a low cost from the traditional fruits, herbs and vegetables which have a good nutritional property as well as immune-boosting and anti-diabetic properties. This project will not only explore the traditional knowledge but will also produce products from our local sources. This will also uplift the benefit of using local herbs, fruits and vegetables.

5. Project status at beginning of the Year:

- Survey and collection of bulk plant material and extraction

6. Interventions made:

- Formulation and standardization of the process

7. Current status:

- Analysis of the plant compound, Development of the prototype, Testing and Standardization

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Fertilia Mirror – Reproductive Health Meter

1. Project Title: Fertilia Mirror – Reproductive Health Meter

2. Mentor Name: Dr. Deboja Sharma

3. Student Team Names:

- i. Gracy Nath
- ii. Nisha Seth
- iii. Shivani Boruah
- iv. Meteibor Puwein
- v. Deiwamangmi Suchiang
- vi. Dawadbniah Ramde

4. Project Description:

In every cycle there are only a few days when a woman can conceive, so trying to conceive on these days is very important if one is trying to get pregnant. 1 in 2 couples could be trying to conceive on the wrong days of the woman's cycle. The digital ovulation test detects the rise of the ovulation hormone LH (Luteinizing hormone) 24-36 hours prior to ovulation and identifies the 2 best days to conceive in a given cycle. It's more accurate than calendar and temperature methods and gives one unmistakably clear results on a digital display. It also helps women suffering from PCOD/PCOS to find their ovulating days and to track their menstrual cycles if they are having irregular periods, by detecting the surge of the ovulation hormone (LH).

5. Project status at beginning of the Year:

- Marketing research, Analysis of data relevant to aspects of marketing, analysis of nature, Product Planning, product designing, cost effectiveness analysis, product structure filing

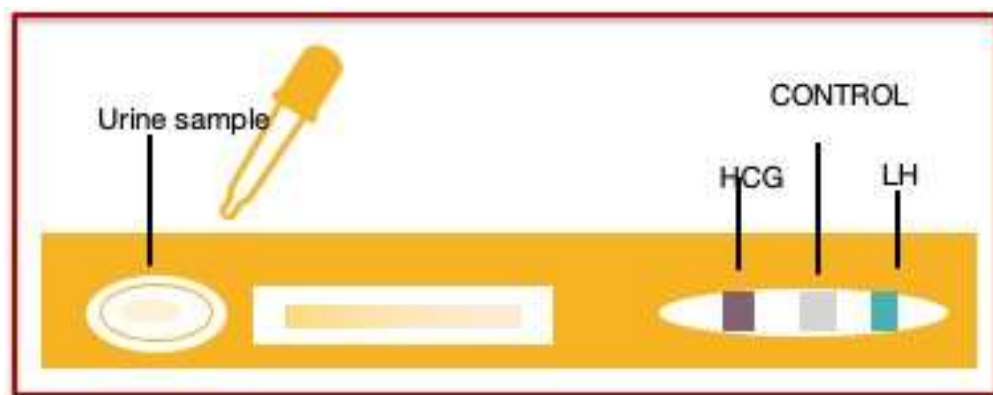
6. Interventions made:

- Analysis of availability of raw materials, Material requirements planning, assembly and buying of raw materials

7. Current status:

- Product development in progress, Formulation of Work, Applied for IPR

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Nutritional Feed from Hostel Waste

1. Project Title: Nutritional Feed from Hostel Waste

2. Mentor Name: Dr. Madhusmita Borthakur

3. Student Team Names:

- i. Yashodhara Goswami
- ii. Dorthi Rajkumari
- iii. Roshan Kumar Singh
- iv. Shilpi Das
- v. Soubam Nickol Devi
- vi. Shimanta Nath
- vii. Mofida Yasmin

4. Project Description:

Food waste management is a great concern for the sustainability of the society. Converting food waste into aquafeed can be highly acceptable in providing adequate food for increasing human population. The proposed start up plan focuses on utilizing less expensive and waste resources to replace fish meal without reducing nutritional quality of feed. In India 35 million tons of vegetable waste and animal waste are produced which results in 10 million tons of waste. Very little emphasis has been given to reuse hostel waste products which are low cost, easily available. The proposed start up plan also aims to restore and conserve of endangered aqua species by proving nutritious fish feed which will aim at high reproductive rate that can also benefit and sustain the livelihood.

5. Project status at beginning of the Year:

- Selection of students, Planning on topic, Marketing research, Analysis of data relevant to aspects of marketing, analysis of nature of competition

6. Interventions made:

- Analysis of availability of raw materials, Material requirements ordered, Raw materials collection, Preparation of first lab trial, Start for Product development in lab conditions, Product moulding and fortification started

7. Current status:

- Prototype developed is being focused on the bio-analytical experiments required for the product improvement and marketing, Applied for IPR

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Smart Urban Tree – Road-side Air Pollution Control

1. Project Title: Smart Urban Tree – Road-side Air Pollution Control

2. Mentor Name: Dr. Mautushi Das

3. Student Team Names:

- i. Anuradha Boruah
- ii. Chinmayee Kashyap
- iii. Sarder Sabrina Zaman
- iv. Eldad Ngurienkhum Riengsete
- v. Nguri Raja

4. Project Description:

The proposed project aims to fight air pollution using an artificial tree structure and different lower groups of organisms. They can be used in high-traffic areas, transportation terminals, where you can't just plant a hectare of trees. The system isn't going to end air pollution completely though it can alleviate the problem in high-traffic areas, smoky bars, clubs or can be used in old age homes to supply sufficient oxygen to elderly people. The towering metal structure will use microalgae/macroalgae to clean carbon dioxide and other contaminants from the air, returning pure oxygen to the environment. The device will look something like a cross between a tree and a post-modernist high-rise, with a steel trunk that radiates rising bands of concentric metal. This system will inhale air pollution and use biology to carry out the natural process (of photosynthesis), just like a tree and in return will give sufficient amount of oxygen in the environment. Artificial 'robot' trees which can do the work of an entire small forest. The trees, which use organic algae to replicate the processes of natural trees, could be one way of improving air quality in areas lacking in green spaces. The basic process of photosynthesis is plants and other organisms to convert light energy, normally from the sun, into chemical energy that can be later released to fuel the organism activities and thus release oxygen as a by-product. Most plants, most algae, and cyanobacteria perform photosynthesis, and such organism are called photoautotrophs. Microalgae are sunlight-driven cell factories that convert carbon dioxide to potential biofuels, foods, feeds and high value bio-actives. Hence, in the process algae will be used to reduce air pollutant such as sulfur dioxide, nitrogen dioxide and converting carbon dioxide into oxygen by

process of photosynthesis. Various types of pollutants continuously causing damage to the environment and after a long-term observation it is found that there is a best option of using microalgae in different techniques for reducing environmental pollutants. Since, versatile species of microalgae has been a part in reduction and removal of environmental pollutants as we observed in different bioremedial techniques such as in waste water treatment plants, heavy metal removal techniques, bio-degradation of azo-dyes, phenol and other organic aromatic compounds which are dangerous to the environment. Keeping this in view, algae will be the test material to remove the pollutants from the air. Artificial light, air flow sensors will be added to the system. Additionally, the tree will be covered by pollution-sapping qualities of moss with remote technology and smart-enabled sensors to direct air flow, monitor pollution levels and reduce the amount of contaminants in the air. By literally eating nitrogen dioxide and particulate matter out of the atmosphere, this artificial system can help to boost the air that urban dwellers breathe and offset many tonnes of carbon-equivalent emissions each year. Cultured microalgae will be incorporated in the system. With inbuilt irrigation and ventilation systems, the units require minimal maintenance (just a handful of hours every year) but can provide a long-lasting solution to air pollution. Few air purifying plants which can reduce particulate matter significantly and other pollutants and give oxygen in return will be added to this smart urban tree so that the artificial structure looks green which will beautify the public places as well. People are always astonished to find something natural and beautiful in the middle of a big city. So, this smart urban tree will be a complete solution for air pollution both indoor and outdoor and will additionally beautify the area.

- The start-up cost of “Smart urban tree” will consist primarily of equipment and inventory, plants, algal culture, sensors.
- Market Analysis Summary
- Govt. is looking for cost effective solution for air pollution in highly polluted cities like Delhi, Mumbai, Kolkata, Hyderabad, Chennai etc. Many public enterprises, offices, malls, smoky bars and restaurants also requires remedy for air pollution so to keep their employees and customers healthy. Additionally, the bio structure with different plants will enhance the beauty of public places and indoors. The cost effective minimum maintained structure will be a complete solution for fighting air pollution.

5. Project status at beginning of the Year:

- Survey Collection, and culturing of Algae

6. Interventions made:

- Development of Urban tree structure, Analysis, Installation of tree structure advertisement

7. Current status:

- The project is under the process of prototype development and testing, Physical structure fabrication ongoing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Low-Cost Vertical Self-Irrigating Gardening System

1. Project Title: Low-Cost Vertical Self-Irrigating Gardening System

2. Mentor Name: Dr. Milu Rani Das

3. Student Team Names:

- i. Ms. Suchandra Gope
- ii. Mr. Nabajit Choudhury
- iii. Ms. Arpita Talukdar
- iv. Ms. Puja Gupta
- v. Chonghoivah Singson

4. Project Description:

Vertical gardens require a minimal amount of space and they look really cool, first of all, gardens that hang vertically are fun and interesting to look at. They can double as artwork or home decor on a bare wall (inside or out). Secondly, homeowners (or renters) can display plants where they might otherwise not have the space. Urban farmers typically have limited growing space to work with. In this case, vertical gardening is their only option if they want to grow food. Third, even if people have the space for potted plants, they may not want them cluttering up their tabletops or floors. Vertical gardens are conveniently out of the way, which also results in a cleaner, more organized look. Fourth, plants can help “clean” the air indoors. Many people think that having a living wall in a living room or other area of the home provides a great health benefit. Indoor plants have a tendency to collect and show dust, but when vertically grown, they collect and show less dust – but they are also easier to clean. There are also some problems in using vertical gardens. Many pre-made vertical planting systems cost more than traditional pots. They are specially-designed for easy set-up, easy maintenance and easy watering, which are all great benefits but they are more expensive. **Watering and Drainage is a problem in vertical gardening.** This is an important issue to think through, especially if the plants will be indoors. However, the product may be able to solve both the problems and create a structure for much less money with materials at local with a self-irrigation system.

5. Project status at beginning of the Year:

- Planning and Research on the topic, Conceptualization of the idea

6. Interventions made:

- Formulation and standardization of the process, Testing the light weight substrate (Growing media), Standardization and Linkage

7. Current status:

- Installation of irrigation system is going on, Vertical Garden Framework set-up

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 07: Herbal Antimicrobial Diffuser

1. Project Title: Herbal Antimicrobial Diffuser

2. Mentor Name: Mrs. Parimita Saikia

3. Student Team Names:

- i. Hathorkhi Rwmwi Basumatary
- ii. Rahul Ranjan Borah
- iii. Abigail Iarisa Ryntarhiang
- iv. Abhilash Borah
- v. Jyotirmoy Kalita
- vi. Pritam Choudhury

4. Project Description:

Our product is a small organic repellent consisting of all utilized essential herbs & plants extracts that can be used in any concerned areas and this is going to be harmless to organisms and fumigate the whole environment and can fill your rooms and all area with pleasant fragrance. The liquid form of repellent is converted to the mist by the help of electronic circuit designed which is associated with microcontroller, sensor, motor mist maker circuit etc.

5. Project status at beginning of the Year:

- Brainstorming, ideation, Literature Survey

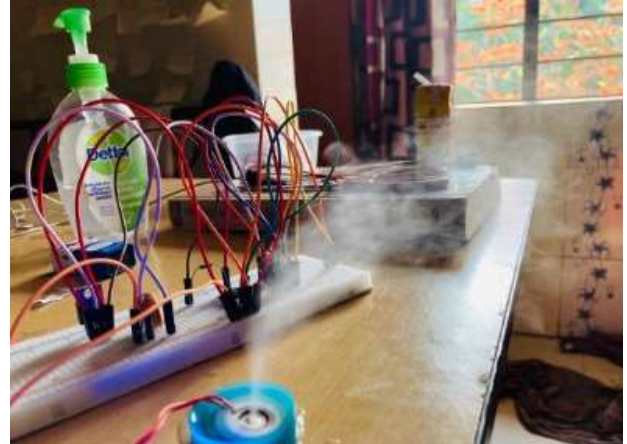
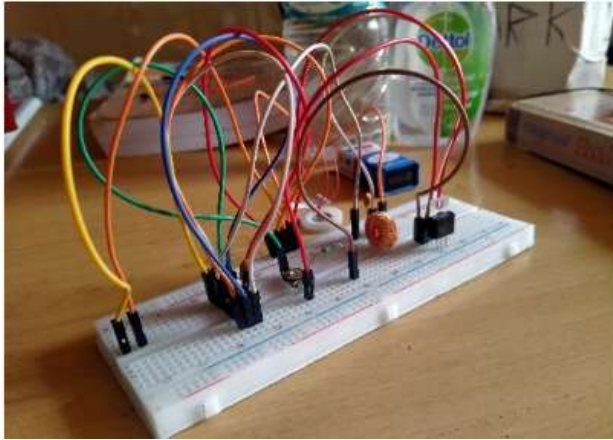
6. Interventions made:

- Component collection, Hardware design and diffuser solution testing

7. Current status:

- Prototype and model design completed and testing and standardization ongoing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 08: Herbal Tooth Gel for Management of Gingival Bleeding & Toothache

1. Project Title: Herbal Tooth Gel for Management of Gingival Bleeding & Toothache

2. Mentor Name: Dr. Priyanka Kashyap

3. Student Team Names:

- i. Bristi Plawan
- ii. Genmuanlal Suantak
- iii. Dayita Kakoti
- iv. Parija Nath
- v. Priya Baruah

4. Project Description:

Periodontal diseases are mainly the result of infections and inflammation of the gums and bone that surround and support the teeth. In its early stage, called gingivitis, the gums can become swollen and red, and they may bleed. Gingivitis is very common. Almost half of all adults older than 30 have some kind of gum disease. In India, the prevalence of gingivitis in children was about 59%. Among them 53% were mild gingivitis cases and 5.5% were moderate cases. Various methods and treatments have been suggested to help reduce bleeding, pain and inflammation of the gums but they are mostly chemical based.

The management of gingival bleeding and toothache is different from the existing products which are available in the market. This herbal gel will be a mixture of plant extract which are locally available in the region. *Spilanthes acmella* is a medicinal plant. Popularly, it is known as toothache plant which reduces the pain associated with toothaches and can induce saliva secretion. It has multiple pharmacological actions, which include antifungal, antipyretic, local anesthetic, antioxidant, antimicrobial, toothache relieve and anti-inflammatory effects.

Green tea extract is significantly effective in stopping bleeding of socket caused by tooth extraction and it is cheap and herbal as well.

5. Project status at beginning of the Year:

Herbal active ingredients used are *Spilanthes acmella* extract, green tea extract and clove oil. The herb *Spilanthes acmella* is collected from the

surrounding area and the flower part of the plant are dried in a dryer at 45°C for 2-3 hours. Our second active ingredient, Green Tea were collected from the nearby tea estate and dried at 45°C for 3-4 hours. The dried herbs are then extracted using decoction method. (Since the main constituent of Spilanthes that is Spilanthol is non-volatile, decoction method is preferred)

6. Interventions made:

Clove oil is added as a natural preservative due to its antimicrobial properties. Mentha oil is added which imparts soothing effect and a long-lasting refreshing taste to the gel. There is certain test to be performed such as viscosity, spreadability, centrifuge and temperature change test

7. Current status:

- Samples are undergoing testing and packaging of the product is to be done. Standardization ongoing. IPR Application filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 09: Development of a Dryer Based on Refractive Window Technology for Small Tea Growers

1. Project Title: Development of a Dryer Based on Refractive Window Technology for Small Tea Growers

2. Mentor Name: Mr. Palash Mukul Das & Ms. Pallavi Gogoi

3. Student Team Names:

- i. Kabyashree Kalita
- ii. Preety Nayan Chutia
- iii. Subhrajyoti Dhar
- iv. Hugge Basar
- v. Saeed Taj

4. Project Description:

There are around 2500 small tea gardens in Assam today adding to the State's total production by more than 50 million kg. This is certainly a welcome change. But, since they grow in small scale, they cannot go for factory manufacturing and, hence, have to sell out only green leaves to the large estates which often subject them to exploitation. Tea manufacturing consists of processes such as PLUCKING, WITHERING, ROLLING, FERMENTATION, DRYING, SORTING and GRADING. DRYING of firing of tea leaves is a tricky step in the manufacturing of tea. A mistake at this step could ruin a whole day's production. On flat conveyor belts the tea runs through a giant oven and is exposed to hot air, around 95°C. The heat will dry the tea leaves, giving them the dark colour and stop the fermentation process. Moisture content will be reduced to about 3 to 4 percent and ensure that tea can be stored for a long time. But for small tea growers affording a very costly dryer is very difficult. So they traditionally use WOOD or ELECTRIC HEATER for their country made dryer. This heater has a major problem of non-uniform heating is being tried to solve by a novel drying technology called REFRACTANCE WINDOW. In Refractance window technique the material to be dried is placed on a thin plastic sheet and, the plastic sheet is heated from below via circulating hot water. Current understanding suggests that the use of a thin plastic sheet that is transparent to infrared radiation (IR) creates a "window" for thermal radiation from hot water to the wet material.

5. Project status at beginning of the Year:

- Brainstorming the ideas. Finalizing the idea. Process of works to be done. Collecting information about the components

6. Interventions made:

- Purchased the basic components required. (In transit). Field visit done to study the processes involved in tea making. With special focus on existing dryer. Started making steel made conveyer belt

7. Current status:

- Currently the construction of the model is completed. Till now the making of the table and the water block has been completed. Calibration ongoing. IPR Application to be filed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 10: IoT based Agriculture Environment Monitoring System

1. Project Title: IoT based Agriculture Environment Monitoring System

2. Mentor Name: Ms. Rishiparna Choudhury & Ms. Priyanka Sarma

3. Student Team Names:

- i. Anup Kr. Dhar
- ii. Gaurab Roy
- iii. Jintumoni Baruah
- iv. Nilotpai Mudoi
- v. Victor Syiem

4. Project Description:

Smart agribusiness is an arising idea since IoT sensors are fit for giving data about agribusiness fields. The component of this paper includes the improvement of a framework that can screen temperature, humidity, and moisture level, and detects intrusion into the field. Smart Agriculture is an arising idea because IoT sensors can give data about agriculture fields and afterwards act upon it for better production.

5. Project status at beginning of the Year:

- Material Collection (Electronic component)

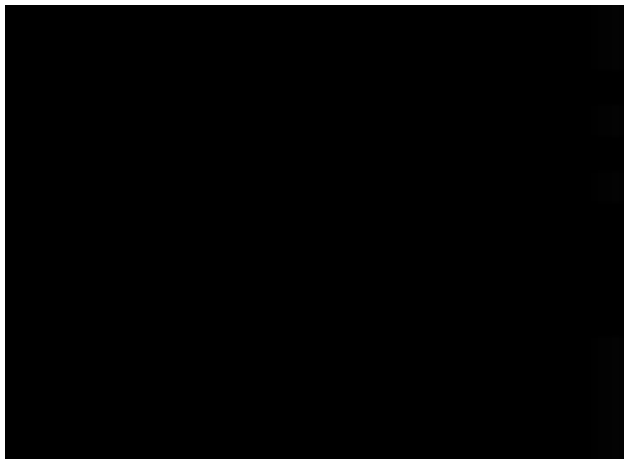
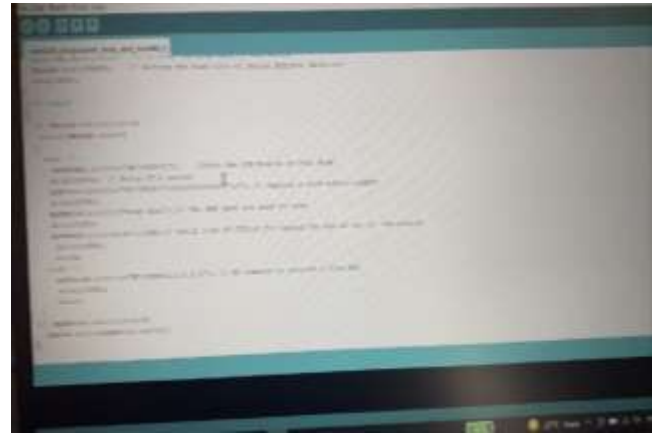
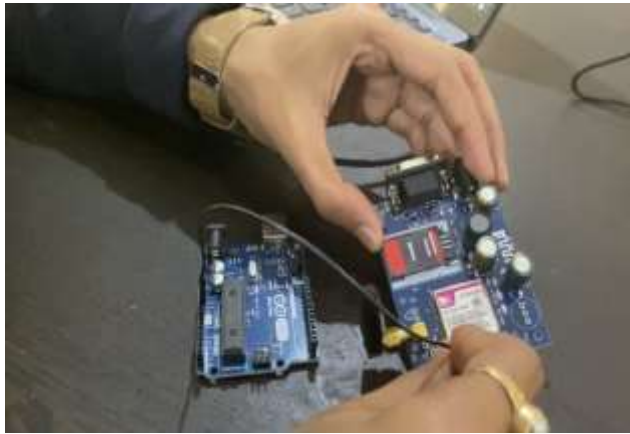
6. Interventions made:

- Circuit designing and Customization

7. Current status:

- The prototype of IoT based agriculture environment and security monitoring system is ready for test in the real world. It has so far passed all the tests done on the sample plants. This makes it ready for the deployment process. IPR to be Filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 11: Preparation and Standardization of Hair Serum from Medicinal Plants of NE India

1. Project Title: Preparation and Standardization of Hair Serum from Medicinal Plants of NE India

2. Mentor Name: Dr. Pallab Kalita

3. Student Team Names:

- i. Md Bazlur Rahman
- ii. Meezan Haque Choudhury
- iii. Abul Barkat Md Tufail Ahmed
- iv. Md Ehsanul Alam
- v. Himangshu Jyoti Sharma

4. Project Description:

Main objective of our start up is to preparation of hair Serum completely from organic sources. The serum is derived from traditional methodology that has been frequently found used since early times. The serum will contain highly nutritious elements that will help in restoring hair loss and will promote hair growth as well. It will also restore the damaged hair due to pollution in regular usages. Due to its organic nature the serum will have no or least adverse effects. Moreover, the serum will be manufactured from substances easily found in our North-east region of India which will lead to low cost production and as a result the product will be affordable for any middle earning customer, at the same time the quality of the product will be excellent. The ingredients will not only help us in standardization of a safe and effective product but also enable us in re-establishing highly enriched Indian medicinal history. Main ingredients used – Neem, onion, garlic and aloe vera.

5. Project status at beginning of the Year:

Literature survey, acquisition of knowledge from traditional health practitioners, collection, authentication and extraction of plant materials. An herbarium of the plants would be prepared following standard guidelines and visit to Botanical Survey of India, Eastern Regional Centre, Shillong, for discussion of the flora and their identification would be carried out.

6. Interventions made:

- Viscosity test. P^H . Assays. Elemental analysis etc. Standardization and validation. Data Compilation and Documentation

7. Current status:

- Formulation (hair serum) completed. Confirmatory test and market linkage processes ongoing. Applied for IPR

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 12: Utilization of Bio-resource & Bio Processing of Cow Dung

1. Project Title: Utilization of Bio-resource & Bio Processing of Cow Dung

2. Mentor Name: Dr. Priyanka Shankarishan

3. Student Team Names:

- i. Sidhi Soran Barman
- ii. Sampriti Goswami
- iii. Anjuwara Parbin
- iv. Glarisa Mary Nongsiej
- v. Himanshu Gogoi

4. Project Description:

The Proposal entitled “**Utilization of Bio-resource and Bio-processing of Cow dung for Product Development and generating Women Empowerment through Entrepreneurship**” for Product Prototype development was submitted to NGIEDC- USTM, a project funded by NSTEDB-DST, Govt. of India and implemented by Entrepreneurship Development Institute of India, Ahmadabad. The Team planned to develop a product prototype for:

- Organic Incense Sticks/cones using Cow dung and Temple waste flowers
- Herbal mosquito repellent using Cow dung, Temple waste flowers and some locally available herbs like lemon grass, tulsi, neem leaves etc.

Natural and Organic- our products i.e. Incense Sticks and mosquito repellent are made using cow dung, pious temple flowers, natural & non-toxic ingredients – with NO Chemicals, petrochemicals, charcoal, dyes, alcohol or pesticides. Researchers proved that pyrethroids used in chemical mosquito repellants lead to hyper excitation of nervous system and prolong uses may result in corneal damage, liver damage, asthma and exposure to foods and water is also health hazardous. But our herbal mosquito repellent is not harmful in any ways. Each agarbatti is carefully hand-rolled with love. One of the most important benefits of our product is that it is one of the best natural air purifiers and can also be used for Aromatherapy, Medication, Home Fragrance, Meditation and mosquito repellents.

Our products are hand made from Cow dung, divine flowers offered in temples and herbs and are purely organic and devoid of any chemicals. **The Mission of our team's innovative start is to utilize bioresources i.e. cow dung and divine flowers and provide women entrepreneurship opportunities and is aligned with Swachh Bharat Abhiyan, Skill India, Make in India and Startup India**

5. Project status at beginning of the Year:

- Literature Review and Planning. Making the list of materials/items and equipment required

6. Interventions made:

- Ordering the items, equipment required. Collected raw materials and started with the prototype development

7. Current status:

- Prototype development complete. Standardization ongoing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 13: Vehicle Classification and Speed Estimation System

1. Project Title: Vehicle Classification and Speed Estimation System

2. Mentor Name: Dr. Rashel Sarkar & Abdul Kayum Ali

3. Student Team Names:

- i. Saksham Saxena
- ii. Rashan Ara Ahmed
- iii. Jyotishna Basumatary
- iv. Mahmadul Alam
- v. Krishti Borah

4. Project Description:

In the era of technology, the number of vehicles has increased in the roads of India also. Besides that, the number of accidents and other incidents are also increasing. Currently many techniques have been found RADAR, LIDAR, VASCAR, which are costly and can track the speed of one vehicle at a time. Computer based image processing can be a best technique for the surveillance of traffic to keep an eye on every vehicle through only a computer located area wise traffic control rooms. This system will use a surveillance camera for taking the video and the computer will use the software to keep track on the vehicle and its speed.

5. Project status at beginning of the Year:

- Collection of Material

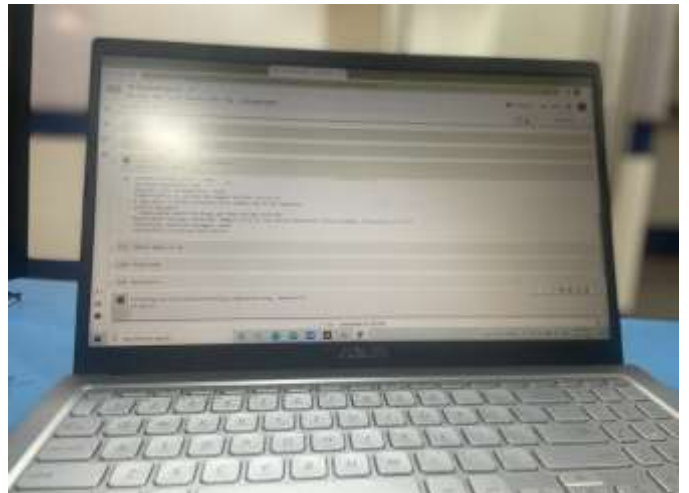
6. Interventions made:

- Algorithm and flow chart

7. Current status:

- Python Application completed. Testing ongoing. Prototype to be ready by June 20

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 14: C/Env –Portable Plastic Recycler

1. Project Title: C/Env –Portable Plastic Recycler

2. Mentor Name: Dr. Sony Kumari

3. Student Team Names:

- i. Satabdi Das
- ii. Arpita Das
- iii. Kahdija Khatun
- iv. Sasanka Gautam

4. Project Description:

Plastic pollution free world is not a choice but a commitment to life. Plastic is everywhere nowadays. However, no one realizes how it is harmful to our planet. We need to become aware of the consequences so that we can stop plastic pollution. It is seen everywhere these days, from supermarkets to common households. Why is that? Why is the use of plastic on rise instead of diminishing? And the only reason is that plastic is cheap. But no one actually realizes that it is toxic and non- degradable.

The **aim** of the current proposal is to make an environment clean and to solve the problems related with plastics, a prototype of **plastic degradation device** will be developed which will be portable and cheap so as to counter the ongoing exposure of toxicity in the environment. **The device will not only convert toxic plastics into non-toxic form but also will reuse the degraded plastic particles into useful products.**

5. Project status at beginning of the Year:

The prototype for the device is designed and the assembly of different parts is done to convert the solid plastic waste into liquid so that it can be molded into different shapes.

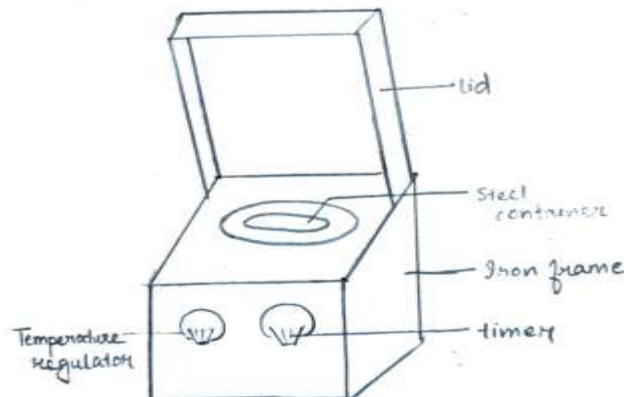
6. Interventions made:

- Different temperatures have been standardized to check the temperature for liquefaction of different types of plastics

7. Current status:

- Trial for testing and conversion into small cubical shape has been successfully performed. The moulding of melted plastics in different shapes by dice is ongoing. Applied for IPR

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 15: Development of Cosmetic & Nutraceutical Formulation from Selected Fruits of NE

1. Project Title: Development of Cosmetic & Nutraceutical Formulation from Selected Fruits of NE

2. Mentor Name: Dr. Sudarshana Borah & Mr. Aditya Bora

3. Student Team Names:

- i. Gouranga Boruah
- ii. Samima Nasrin Rahman
- iii. Dipankar Sarkar
- iv. Mamun Rashid Barbhuyan
- v. Sarfaraj Ahmed
- vi. Wahidul Alom Choudhury
- vii. Azaharul Islam
- viii. Phulan Jyoti Dutta

4. Project Description:

Our prominence on this research would be on recycling, reviving and reformulating. This proposal has been intended with the purpose of designing a cosmetic and a nutraceutical formulation. Natural drugs are having a major remedial role due to its multiple therapeutic outcome and lesser side effects. We have planned to develop an anti-cholesterol emic, anti-obesity nutraceutical formulation for 10 varieties of fruits collected from different zones of Northeast India. Besides, an anti-acne cum beauty product cum cosmeceutical would be developed from the essential oil of these fruits due to their antioxidant, antimicrobial properties.

5. Project status at beginning of the Year:

- Conceptualization, Brainstorming, Material collection, Students Orientation

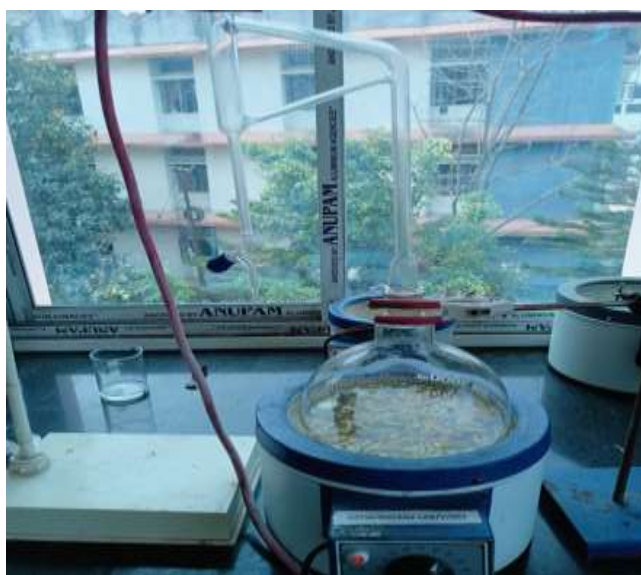
6. Interventions made:

- Evaluation/ Confirmatory test: -Viscosity test, P^H, Assays, Elemental analysis etc

7. Current status:

- Formulation of nutraceutical and cosmeceutical has been completed.
Data Compilation and Documentation-Market Linkage/IPR/Start-up.
Applied for IPR

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 16: Solar powered river water purifier

- 1. Project Title:** Solar powered river water purifier.
- 2. Mentor Name:** Mr. Jahidul Islam & Akshee Shivam
- 3. Student Team Names:**
 - i. Suresh Sharma
 - ii. Arup Jyoti Bharali
 - iii. Ritik Ranjan Bhuya
 - iv. Hifzur Rahman
 - v. Abu Hanifa

4. Project Description:

Only 3% of the water available on earth is fresh water. Two thirds of this fresh water is present in frozen glaciers. On an average over 1.1 billion people over the globe lack proper access to any fresh water reserves and over 2.7 billion people face scarcity of water at least once a month. But fortunately, as we know 71% of earth's surface is water and 97% of that water is sea water.

So here we develop a portable solar powered water purifier to solve the water problem with a smart innovative concept. The solar portable desalinator serves the following key aspects

- Fast Water Desalination
- Instant Purification of desalinated water using RO system
- Added UV sterilization for virus bacteria sterilization
- Compact Design
- Portable Design Easy to Move
- Solar Powered – No External Power Needed
- Easy Maintenance System

The machine makes use of a 3-stage process to convert normal water of Brahmaputra to pure drinkable water. The system first allows user to pour water via a mesh-based inlet where large waste like plastic granules or stones, weed etc. gets separated. This water is then pumped into a large purification chamber having 3 layers of purifiers including sand and gravel for filtering weed, sand and large salt particles. The output of this process is still salty water but without any particles. This water is then passed on to the second filtration where we use reverse osmosis to filter out salt from the water. Here we use 3 filtration membranes to filter out fresh water from salty water and trap the salt particles in membrane filters. This water is now stored in a tank just above the system. The system tap when opened allows water to run from the tank to the tap where we detect the flow when on and turn on the

UV light for stage 3 filtration to deactivate any remaining bacteria and virus in the water. This water is now in drinkable form using 3 stage processes without the use of any chlorine. Now the pumps used in the system are powered by a large battery. This battery is in turn charged by 2 × 50Watt solar panels due to large availability of solar power.

5. Project status at beginning of the Year:

- Brainstorming the ideas. Finalizing the idea. Process of works to be done. Collecting information about the components

6. Interventions made:

- Purchased the basic components required. Working on frame of the project

7. Current status:

- Assembly of the components is completed. Testing and fabrication completed. Standardization ongoing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 17: Advanced Agriculture Drone for Pest Control in Tea Garden

1. Project Title: Advanced Agriculture Drone for Pest Control in Tea Garden

2. Mentor Name: Dr. Nitu Borgohain, Dr. Hari P Jaishi & Dr. Mainak Basu

3. Student Team Names:

- i. John L. Khawbung
- ii. Abhigyanam Bashistha
- iii. Mostakfijur Rahman
- iv. Raju Aditya
- v. Kayser Ahmed

4. Project Description:

We are in process to build an advanced agricultural quadcopter, with a sensor based machine learning algorithm, to detect pest and diseases in the tea gardens. The algorithm has been developed and the prototype is in testing phase. The agricultural drone business requires a high level of commitment and creativity. As a result of advancement in technology, the agricultural drone business has stood a very profitable one.

5. Project status at beginning of the Year:

We have started by collecting a collection of infected tea leaf samples (photographs by a small dummy quadcopter, bought from market), which will be saved in a folder called illness dataset. Our developed programme is being tested initially on three diseases, namely, "BLACKSPOT", "ANTHRANOSE", and "GIBBERELLOSIS".

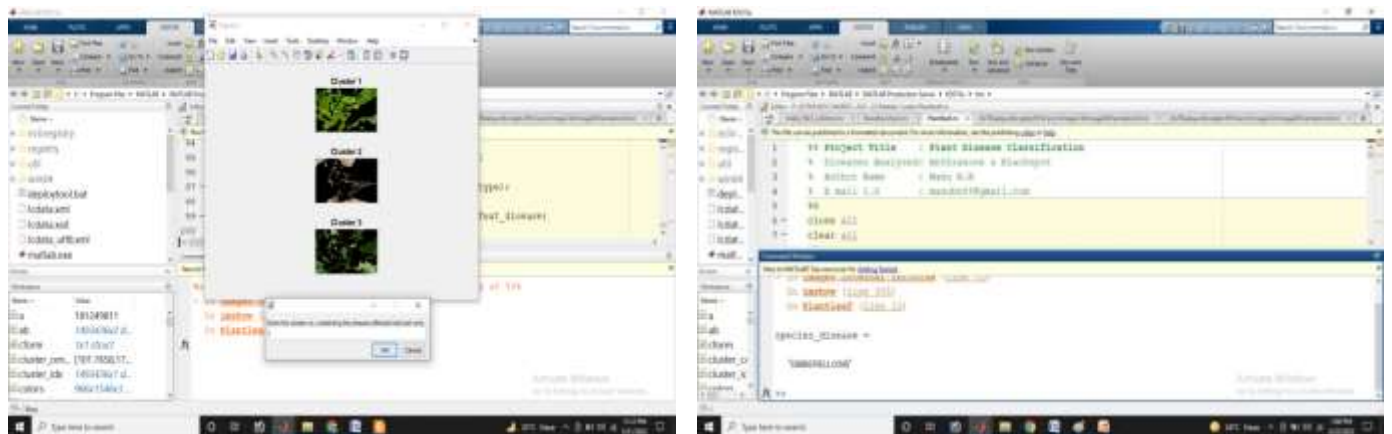
6. Interventions made:

- The method is comprising of few steps such as *Image Acquisition, Image Segmentation, Feature Extraction and Classification Using SVM*

7. Current status:

- The numerical algorithm for disease detection using digital image processing through MATLAB/Python code is developed to identify various diseases in Tea Leafs. Test fly are ongoing. Standardization and testing ongoing. IPR to be applied by June 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 18: Development of Low GI Bread

1. Project Title: Development of Low GI Bread

2. Mentor Name: Dr. Md Zaki Shamim

3. Student Team Names:

- i. Sima Basumatary
- ii. Hiramani Das
- iii. Ashrailla Marak
- iv. Bhargobi Saikia
- v. Kritakshee Lahkar
- vi. Mokibur Islam

4. Project Description:

In today's life individuals leading a sedentary lifestyle are more and more prone to lifestyle chronic diseases and disorders. Most of the individuals with diabetes have restricted diet schedules that keep them away from many dishes and products that they want to consume but cannot consume due to high their glycemic index, high energy and high fat. These patients look for food products that can satisfy their taste and meet their nutritional requirements. The development of low glycemic index food products appropriate for market demand will be contributory for control and prevention of lifestyle chronic diseases and disorders. Due to easy availability, high nutritive value and low glycemic index of pulses (chick peas) and cereals (barley) which have therapeutic uses and with the incorporation of medicinal herbs can have therapeutic applications in the diet of people suffering from lifestyle diseases and disorders. Keeping above points in mind the present study is planned to prepare low glycemic index food products by using local available ingredients.

5. Project status at beginning of the Year:

- Project idea. Online Collection of information related to the project (literature)

6. Interventions made:

- Equipments purchased & Collection of raw materials

7. Current status:

- Preparation of various treatment combinations. Sensory evaluation of all the trials & Chemical Analysis at laboratory level. Applied for IPR

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 19: Isolation of PGPR and Production of Multi-functional Bio-Fertiliser

1. Project Title: Isolation of PGPR and Production of Multi-functional Bio-Fertiliser

2. Mentor Name: Dr. Manjit Kumar Ray

3. Student Team Names:

- i. Kelleen Oniel Warjri
- ii. Ananya Konwar
- iii. Abu Naser Mostaque Ahmed
- iv. Kunjan Bhorali
- v. Jude Rahang

4. Project Description:

Sustainable agriculture is vitally important in today's world because it offers the potential to meet our future agricultural needs, something that conventional agriculture will not be able to do. Recognizing the adverse effects of prolonged use of chemical fertilizers an eco-friendly approach to green organic agriculture has encouraged the use of bio-fertilizers. Plant-growth-promoting rhizobacteria (PGPR) are naturally occurring soil microorganisms that colonize roots and rhizosphere and can stimulate root and shoot growth and enrich the soil fertility and enhance the agricultural yield. Worldwide, considerable progress has been achieved in the area of PGPR bio- fertilizer technology. PGPR are excellent model systems which can provide the biotechnologist with novel genetic constituents and bioactive chemicals having diverse uses in agriculture and environmental sustainability. The proposed work aims to isolate the PGPR from different cultivation sites of Meghalaya and their plant growth promoting traits will be examined with standard protocols.

5. Project status at beginning of the Year:

- Isolation of Plant growth promoting rhizobacteria from soil sample and maintenance of pure culture

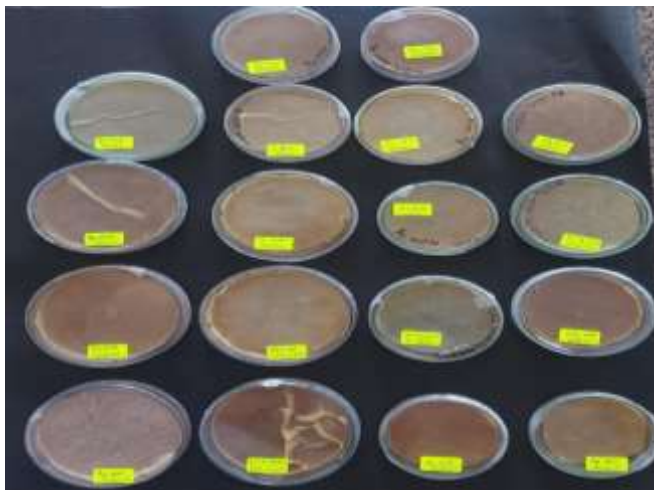
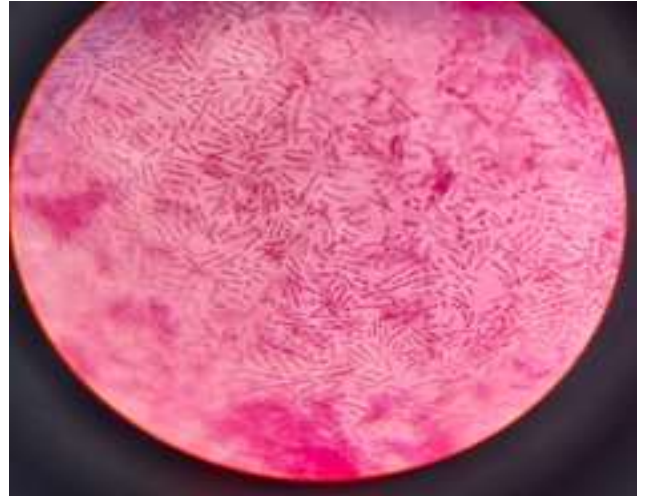
6. Interventions made:

- Biochemical Testing and Testing of plant growth promoting parameters. Seed inoculation and pot culture

7. Current status:

- Analysis of Germination and growth parameters. Product formulation is under process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 20: Innovative Solar Lighting System for Sunlight Deprived Buildings

1. Project Title: Innovative Solar Lighting System for Sunlight Deprived Buildings

2. Mentor Name: Dr. Mayuri Deveen, Dr. Ritun Chakraborty & Dr. Sanchita Roy

3. Student Team Names:

- i. Bhaskarjit Gayan
- ii. Raktim Nath
- iii. Rupam Paul
- iv. Tohidur Alom
- v. Ali Abdullah Saleh
- vi. Matiyar Rahman
- vii. Doranny N Sangma
- viii. Sadique Ahmed Choudhury
- ix. Kh Rohit Kumar Singh
- x. Bikram Biswas

4. Project Description:

This proposal aims to investigate a new passive daylighting solution to bring natural light into the sunlight deprived areas and corridors of deep plan buildings, like educational institutes buildings. The proposed system consists of a mirrored light pipe coupled to a simple day light collector known as laser cut panels, prismatic pipes, fiber optics or lens systems and other components like sun tracking and concentration system. The main objective of this proposal is to meet the requirement for green architecture through limited dependency on electricity which will reduce the electricity bill and most importantly to create healthier work environment. Thus, this idea may be a great solution for the enhancement of natural illumination of deep plan buildings.

5. Project status at beginning of the Year:

- Faculty mentors conducted discussions with student members about the planning and execution of the project

6. Interventions made:

- Procurement of raw materials have been started to start the basics of the work

7. Current status:

- Mirror/ reflector array developed. Orientation and standardization ongoing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 21: Medicinal Herb Based Immunity Booster – Documentation & Standardization of Traditional Practices

1. Project Title: Medicinal Herb Based Immunity Booster – Documentation & Standardization of Traditional Practices

2. Mentor Name: Dr. Nibedita Das

3. Student Team Names:

- i. Ms. Dharitree Sonowal
- ii. Mr. Bhairab Hazarika
- iii. Aiman Nawaz
- iv. Kanti Sinha
- v. Simon Debbarma

4. Project Description:

The product, “Tita gura” (powdered mixture of different medicinal herbs), a medicinal herb-based immune booster having anti-inflammatory, anti-carcinogenic, anti-diarrheal, antioxidant, antimicrobial, etc. properties. Herbal plants increase the intestinal beneficial bacteria which are helpful and make up the immune system. Good nutrition is crucial for health, particularly in times when the immune system might need to fight back. “Tita gura” is based on plants and will be prepared with about 20 medicinal herbs from the various parts of the plant like root, leaf, flower, fruit extrude or plant as a whole. It is a Herbal health supplement showing immunity boosting as well as antioxidant properties.

5. Project status at beginning of the Year:

- Identification of herbs and collection of the same

6. Interventions made:

- Testing and formulating the mixture based on traditional wisdom coupled with scientific analysis. Formulation for the mixture in ready mix form. Standardization and Linkage

7. Current status:

- Prototype development completed. Standardization ongoing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project 22: MalDet –Malaria Dectector

1. Project Title: MalDet –Malaria Dectector

2. Mentor Name:

3. Student Team Names:

- i. Ms. Rajshree Das
- ii. Mr. Dhrubajyoti Basumatary
- iii. Mr. Syed Ashik Ahmed
- iv. Mr. Samim Saikia
- v. Ms. Rimpi Gogoi
- vi. Ms. Tamanna Chakma

4. Project Description:

Globally, malaria is one of the huge infectious diseases which is caused by infections from *Plasmodium* spp. and is transmitted by *Anopheles* mosquitoes. To curb its epidemic and its fatality rate, severe steps were required. There is a need to develop new tools using novel technologies to accelerate the efforts towards malaria elimination. In this project, to address this global issue, we were trying to develop a handy prototype as portable malaria detecting device (*MalDet*) which will turn out to be more convenient in detecting malaria. Modern information technology will play a key role in many attempts at fighting the disease. Recently, a highly sensitive and rapid malaria diagnosis system was developed using fluorescent blue ray optical devices. The system comprises of a scan disc and fluorescence image reader. The study with this system, which generally requires huge electric power and several complicated manual steps, was performed in a well – equipped laboratory. But the laboratory ambiances are usually different from the conditions in the malaria – endemic regions having limited infrastructure thereby posing the challenges to come up with more feasible products.

5. Project status at beginning of the Year:

- Material Collection (Electronic component)

6. Interventions made:

- Circuit designing. Customization of Field Programmable Gate Array (FPGA) Board.

7. Current status:

- Prototype completed. Testing & Calibration ongoing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: College of Technology and Engineering

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	College of Technology and Engineering		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Prof. (Dr.) P.K. Singh		
Name of NewGen IEDC Coordinator	1. Dr. Navneet Agarwal 2. Dr. Trilok Gupta		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	Mobile: 09828276279 Email: navneetctae@gmail.com Mobile: 9414406223 Email: guptatriloc@rediffmail.com		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/08 Date: 15/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Helping Hands Application

- Implemented our idea in the College of technology and Engineering, Udaipur

2. Event Planner

- Implemented our idea in the College of technology and Engineering, Udaipur

[B] To identify, develop & commercialize students' innovative ideas

1. E-Stone mate Paper Manufacturing Using Marble Slurry

- Shortlisted in IB Hub Started school, Hyderabad.
- Shortlisted at IIT Mandi Catalyst Pre-Incubation Program.
- Shortlisted at IIT Gandhinagar Pre-Incubation Program

2. Bricks Made up of Ceramic and Rubber Tyre Crumb Waste

- Shortlisted in IB Hub Started school

[C] To enhance Industry-Academia interaction

1. Linkages established with Institutions in the regions:

- The Creative Centre for Rural Development, New Delhi
- Udaipur Chamber of Commerce and Industries (UCCI)
- Small Scale Industries Association, Udaipur
- MSME, Udaipur
- Indian Council of Medical Research, Udaipur
- National Innovation Foundation, Ahmadabad
- Various Technical colleges/ Universities (25 Nos.) of Rajasthan
- Start-up Oasis Jaipur
- Rajasthan State Innovation Council, Jaipur
- Regular interaction with entrepreneurs
- Indian Institute of Management, Udaipur
- Indian Society of Agricultural Engineers, India
- Institution of Engineers, India
- Create opportunity for student to attend local and national workshops, trainings, seminars and other technical events. These institutions represent large set of small to medium industry. Interaction with them leads to identification of input resources needed by these, which can be converted into start-up idea or a regular enterprise by student entrepreneur

2. Talks of entrepreneurs: Success stories

- Strategies for tackling day to day problems;
- Understanding organization processes;
- Sources of finance and other resources

3. Planned visits to local industries

- Students get opportunity to interact with people in these industries which help them in diagnosis of problem areas and specific problems for finding solutions which can be further converted into innovative solutions

4. Expert Lectures, Workshops, & Industrial Visit under MoU with Secure Meters Pvt. Ltd. Udaipur

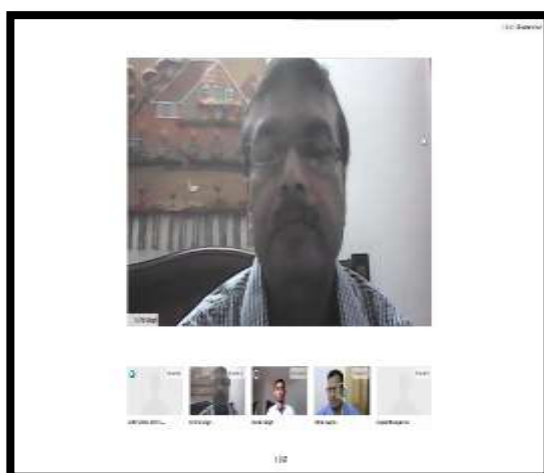
- Skill Improvement with innovative approach, and exposure to latest industrial problems

5. Expert Lectures, Workshops, & Industrial Visit under MoU with Hindustan Zinc Pvt Ltd Udaipur

- Improvement in Critical thinking and Employability enhancement

6. Technical Quits, Design Contest, & Workshops, under MoU with Texas Instruments (TI).

- Improvement in Design skills through hands on design practice



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CONTACT US
T: +91 83500 16503
E: thegenestella@genestella.com

NewGen IED

OPENING CEREMONY

SCHEDULE

10:00 AM : Welcome Address :
10:30AM : VC Sir's Address to Students
10:20AM : Dean Sir's Address to Students
10:40AM : Wrap Up



DR. ANIMESH KUMAR MISHRA
VICE-CHANCELLOR
KJ SOMAIYA INSTITUTE
OF MANAGEMENT &
INFORMATION TECHNOLOGY



DR. ANIMESH KUMAR MISHRA
DEAN
KJ SOMAIYA INSTITUTE
OF MANAGEMENT &
INFORMATION TECHNOLOGY

Save The Date 19/07/2021

Sponsored By
INFIGON Superpro JCloudWork

Business Conclave

11:00 AM ONWARDS

The Business Conclave provides a platform for thought-provoking discussions on pertinent new age topics. The conclave gives a golden opportunity to inquisitive minds to interact with and get inspired by these leaders.

We invite you to this brainstorming event, as leaders from varied fields provide their insights on 'LEADING INDIA IN 21st CENTURY'



MR. NARAYAN LAL GURJAR
CEO, IF Polymers Pvt. Ltd.



FCS SURENDER SINGH
STARTUP EXPERT



MR. PYUBEN KUMAR SINGH
ED, Jemmus Group,
& CEO, AgriGen Tech

Save The Date 19/07/2021

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Save The Date 19/07/2021

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BUSINESS CONCLAVE

GENESTELLA

**LEADING INDIA IN
21ST CENTURY**



Sponsor
FCS SURENDER SINGH
Startup Expert

A startup expert from Delhi India, Founder and CEO of 50 Corporate Law Firms (LLP, Pvt. & Master's Degree in Law, M.Com, B.A. Member of ICAI & ICS. He has numerous skills including Legal Compliance, Public Speaking, Corporate Law, Legal Assistance, etc.

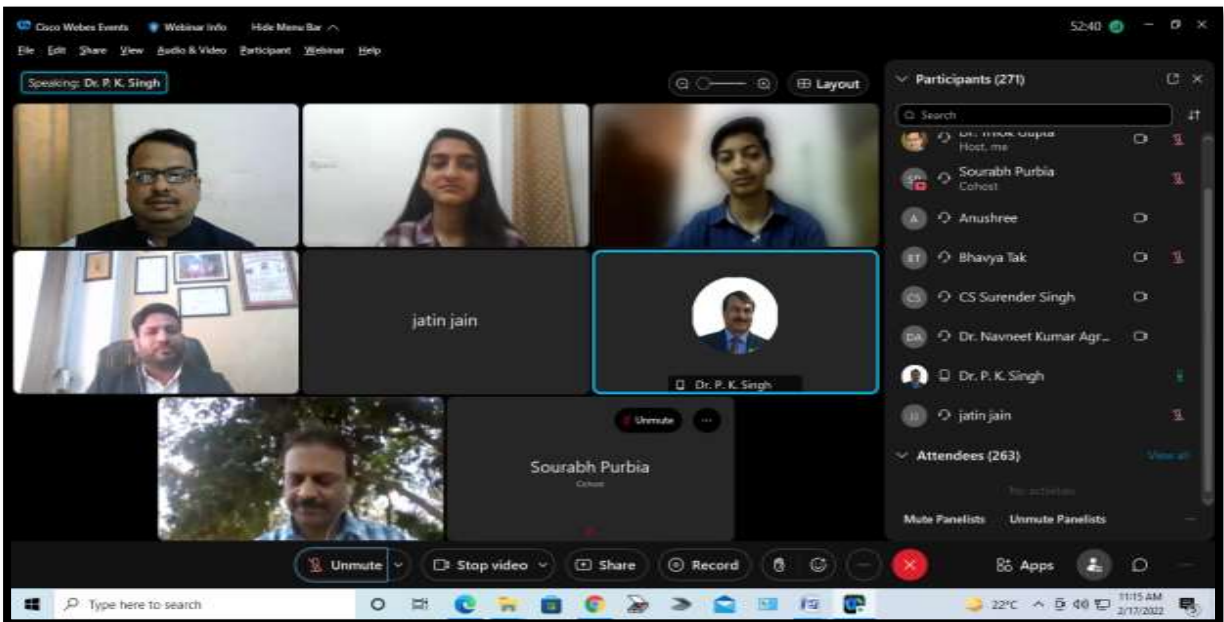
DATE
19th July, 2021

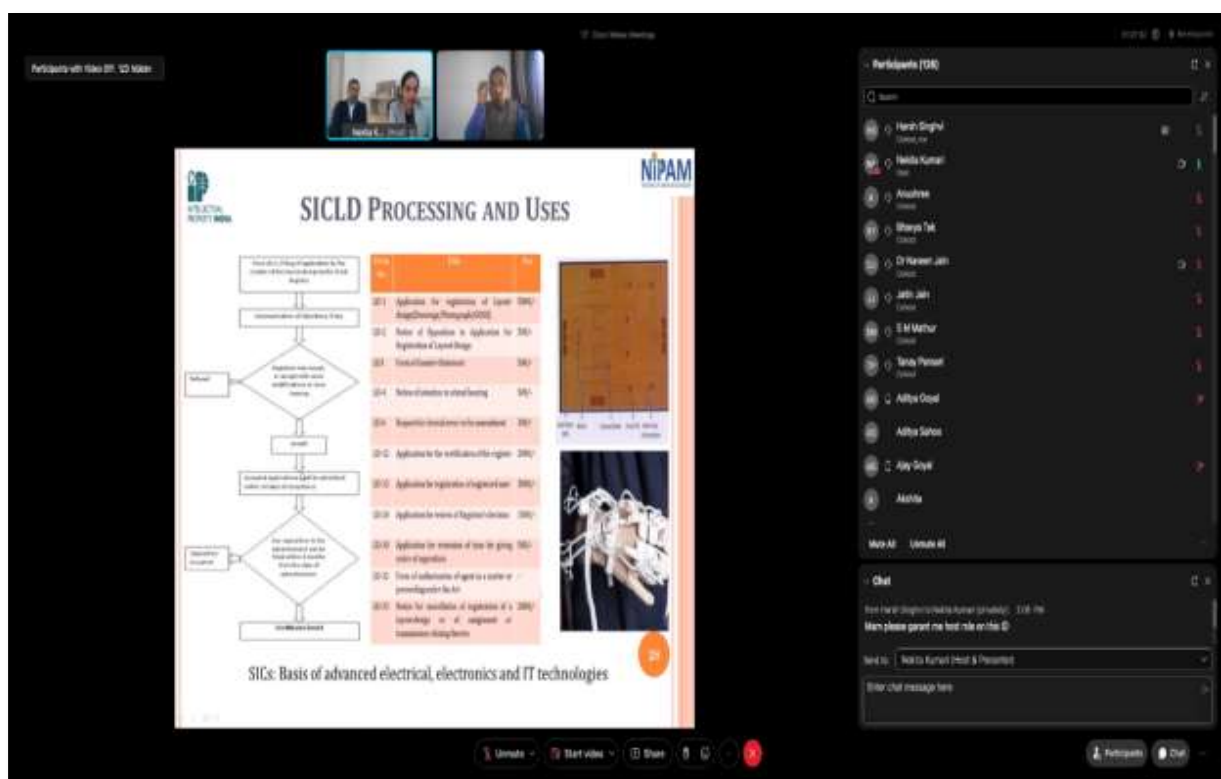
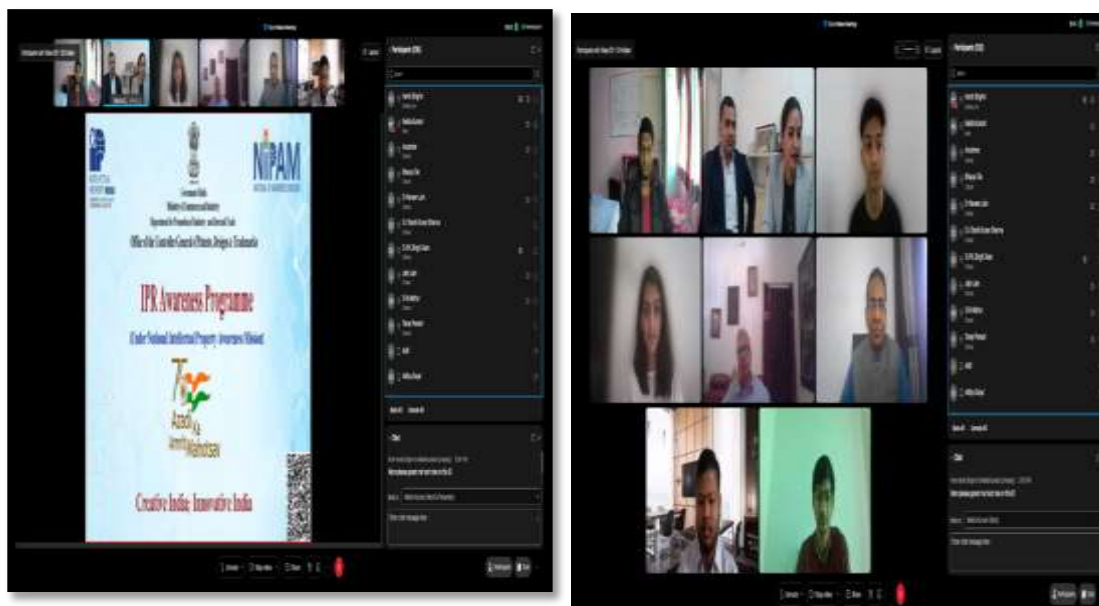
TIME
11 : 00 AM

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GENESIS

E-CERTIFICATE WILL BE PROVIDED TO ALL THE STUDENTS






2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Most of the proposed action plan activities were organized / conducted during the year without deviations

3. Other important highlights (new initiatives), if any:

Genestella:- Organized a university level techno-cultural event, GENESTELLA, which included business conclave, workshops as well as some poetry and RJ event. A one-day event to make everyone learn as well as enjoy amidst the boring life, the pandemic had created. Also got appreciated by honorable Vice Chancellor, MPUAT for conducting the event





GENESTELLA

Business Conclave


11:00 AM ONWARDS

The Business Conclave provides a platform for thought-provoking discussions on pertinent new age topics. The conclave gives a golden opportunity to inquisitive minds to interact with and get inspired by these leaders.


We invite you to this brainstorming event, as leaders from varied fields provide their insights on 'LEADING INDIA IN 21st CENTURY'



MR. NARAYAN LAL GURJAR
CEO, EF Polymer Pvt. Ltd.




FCS SURENDER SINGH
STARTUP EXPERT




MR. PIYUSH KUMAR SINGH
ED, Jennerus Biorp & CEO, Agriyaan Tech

Save The Date 19/07/2021

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GENESTELLA

COLLEGE OF TECHNOLOGY AND ENGINEERING

Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan

A Techno-Cultural One Day Fest

GENESTELLA

Innovation is our Tradition

Date
19
JULY
2021

Time
10
AM

Patron & Chief Guest



DR. NARENORA SINGH RATHORE
Honorable Vice-Chancellor
MPUAT, Udaipur

Convener



DR. P.K. SINGH
Dean
CTAE, Udaipur

Schedule

OPENING CEREMONY

Inviting Address and
Prayers of Devotion

DR. NARENORA SINGH RATHORE
Honorable Vice-Chancellor
MPUAT, Udaipur

Timing
09:30 AM - 10:30 AM

BUSINESS CONCLAVE

Leading India in 21st Century

MR. NARAYAN LAL GURJAR
CEO, EF Polymer Pvt. Ltd.

MR. SURENDER SINGH
STARTUP EXPERT

Timing
11:00 AM - 12:00 PM

TECHNICAL WORKSHOPS

Leading Workshop by Dr. P.K. Singh

MR. PIYUSH KUMAR SINGH
ED, Jennerus Biorp & CEO, Agriyaan Tech

Timing
02:30 PM - 04:30 PM

FUN AND ENTERTAINMENT

Music & Art Show

MR. SURENDER SINGH
STARTUP EXPERT

Timing
04:30 PM - 06:00 PM

Organising Secretary

Dr. Jai Kumar Maheshchandani
Dean, CTAE, Udaipur

Dr. Trilok Gupta
Associate Dean, Engineering Dept.

Student Co-ordinators

Jatin Jain
B.Tech. Electrical Engineering

Sourabh Parthiv
B.Tech. Computer Science Engineering

Siddharth Mittal
B.Tech. Mechanical Engineering

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Superpro AI **INFIBON**



Hosted By: GENESTELLA

Contact Us: genestella@mpuat.ac.in

Genesis 2.0: Genesis 2.0 Igniting the Innovation was an event organized by students for spreading the idea of entrepreneurship, startup and innovation in the minds of learners. This event was held to bring light on the scenario of business startups which failed and attained success. This event had called renowned speakers to inspire student to move forward in their career and never look back. Students started putting their foot forward for starting their startups.



4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Development of Solar Based In-Situ Milk Cooling System for Small Farmers

I. Project Title : Development of Solar Based In-Situ Milk Cooling System for Small Farmers

II. Mentors Name : Dr. S. K. Jain, Dr. Chitranjan & Dr. N. L. Panwar

III. Student team details

i. Ashok Kumar

IV. Brief description of the student start-up

Literature survey/patent search-

From the literature review, it has been found that for storing the milk, proper heating is essential and electric heating systems were used for heating. Researchers also proved that heating, as well as cooling systems of milk pasteurization system can be driven by fossil fuels. With industrialization and increasing demand for cooling, fossil fuels were dwindling at a faster rate and hence the cost is increasing day by day. They have also mentioned side effects on human health and the environment. Researchers have developed and analyzed different numerical and experimental models of adsorption refrigeration systems. The literature also shows that there is a time gap between milking and transportation, as a result spoilage is more. Hence, cooling has to be done immediately after milking.

The solar milk cooling system, an innovative technology to cool the milk In-situ, is entirely based on solar energy. The system as shown in Fig.1 will be composed of cooling chamber of 1.5mm thick AISI 304 SS plate with Poly urethane insulation, photovoltaic panels, storage batteries, an adaptive control unit, a charge controller and a refrigeration unit with an integrated fan. Cooling will be done by vapour absorption coupled with a solar panel that can harness solar radiation with help of an adaptive control unit and transfer to storage battery connected to refrigeration unit. A set of battery will be connected to make power available for continuous cooling of milk for longer period. Raw milk having approximately temperature of about 30°C after milking will be transferred into the chiller to cool down temperature to 4°C within short period. A digital scale will also be installed at the wall of chiller to record temperature, voltage, energy.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

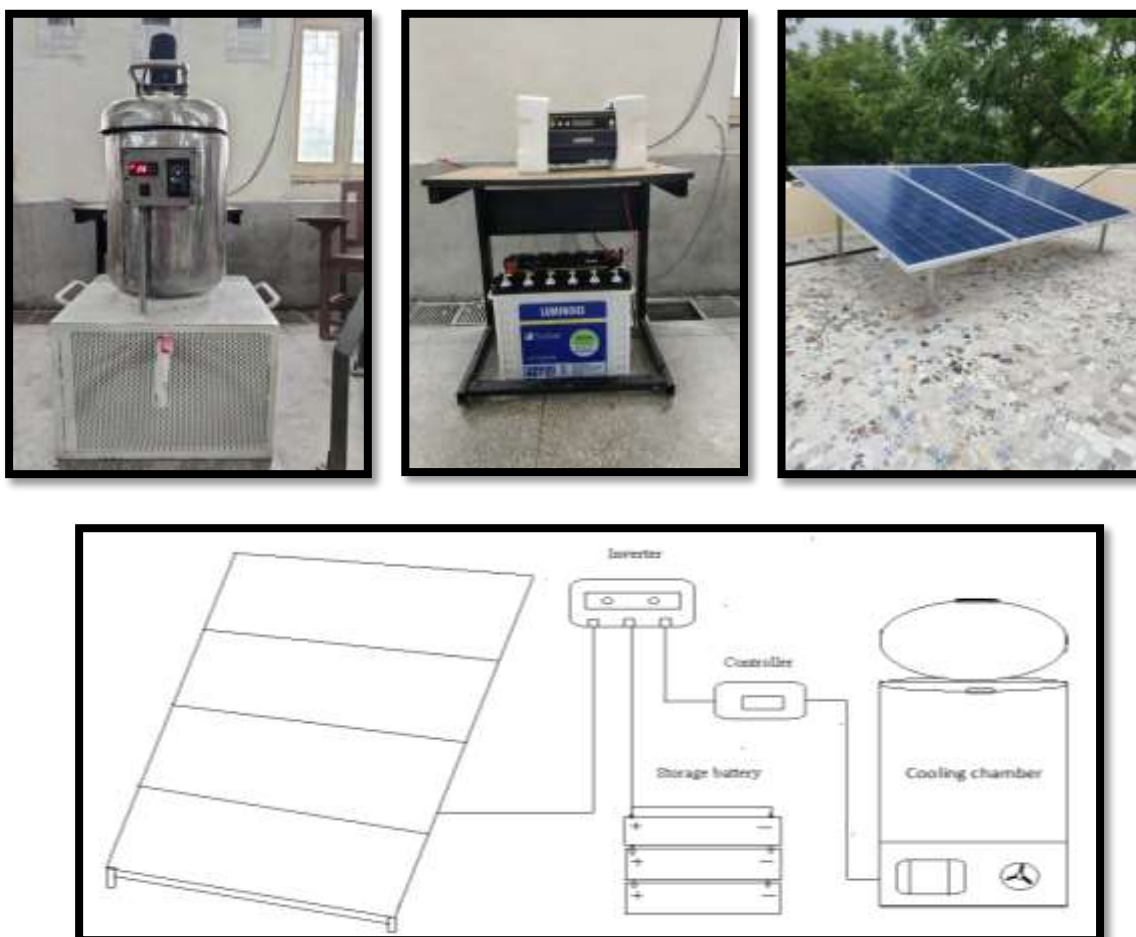


Fig.1 Proposed design plan of milk cooling system powered with solar panels

VI. Contribution of NewGen IEDC in the same

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.

VII. Future plan

- To upgrade, innovate the product as per the feedback of the customers and also to make it more cost effective

VIII. Important highlights

- There are several small milk producers co-operative societies located in remote place where availability of electric power supply is uncertain. This technology will reduce the spoilage of milk due to lack of adequate storage facility and provide them an opportunity to farmer's community and co-operative society to grow their businesses, increase their income and thus improve their standards of living

Best Project-2: Design and Development of a Low-Cost Biochar Kiln for Production of Biochar from Agricultural Crop Residues to Enhance Farm Productivity

I. Project Title : Design and Development of a Low-Cost Biochar Kiln for Production of Biochar from Agricultural Crop Residues To Enhance Farm Productivity

II. Mentors Name : Dr. N. L. Panwar

III. Student team details

i. Maga Ram Patel

IV. Brief description of the student start-up

The use of biomass in agricultural activities had continued to get global attention over this few decades. Biochar which produced industrially had high potential to become one of the raw materials for the biobased economy in future world. As construction, waste water treatment, textile and other industries will be competing for the biochar, biochar which produced commercially will sell at higher price for farmers. For small farmer, since their amount of product and profit is relatively low, they will have some difficulties in purchasing the costly biochar which produced industrially. However, the small farmers have other alternative ways to produce their own biochar by using some natural sources of raw material available at their farms such as waste-wood, agricultural by-product and crop residue. The resource loop can be completed by farmers on their own farms and biochar help in enrichment for soil due to the larger surface area and highly porous structure. Production of charcoal and biochar in larger quantities will become the causes for the deforestation. Normally, the charcoal produced used for heating and cooking for a family. For industrial purposes, the charcoal was used to heat the ceramics, to melt the ore or produce lime. However, when finer charcoal fraction combine with the organic wastes can be used to improve the fertility of the soil and increase the production of crop in agriculture.

This project seeks to present the design of low-cost biochar kiln which is simple for small farmer to fabricate with low cost. The use of waste from agricultural was used by farms, the small farmers to produce a sufficient amount of biochar by using biochar kilns. The unit of biochar kiln is portable and it is easy for the small farmer to move the biochar kiln to desired place. The general concept of pyrolysis technology was applied in the design of

biochar kiln. The optimum size of the biochar kiln is designed which can produce sufficient amount of biochar for small farmers. Normally, after the crops have been harvested, most of the waste is thrown away without consideration for other uses. The waste can be processed into biochar through pyrolysis for soil enrichment by using biochar kiln. Waste management plays a significant role in sustaining the global cleanliness. Normally, they dispose the agricultural residues by using open burning method which will lead to air pollution for our environment and further lead to climate change. Offering the small farmers an option to utilize the waste by providing a biochar kiln will help them to avoid the waste generation and air pollution. Through this project, the agricultural residue will be utilized for production of biochar to improve the quality of the soil and also reduce the quantity of fertilizer used by the small farmers.

Environment Aspect: The use of traditional method to produce biochar is increasing pollution in the environment by releasing poisonous gases (syngas's) into the environment. They have a negative impact on the environment as they are part of the greenhouse gases that trap heat and lead to depletion of the ozone layer. By using this project (low cost biochar kiln) reducing the syngas emission in environment, means less greenhouse gas production and eco-friendly this system. Hence, the biochar increases the availability of nitrogen in the soil and reduces the need of chemical fertilizer. Rapid industrialization and unsustainable development have increased greenhouse gases (GHG) which has caused changes in global climate and global warming. Production of bio-char has been proven to be a method to sequester carbon dioxide from the atmosphere. Therefore, bio-char undoubtedly is very important in creating an environmentally friendly method to mitigate the problem of greenhouse gases and control the amount of methane and nitrogen dioxide that is released from the soil.

Commercial Aspect: The initial investment of this system is low and the running cost is also very low because of the whole system being operated by biomass. Some organizations developed the biochar kiln, but none reused the syngas for heating purpose, and no commercial system is available in India. In the agriculture field, for the production of biochar and waste management, this technology is very useful.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

NewGen provided motivation, resource and financial support for the converting Idea to product for commercialization

VII. Future plan

To upgrade, innovate the product as per the feedback of the customers and also to make it more cost effective

VIII. Important highlights

The developed technology will be a socially inclusive, ecosystem-based approach to address the more efficient use of local resources such as agriculture residue to improve food security and rural energy while reducing dependence on external inputs like chemical fertilizer for such farmers. Also, the positive impacts on rural poverty and health because of a combined biomass-energy production system, a reduction in greenhouse gas emissions due to sustainable agriculture and waste management systems, and reliance on imported chemical fertilizers. The socio-economic level of the farmers could be enhanced through increased productivity through the optimal use of available means and resources without depletion of the environment. The biochar produced can save money by reducing fertilizer requirements while also increasing the farm's produce and value with organic tags. The system makes it eco-friendly and reduces the human hazard from regular use of chemical fertilizer. The innovation is affordable, durable, reliable, convenient, safe to use and meets the sociocultural expectations and preferences of the intended users.

Best Project-3: SWASTHAM (Smart Waste Treatment Hub and Management)

I. **Project Title** : SWASTHAM
(Smart Waste Treatment Hub and Management)

II. **Mentors Name** : Dr. Navneet Agrawal

III. **Student team details**

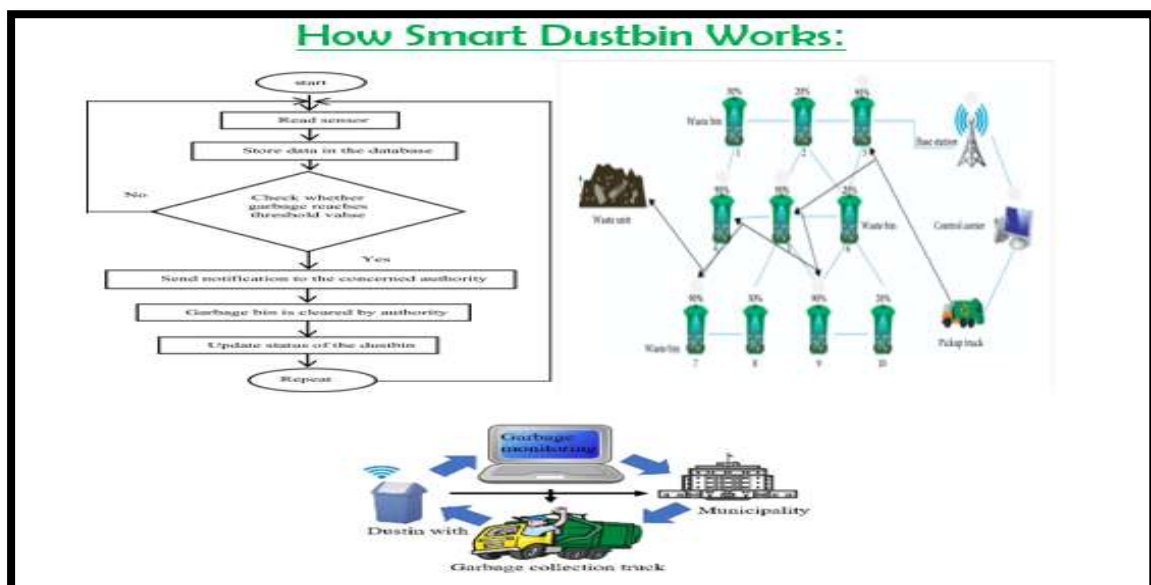
i. Priyanka Pandey

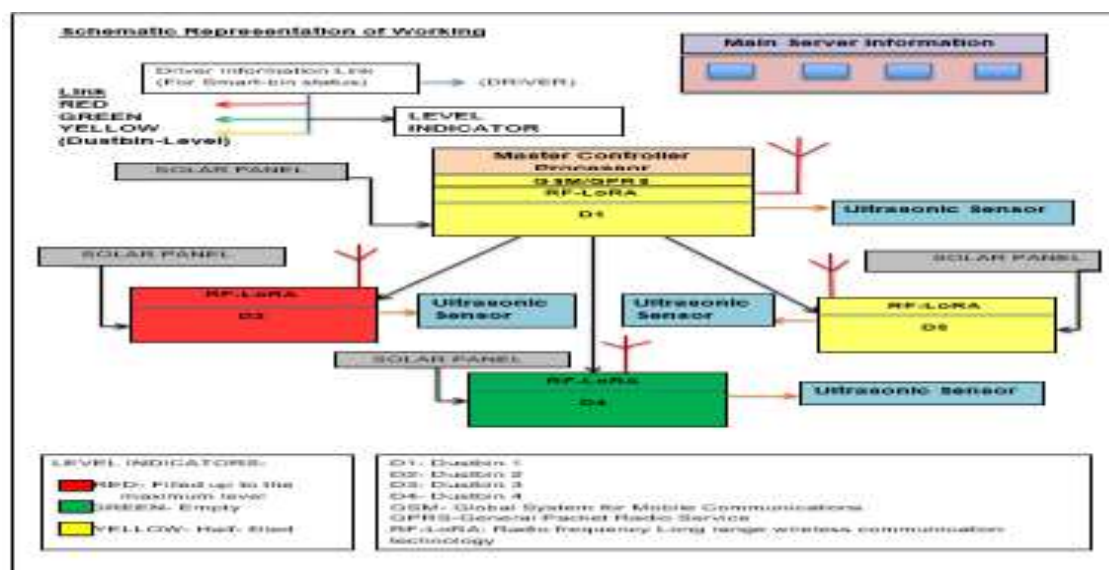
IV. **Brief description about the student Project**

To Develop IOT based Smart Dustbin monitoring for Smart City, We will build a system which will notify the corporations to empty the bins on time. This system will help in cleaning the city in better way. The work proposed here illustrates the smart waste management architecture that ensures the cleaning operators for detecting cleanliness issues in real time. Moreover, minimizing the end-to-end delay is also taken into consideration when a message is required to be sent for garbage collectors.

- Literature survey/patent search- Yes
- Development work done so far, including involvement of agencies, consultation with expert- Yes
- Patenting of the innovation- No
- Tie-up for design, fabrication etc. with any external agencies- Not yet
- Techno-economic/ market feasibility studies /reports- Yes

V. **Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.**





VI. Contribution of NewGen IEDC in the same

- NewGen provided motivation, resource and financial support for the converting Idea to product for commercialization

VII. Future plan

- To upgrade, innovate the product as per the feedback of the customers and also to make it more cost effective

VIII. Important Highlights

The end product will be SWASTHAM (Smart Waste Treatment Hub and Waste Management), making use of IOT for centralized and automated system to communicate directly to the municipal corporations (authorized organization for the particular waste disposal and treatment), making this system user-friendly, reduce dependency on manual Labour and augment the performance and features of the system. The product will be eco-friendly and cost-effective in long run as it uses solar panels for charging of the batteries and working of the system.

While waste management services have gained significant importance in city planning, current operating standards have proven to be highly resource-intensive and inefficient. This is mainly due to use of outdated and manual waste collection techniques, as well as logistical processes that lack effective data-driven waste management and collection solutions. Therefore, we are focusing on developing and implementing smart, IoT-based techniques and solutions to address these pressing challenges.

- Smart city initiative (Clean and Green City)
- Effective Reduction and control of health hazards
- Environment friendly for a better ecosystem (Sustainable Development)
- Centralized system for Waste management

Annexure-A

Details of Student Projects

Project-01: Piclet

1. **Project Title** : Piclet

2. **Mentor Name** : Mrs. Kalpana Jain

3. **Student Team Names:**

I. Sourabh Purbia

4. **Project Description:**

We are creating our web Application using React JS / React Native which is a Open-Source cross platform technology used to create a client as well as server-side Web Application which can also be operated on Mobile Android Devices as well as IOS Devices. For Backend, we will be Using Node.JS Technology for server-side Scripting and for Database, we will be using S3 Technology by Amazon Web Services to Store all the Data Uploaded by user on our Servers and to Retract them whenever Requested by a User. Other than this, we will Configuring Network Security to safeguard our data as well as a photographer's Data on our Portal

5. **Project status at beginning of the Year:**

- Proof of concept was prepared

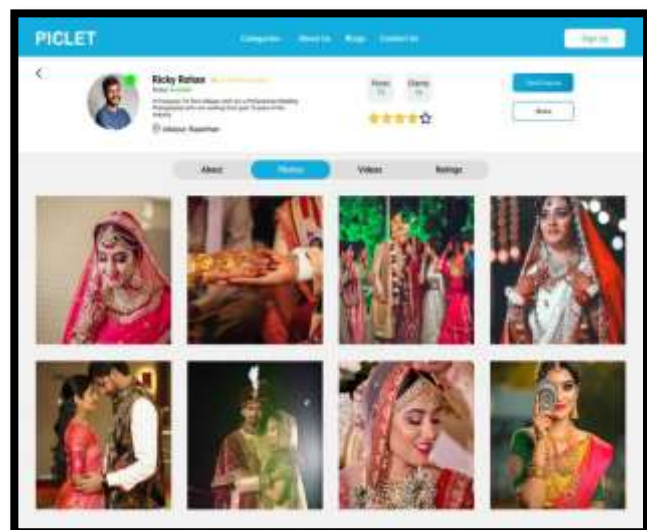
6. **Interventions made:**

- Hiring fabricator and procurement of raw materials.
- Deployed Initials phase on web.
- Ongoing user testing

7. **Current status:**

- Prototype Completed

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-02: The Nature's Bridge

1. Project Title : The Nature's Bridge

2. Mentor Name : Dr. Chitranjan Agarwal & Dr. Trilok Gupta

3. Student Team Names:

I. Ayush Raj Tiwari

4. Project Description:

➤ **Description of working of the innovation:**

1. Pre – Acquisition:

- **Through online:** We will acquire customers through digital marketing, if the customer is interested in our services, then they will contact us for free consultation.
- **Through Offline:** We will personally visit to MNC's, Malls and Houses to explain them about our service and take order.

2. During Acquisition:

- When the customer contacts us, our experts will get connected and provide a free consultation. (*Our experts will understand the demand of the customer and provide the best possible service.)
- As soon as the order is placed, we will immediately contact the nursery and pot suppliers for the supply of desired products.
- Our plant specialists will install the plants at the client site and will also provide a brief overview on how to take care of their plants. (*A brochure inscribed with essential information regarding "How to take care of plants" will also be provided.)

3. Post-acquisition:

- After the installation of plants, we will provide a free one-month plant care service which includes
 - a. Periodic visits to the site.
 - b. Properly water, prune, feed and clean the plants.
 - c. Replacement of the plant if it is unable to survive for the first month.
- If the customer wants to continue our plant care services, they can select from our paid service packages.

5. Project status at beginning of the Year:

- Proof of concept was prepared

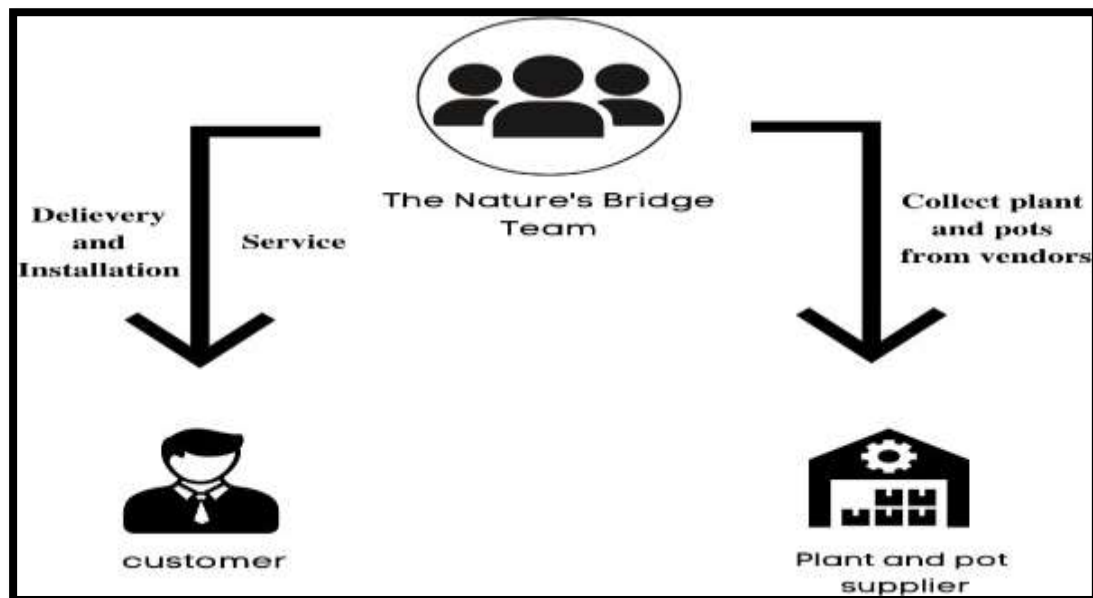
6. Interventions made:

- Mentored for product development, design and selection of equipment.

7. Current status:

- Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Development of Solar Based In-Situ Milk Cooling System for Small Farmers

1. Project Title : Development of Solar Based In-Situ Milk Cooling System for Small Farmers

2. Mentor Name : Dr. S. K. Jain, Dr. Chitranjan & Dr. N. L. Panwar

3. Student Team Names:

I. Ashok Kumar

4. Project Description:

The solar milk cooling system, an innovative technology to cool the milk In-situ, is entirely based on solar energy. The system as shown in Fig.1 will be composed of cooling chamber of 1.5mm thick AISI 304 SS plate with Poly urethane insulation, photovoltaic panels, storage batteries, an adaptive control unit, a charge controller and a refrigeration unit with an integrated fan. Cooling will be done by vapour absorption coupled with a solar panel that can harness solar radiation with help of an adaptive control unit and transfer to storage battery connected to refrigeration unit. A set of battery will be connected to make power available for continuous cooling of milk for longer period. Raw milk having approximately temperature of about 30°C after milking will be transferred into the chiller to cool down temperature to 4°C within short period. A digital scale will also be installed at the wall of chiller to record temperature, voltage, energy.

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.

7. Current status:

- Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Design and Development of a Low-Cost Biochar Kiln for Production of Biochar from Agricultural Crop Residues to Enhance Farm Productivity

1. Project Title : Design and Development of a Low-Cost Biochar Kiln for Production of Biochar from Agricultural Crop Residues to Enhance Farm Productivity

2. Mentor Name : Dr. N. L. Panwar

3. Student Team Names:

I. Maga Ram Patel

4. Project Description:

The use of biomass in agricultural activities had continued to get global attention over this few decades. Biochar which produced industrially had high potential to become one of the raw materials for the biobased economy in future world. As construction, waste water treatment, textile and other industries will be competing for the biochar, biochar which produced commercially will sell at higher price for farmers. For small farmer, since their amount of product and profit is relatively low, they will have some difficulties in purchasing the costly biochar which produced industrially. However, the small farmers have other alternative ways to produce their own biochar by using some natural sources of raw material available at their farms such as waste-wood, agricultural by-product and crop residue. The resource loop can be completed by farmers on their own farms and biochar help in enrichment for soil due to the larger surface area and highly porous structure. Production of charcoal and biochar in larger quantities will become the causes for the deforestation. Normally, the charcoal produced used for heating and cooking for a family. For industrial purposes, the charcoal was used to heat the ceramics, to melt the ore or produce lime. However, when finer charcoal fraction combine with the organic wastes can be used to improve the fertility of the soil and increase the production of crop in agriculture.

This project seeks to present the design of low-cost biochar kiln which is simple for small farmer to fabricate with low cost. The use of waste from agricultural was used by farms, the small farmers to produce a sufficient amount of biochar by using biochar kilns. The unit of biochar kiln is portable and it is easy for the small farmer to move the biochar kiln to desired place.

The general concept of pyrolysis technology was applied in the design of biochar kiln. The optimum size of the biochar kiln is designed which can produce sufficient amount of biochar for small farmers. Normally, after the crops have been harvested, most of the waste is thrown away without consideration for other uses. The waste can be processed into biochar through pyrolysis for soil enrichment by using biochar kiln. Waste management plays a significant role in sustaining the global cleanliness. Normally, they dispose the agricultural residues by using open burning method which will lead to air pollution for our environment and further lead to climate change. Offering the small farmers an option to utilize the waste by providing a biochar kiln will help them to avoid the waste generation and air pollution. Through this project, the agricultural residue will be utilized for production of biochar to improve the quality of the soil and also reduce the quantity of fertilizer used by the small farmers.

Environment Aspect: The use of traditional method to produce biochar is increasing pollution in the environment by releasing poisonous gases (syngas's) into the environment. They have a negative impact on the environment as they are part of the greenhouse gases that trap heat and lead to depletion of the ozone layer. By using this project (low cost biochar kiln) reducing the syngas emission in environment, means less greenhouse gas production and eco-friendly this system. Hence, the biochar increases the availability of nitrogen in the soil and reduces the need of chemical fertilizer. Rapid industrialization and unsustainable development have increased greenhouse gases (GHG) which has caused changes in global climate and global warming. Production of bio-char has been proven to be a method to sequester carbon dioxide from the atmosphere. Therefore, bio-char undoubtedly is very important in creating an environmentally friendly method to mitigate the problem of greenhouse gases and control the amount of methane and nitrogen dioxide that is released from the soil.

Commercial Aspect: The initial investment of this system is low and the running cost is also very low because of the whole system being operated by biomass. Some organizations developed the biochar kiln, but none reused the syngas for heating purpose, and no commercial system is available in

India. In the agriculture field, for the production of biochar and waste management, this technology is very useful.

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment.

7. Current status:

- Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Development of nanoformulation for studying shelf-life of mango

1. Project Title : Development of nanoformulation for studying shelf-life of mango

2. Mentor Name : Dr. S. K. Jain, Dr. P.S Champawat, Dr. Vinod Saharan & Dr. Shalini Pilania

3. Student Team Names:

I. Maya Sharma

4. Project Description:

Description of working of the innovation (use sketch/ drawing, patent, photographs, video to explain the working): Plant based compound, hexanal shows antifungal properties, reduces ethylene production, amplifies shelf-life and prolongs the quality of fruit and vegetable after pre and postharvest application. Hexanal vapour has been evaluated on various fruits/vegetables to boost shelf-life of product such as raspberries, peach, banana, mango, apple, guava, papaya, fresh apple slices, bell peppers and sweet cherry. However, Due to volatile nature, hexanal evaporates rapidly and reaches its maximum evaporation within 1-3 hours which reduces its efficiency. Hexanal vapour penetrates into fruit tissue and metabolized within the tissue. Therefore, appropriate carrier or vehicle is entailed to make hexanal physically stable and to control its evaporation. Hence, the proposed work aspires for synthesis of novel hexanal nanoformulation and its characterization for various physicochemical properties.

Objectives of the research work are as following –

- To Develop and Characterize hexanal nanoformulation.
- To study effects of different physiological conditions on developed hexanal nanoformulation.
- To study antifungal activity of developed hexanal nanoformulation.
- To study the shelf-life of mango treated with hexanal nanoformulation

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment,
- Hiring fabricator and procurement of raw materials
- Ongoing user testing

7. Current status:

- Completed

Project-06: Design and Development of GripX Mobi-seat

1. Project Title : Design and Development of GripX Mobi-seat

2. Mentor Name : Dr. Bheru Lal Salvi & Dr. MA Saloda

3. Student Team Names:

I. Sourabh Purbia

4. Project Description:

Detail of the idea – Design and development of mobile holder which would be convenient for the bike riders and delivery persons where mobile holder is expected to be user friendly and should damp the vibrations and provide charging facility and provide small wind shield to protect the device from the air which is blowing

Description of working of the innovation (use sketch/ drawing, patent, photographs, video to explain the working): Basic sketch of the product under innovation is shown in Fig. 1. There is a beam that is to be attached to the handle of bike. The beam will be used for mounting the mobile holder. There are holes provided on the mobile holder for the cooling system. There will be adjustment provided in the length and the width, so that it will be suitable for wide range of smart phones. A good grip will be provided for the device attached. The material of the holder will be selected in such a way so that it can damp and transmit the vibrations which are arising during anytime of the ride. A wind shield will be provided so that it can protect the device from the wind and dust which will be blowing during the ride. A plug and play charging facility will also be provided.

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.
- Testing of developed technology.

7. Current status:

- Working on Prototype development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

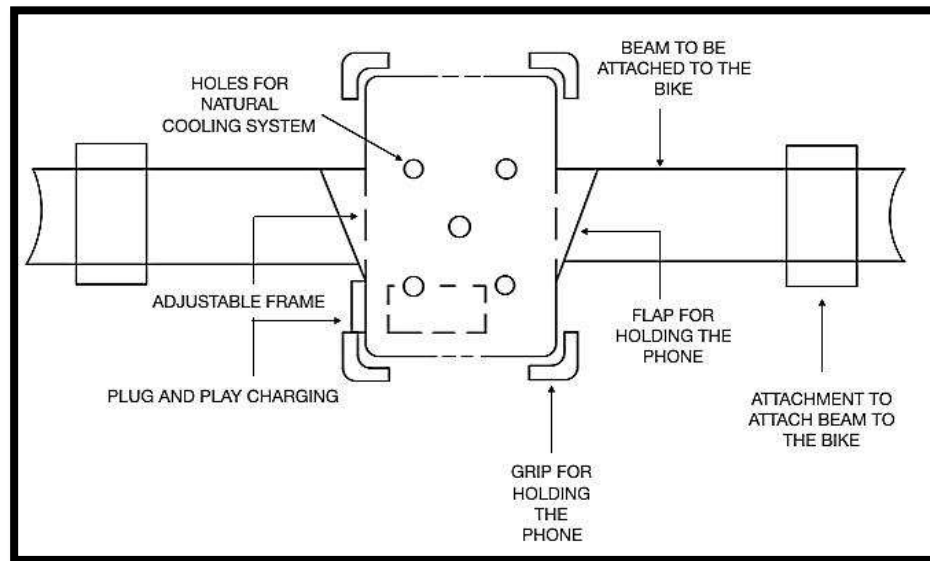


Fig. 1: Schematic diagram of product 'GripX Mobi-seat' under innovation

Project-07: Development of IoT Based Drying System for Value Addition of Horticultural Produces

1. Project Title : Development of IoT Based Drying System for Value Addition of Horticultural Produces

2. Mentor Name : Dr. Navneet Agarwal and Dr. S.K. Jain

3. Student Team Names:

I. Nikita Mishra

4. Project Description:

India's diverse climate ensures availability of all varieties of fresh fruits and vegetables. The agricultural production of the country has increased many folds in recent past and now our country is the second largest producers of fruits and vegetables. However, at the same time lack of awareness for post harvest technology and management, especially for perishable produces cause a great economic loss. Drying is one of the oldest methods of food preservation, but still the control on the process parameters such as temperature and velocity of drying air and moisture content of product during drying is not possible through remote and continuous mentoring is required causing high cost of processing. With the development of information technology, the Internet of Things (IoT) has the characteristics use of action, and good comprehensive benefits. It promotes the development of the IoT technology in the monitoring and control of many process parameters of drying and value addition of food materials. This will not only improve the overall quality of the produce by controlling the process parameters, but also reduce the cost of production/processing. The process parameters such as drying air temperature, temperature of food material in plenum chamber, velocity and relative humidity of air with monitoring and control of duration of drying may help the future processors/entrepreneurs to have access to the input parameters through remote

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.
- Processing in under fabricator.

7. Current status:

- Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Solar and Biomass based Hybrid Water Heating System

1. Project Title : Solar and Biomass based Hybrid Water Heating System

2. Mentor Name : Dr. Bheru Lal Salvi

3. Student Team Names:

I. Tanay Pansari

4. Project Description:

This project aims to solve the problem of supply of hot water in hostels during the season of winter. Presence of fog during winter season and/or overcast situation renders the solar water heating system useless and/or less effective. This system is designed contemplating this problem. In this heat exchanger, biomass (waste wood) will be burnt in a combustion chamber and the heat of the flue gases will be utilised to raise the temperature of cold water and the heated water is then supplied to the overhead tank of the system. As described in the Fig. 1. Schematic diagram of the hybrid water heating system below, recirculation of the water from the solar tank system and the heat exchanging system will take place till the required temperature of water is achieved. This entire system will be optimised in such a way that it will deliver maximum efficiency with least possible cost.

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.

7. Current status:

- Prototype Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

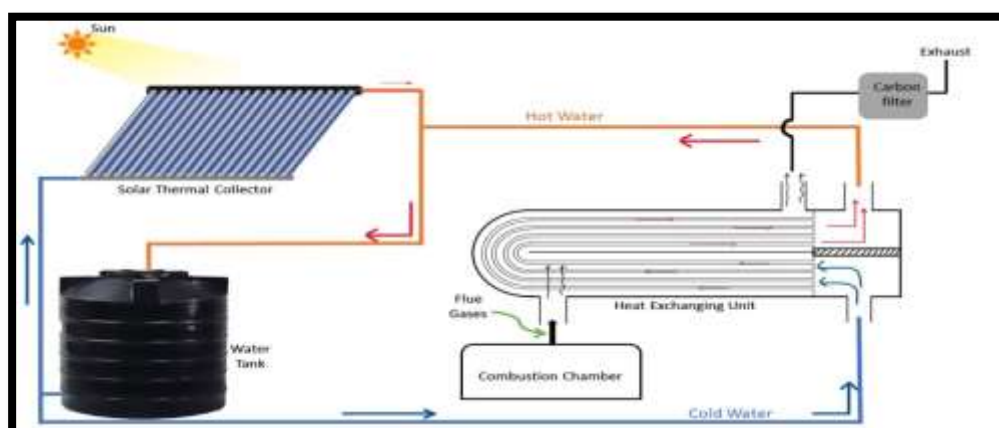


Fig. 1. Schematic diagram of the Hybrid Water Heating System

Project-09: Development of Floor Tiles utilizing rubber ash and stone query waste

1. **Project Title** : Development of Floor Tiles utilizing rubber ash and stone query waste

2. **Mentor Name** : Dr. Trilok Gupta and Dr. Chitranjan Agrawal

3. **Student Team Names:**

I. Ronak Parihar

4. **Project Description:**

Tiles are thin objects, usually square or rectangular in shape. A tile is a manufactured piece of hard-wearing materials such as ceramic, stone, metal, baked clay or even glass, generally used for covering roofs, floors, walls, or other objects such as tabletops. There are traditional methods of making tiles but these methods are not maintaining fixed strength and other engineering criteria, but in our innovation, we try to fulfill all engineering standard to make a good product in economical form. Also, in traditional methods they are not taken care of environment but in the innovation, we are manly focused to maintain and use of waste materials to make the environment friendly. The current published technology deals in manufacturing of tiles from different waste materials but unable to the pain point of industry. The trend of innovation described in patents is related to the complete replacement of material, resulting in development of tiles via casting. Our innovation leads the comparison by replacing the bulkier material, resting the neutral one.

5. **Project status at beginning of the Year:**

- Proof of concept was prepared

6. **Interventions made:**

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials

7. **Current status:**

- Working on Prototype

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-10: Sakias Filter

1. **Project Title** : Sakias Filter
2. **Mentor Name** : Dr. Bheru Lal Salvi
3. **Student Team Names:**
 - I. Mohammed Saif Khan

4. Project Description:

We propose to make our very own advanced grey water filter system that can be incorporated with ease in the traditional bathroom and toilet system. Grey water filtration system includes following features:

1. Collection of all water from wash basin, washing machines and bathroom.
2. A up cycled eco friendly sack water filters made of recycled R.O. Carbon filter cartridges, multi sized sand and activated charcoal.
3. Self cleaning
4. All features while keeping the budget in min
5. Easy to be retrofitted in any bathroom and toilet system

5. Project status at beginning of the Year:

- Proof of concept was prepared

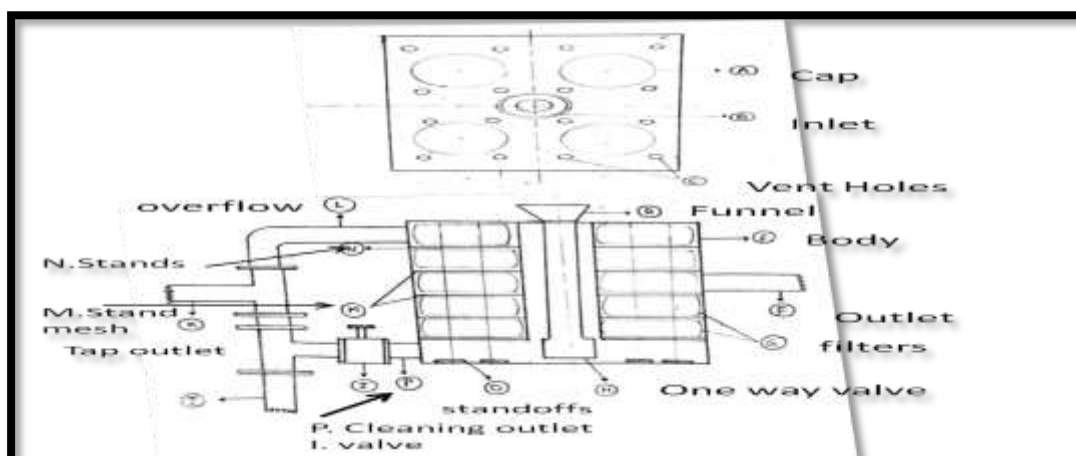
6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.
- Project Testing is required.

7. Current status:

- Prototype Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Start-up Calibrator

1. **Project Title** : Start-up Calibrator

2. **Mentor Name** : Dr. Navneet Agarwal and Dr. Trilok Gupta

3. **Student Team Names:**

I. Rishabh Doshi

4. **Project Description:**

We are creating a web application using React JS/React Native which is an open sources cross platform technology used to create a client as well as server-side Web application which can also be operated on Android Devices and IOS Devices. For backend, we will be using Node.JS Technology for server -side scripting and for database, we will be using Mongo DB Technology to store all the Data Uploaded by user on our servers and retract them whenever requested by a user. AI Model for comparing startup ideas from the data. Data science used to search the best algorithm from the input data for the result

5. **Project status at beginning of the Year:**

- Proof of concept was prepared

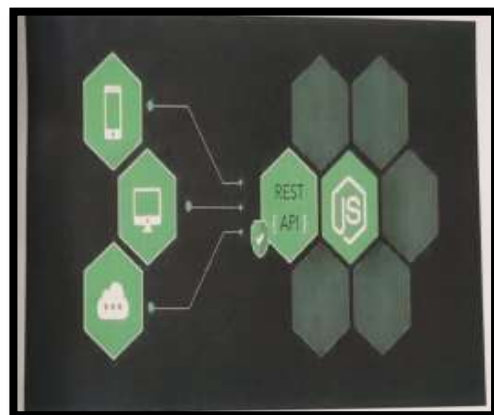
6. **Interventions made:**

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.

7. **Current status:**

- Working on Algorithm and Preparation of Transcription for the AI Model

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-12: SWASTHAM (Smart Waste Treatment Hub and Management)

1. Project Title : SWASTHAM
(Smart Waste Treatment Hub and Management)

2. Mentor Name : Dr. Navneet Agrawal

3. Student Team Names:

I. Priyanka Pandey

4. Project Description:

To Develop IOT based Smart Dustbin monitoring for Smart City, we will build a system which will notify the corporations to empty the bins on time. This system will help in cleaning the city in better way. The work proposed here illustrates the smart waste management architecture that ensures the cleaning operators for detecting cleanliness issues in real time. Moreover, minimizing the end-to-end delay is also taken into consideration when a message is required to be sent for garbage collectors.

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.
- Testing of developed technology.

7. Current status:

- Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Development of Web Based Recruitment Portal

1. **Project Title** : Development of Web Based Recruitment Portal

2. **Mentor Name** : Dr. Trilok Gupta

3. **Student Team Names:**

I. Yash Sharma

4. **Project Description:**

We have worked closely with college recruitment authorities and senior faculties to validate the problem of hiring a new faculty and managing their applications. On the other side teachers have no such particular platform to apply for position for teacher/faculty in the institution and also to be aware about the opportunities for them in the institution. Our main customer segment is Institution who are looking for opportunities in the institution. Also, all the institutions which frequently requires a recruiting mechanism to work for them. So, we are creating our web application using React JS which is an open-source cross platform technology used to create a client as well as server-side Web Application which can also be operated on Mobile Android Devices as well as IOS Devices. We will be using S3 technology by amazon web services to store all the data uploaded by user on our servers and to retract

5. **Project status at beginning of the Year:**

- Proof of concept was prepared

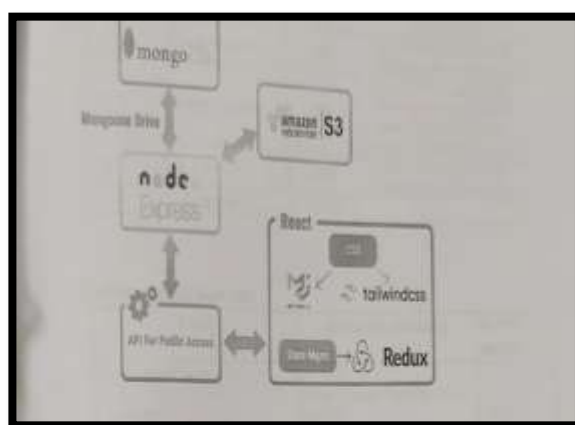
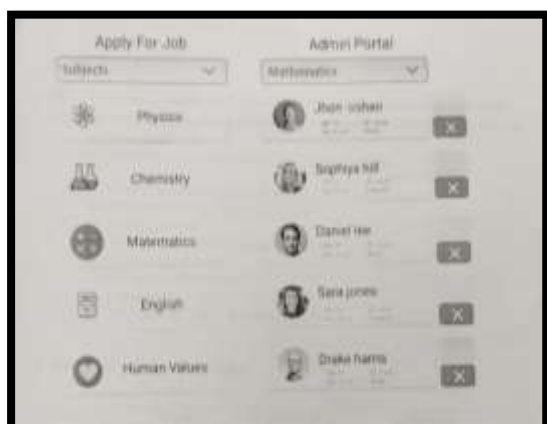
6. **Interventions made:**

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.
- Processing in user Testing.

7. **Current status:**

- Ongoing user testing

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-14: TEXAM- Robust AI driven Online Examination Portal

1. Project Title : TEXAM- Robust AI driven Online Examination Portal

2. Mentor Name : Dr. Trilok Gupta & Dr. Navneet Agarwal

3. Student Team Names:

I. Harsh Singhvi

4. Project Description:

We are creating our Software with native development for each platform which will give us performance benefits and extensive controls over computer hardware and some more perks than webapp. For Backend we are deploying our server on cloud provider which will help us scale and save costs. We will be Using Node.JS Technology for server-side Scripting and for Datastore, we will be using S3 Technology by Amazon Web Services to Store all the media data on our Servers and to Retract them whenever needed. And Cloud MongoDB Database to store form data and design the application to be robust and scalable. Other than this, we will Configuring Network Security to safeguard our data as well as a student's Data on our platform.

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Hiring fabricator and procurement of raw materials.

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Generation Z (GenZ)

1. **Project Title** : Generation Z (GenZ)

2. **Mentor Name** : Dr. Trilok Gupta & Dr. Navneet Agrawal

3. **Student Team Names:**

I. Rishabh Doshi

4. **Project Description:**

The global incubator system market was valued USD 283.3 million in 2016 and is expected to reach USD registering a CAGR of 6.2% from 2017 to 2023. Incubator is the biomedical device that primarily provides humidity, warmth and oxygen to the body in a controlled environment. The infant incubator comprises of an enclosed chamber with a small matter on the top covered by a rigid plastic cover. This chamber protects from dust, noise, and infection. Infant incubator is widely used worldwide owing to high incidence of preterm birth rate.

5. **Project status at beginning of the Year:**

- Proof of concept was prepared

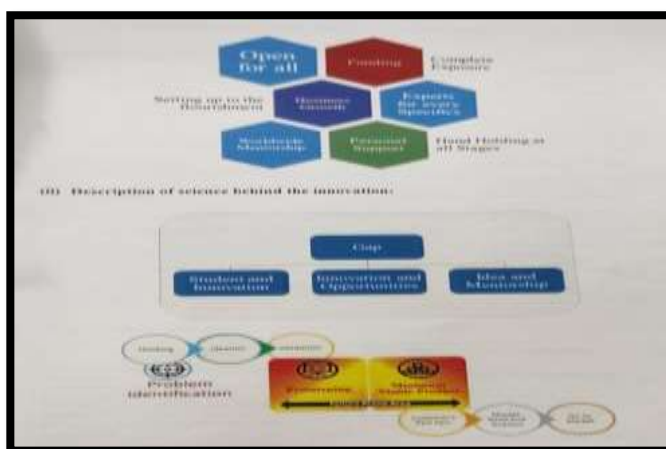
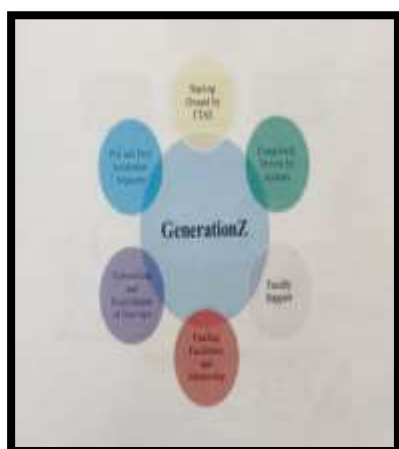
6. **Interventions made:**

- Hiring fabricator and procurement of raw materials.

7. **Current status:**

- Website development and contacting with different tech support organization

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-16: Hybrid Electric Scooter for Rural Application

1. Project Title : Hybrid Electric Scooter for Rural Application t

2. Mentor Name : Dr. Bheru Lal Salvi

3. Student Team Names:

I. Jay Upadhyay

4. Project Description:

To use the conventional scooter and convert it into the Hybrid Electric Scooter which fails the Euro norms & Bharat stage emission norms by placing the motor and battery of high range and power as seen in **Fig. 1**, and making it charge by two ways:-

(1) Charging the battery by the power source.

(2) Using the mechanical energy of the engine to produce electrical energy by the alternator to charge the battery which power the motor and the motor then drives the real wheel of the scooter.

The battery is to be charge from the power source and the engine power to charge battery is only to be use when there is no electricity and using scooter for long range which reduces the carbon foot print, greenhouse gases.

The target area to use HES is the women of village and rural area where the electricity supply is not sufficient and to make them use the new technology of the future world

An old scooter is taken where the battery is placed at the footrest, a charging plug is made below the seat to charge the battery by the power source, alternator is placed above the engine shaft connected by belt the generated current goes to battery, the motor is places above the transmission cover to protect it from water splash as shown in Fig.1, the motor is connected to the rear wheel by use of belt. A carrier is attached which helps the village women to transport their crop.

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.

7. Current status:

- Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

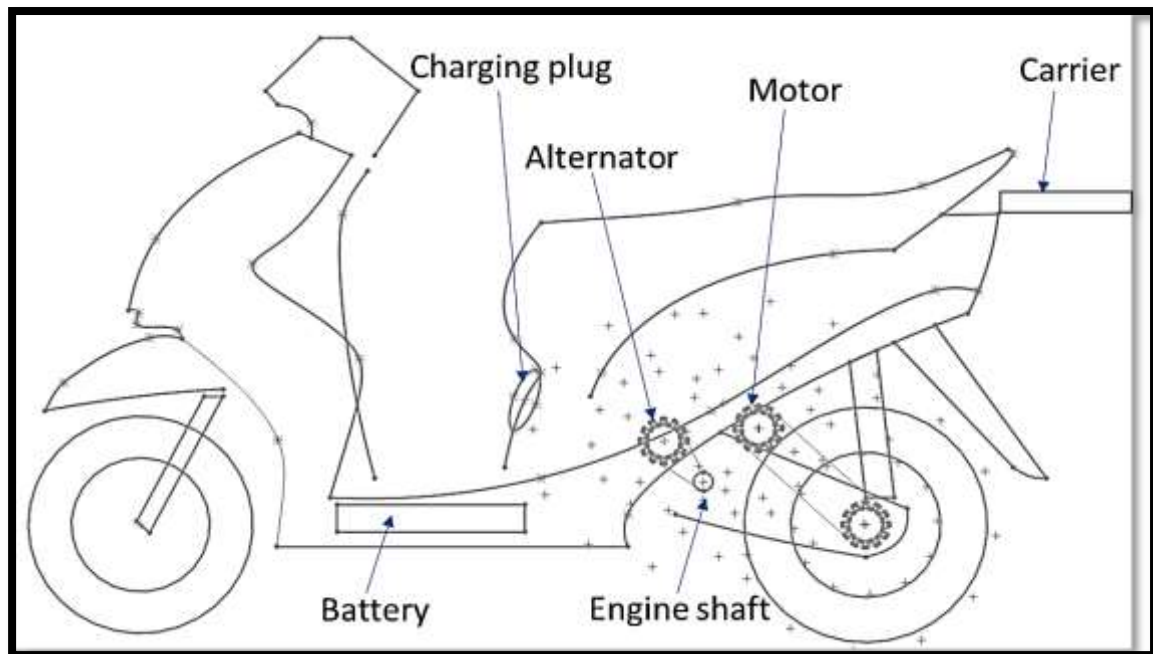


Fig.1. Hybrid Electric Scooter sketch

Project-17: Designing and Development of Solar-Powered Ice-cream Thela for Street Vendor

1. Project Title : Designing and Development of Solar-Powered Ice-Cream Thela for Street Vendor

2. Mentor Name : Dr. N. L. Panwar

3. Student Team Names:

I. Kuldeep Kumar

4. Project Description:

Now a days, the use of solar energy is getting worldwide attention in every field. Once solar panel is installed, solar energy can be produced at no cost. Street vendors with hand carts, selling ice cream on hot summer days, are not equipped to keep their products properly frozen for long. The glycol freezers are generally used by the vendors. Each glycol freezer consumes 3 to 4 units of power a day. The solar freezers, on the contrary, will be environment friendly, consume solar power and be truly mobile because they will not have to return have to return to base camp to be plugged in. The biggest benefit will be that power cuts will not have any consequence at all. The solar panels will provide shade from the harsh sun to the vendors and the freezer, generating enough power to cool the freezer and simultaneously charge a battery.

5. Project status at beginning of the Year:

- Proof of concept was prepared

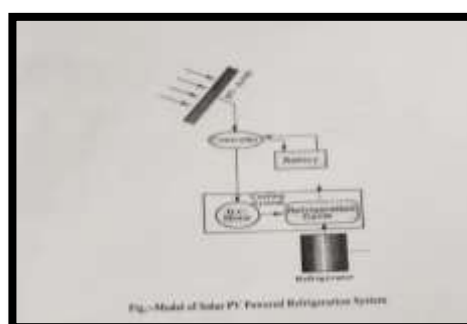
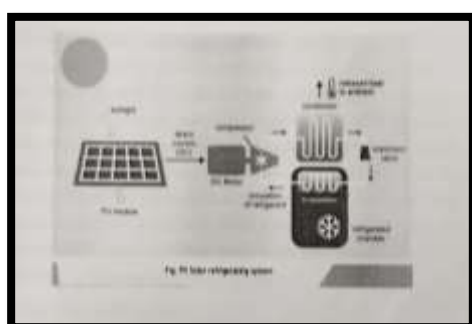
6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials

7. Current status:

- Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Development and Performance Evaluation of An IoT Based Evacuated Tube Solar Dryer Assisted with Thermal Storage System

- 1. Project Title** : Development and Performance Evaluation of An IoT Based Evacuated Tube Solar Dryer Assisted with Thermal Storage System
- 2. Mentor Name** : Dr. S. K. Jain, Dr. N. L. Panwar & Dr. Sunil Joshi
- 3. Student Team Names:**
- I. Vedantam Sai Krishna

4. Project Description:

There are numbers of design and models available for evacuated tube water heating system whereas hot air heating system using evacuated glass tube is the new approach which can be used for drying purpose. It is a forced convection indirect drying method. It converts all the solar radiation into heat energy with maximum efficiency. It consists of evacuated tubes, manifold, blower and drying chamber, IoT system. Evacuated double glass borosilicate tubes are used as heat collecting source. The inner tube is coated with three-layer magnetron sputter coating which gives excellent solar radiation absorption and minimal reflection properties. To improve the drying time, phase change material is introduced which is used to store thermal energy. Also, application of IoT based system will eliminate human intervention and the unit can be operated from remote location

5. Project status at beginning of the Year:

- Proof of concept was prepared

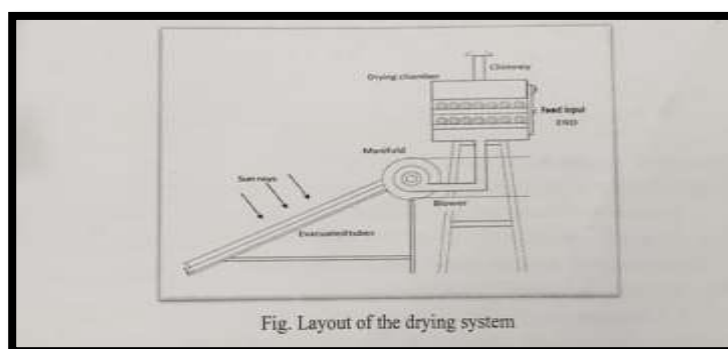
6. Interventions made:

- Mentored for product development, design and selection of equipment

7. Current status:

- Fabrication of Components

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Development of Composite material using natural fibers

1. Project Title : Development of Composite material using natural fibers

2. Mentor Name : Dr. Chitranjan Agarwal & Dr. N. L. Panwar

3. Student Team Names:

I. Siddharth Hanswal

4. Project Description:

There are lot of materials which are being used as composite material and are doing effectively good. The main aim idea here is to develop combinations of different fibers of natural waste with polymers and nano particles to develop the materials with good mechanical properties at low cost. Composite materials with a high specific stiffness and strength can be produced by adding the tough and light weight natural fiber into polymers in various ratios in order to achieve the best properties out of it in very cost-effective sense. Sheets of composite materials are to be prepared, containing fibers of corns and gram straw. Epoxy and Nano particles are used as binder agent to form bonds with fiber material giving it enough malleability to sustain its shape

5. Project status at beginning of the Year:

- Proof of concept was prepared

6. Interventions made:

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.
- Processed in user Testing.

7. Current status:

- Fabrication of Components

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Oxygen Concentrator

1. **Project Title** : Oxygen Concentrator

2. **Mentor Name** : Dr. Navneet Agrawal

3. **Student Team Names:**

I. Anurag Singh

4. **Project Description:**

The portable oxygen concentrator with self-design electronics and programming and live oxygen monitoring level with alarm and display affordable by anyone and no need to be dependent on hospital. The people who have a low level of oxygen in their blood. They are powered by plugging the device into an electrical outlet or by using a battery. An oxygen concentrator receives air, purifies it and then distributes the newly formed air

5. **Project status at beginning of the Year:**

- Proof of concept was prepared

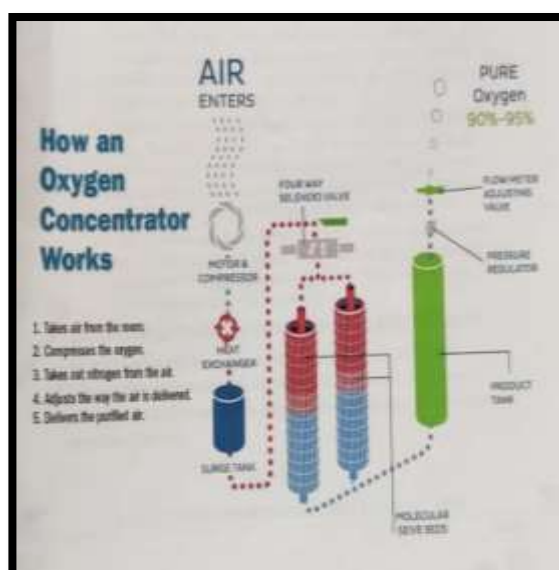
6. **Interventions made:**

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.

7. **Current status:**

- Preparation of layout is completed

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-21: Start-up Calibrator Application

1. **Project Title** : Start-up Calibrator Application
2. **Mentor Name** : Dr. Navneet Agrawal & Dr. Trilok Gupta

3. **Student Team Names:**

I. Bhavya Tak

4. **Project Description:**

We have worked closely with college recruitment authorities and senior faculties to validate the problem of hiring a new faculty and managing their applications. On the other side teachers have no such particular platform to apply for position for teacher/faculty in the institution and also to be aware about the opportunities for them in the institution. Our main customer segment is Institution who are looking for opportunities in the institution. Also, all the institutions which frequently requires a recruiting mechanism to work for them. So, we are creating our web application using React JS which is an open-source cross platform technology used to create a client as well as server-side Web Application which can also be operated on Mobile Android Devices as well as IOS Devices. We will be using S3 technology by amazon web services to store all the data uploaded by user on our servers and to retract.

5. **Project status at beginning of the Year:**

- Proof of concept was prepared

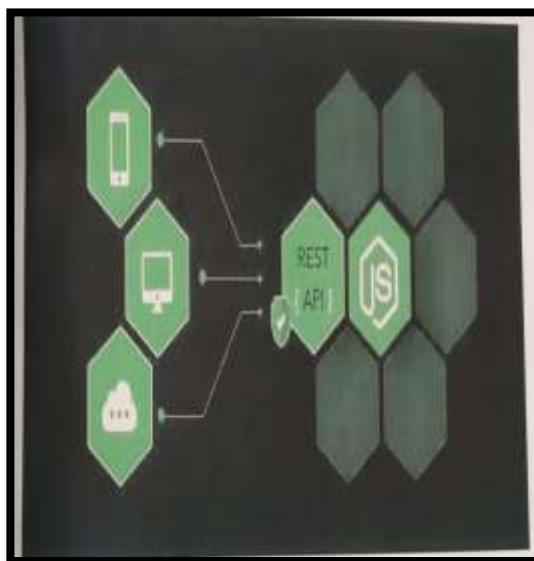
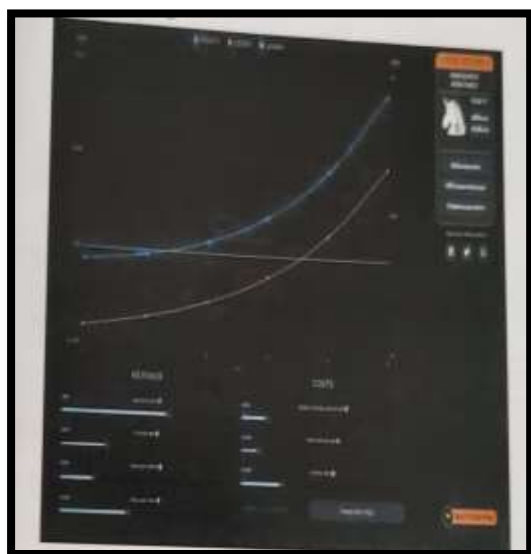
6. **Interventions made:**

- Mentored for product development, design and selection of equipment.
- Hiring fabricator and procurement of raw materials.

7. **Current status:**

- Prototype Completed

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



NewGen IEDC: Dr. M. G. R. Educational & Research Institute

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Dr. M. G. R. Educational & Research Institute		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. C. B. Palanivelu		
Name of NewGen IEDC Coordinator	Dr. J. Arun Kumar		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> • Mobile Number • e-Mail ID 	9962985367, 6379554847 arunkumar.j@drmgrdu.ac.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/09 Date: 15/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

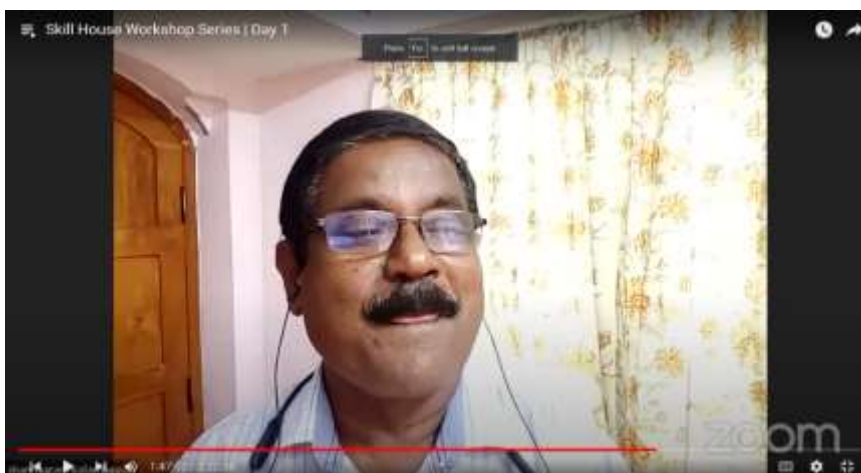
1. Building Successful career with Dr. Rama Vaidyanathan on 12.08.2021

- Incubatees have gained knowledge of how to build a successful career in the field of entrepreneurship



2. Team building by Dr. Kolinjiappan on 12.08.2021

- Activity based team building webinar was conducted for the incubatees



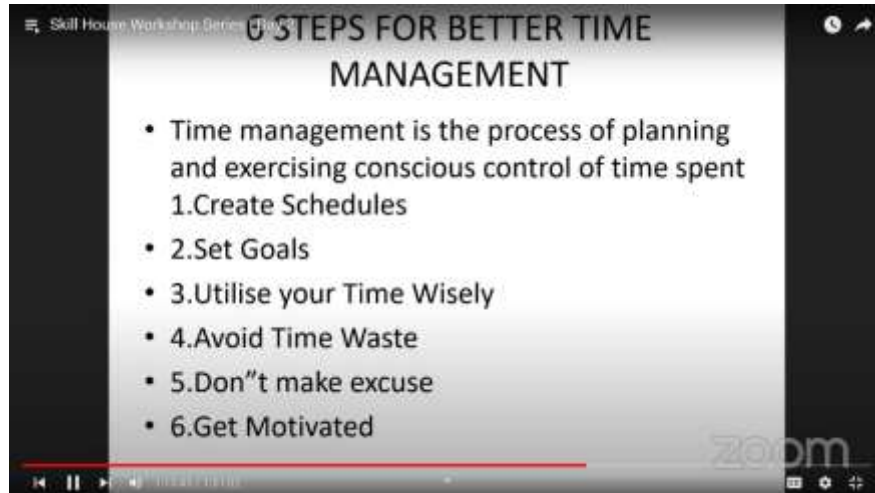
3. Seeing problem as opportunities by Dr. J. Arun Kumar on 13.08.2021

- Problem solving ability among the incubatees was analyzed and how to see the problem as opportunities was discussed by Dr. J. Arunkumar



4. Time management by Dr. P. Subbarayudu on 13.08.2021

- How to achieve greater heights and better results by managing time and effective planning was the moto of the session



5. Side Hustles by Mr. H. Mohamed Rizwan 02.09.2021

- Every Entrepreneur and Students should have a side hustle for earning. What are the side hustles and opportunities were shared with the incubates



6. Business Etiquette by Dr. Anuradha on 02.09.2021

- Enhancement of non-verbal communication and first impression for the incubatees and the students



7. World entrepreneurship week includes (entrepreneur's talk, debate, panel discussion, life of entrepreneur and Entrepreneurial case study on 24.08.2021

- Entrepreneurship week was celebrated and students were actively participated in the entire session. Panel discussion was conducted with the alumni entrepreneurs of AKC



8. Alumni Talk series by Mr. Suman Kumar Jha on 24.09.2021

- Story of our alumni entrepreneur was shared among the incubate community



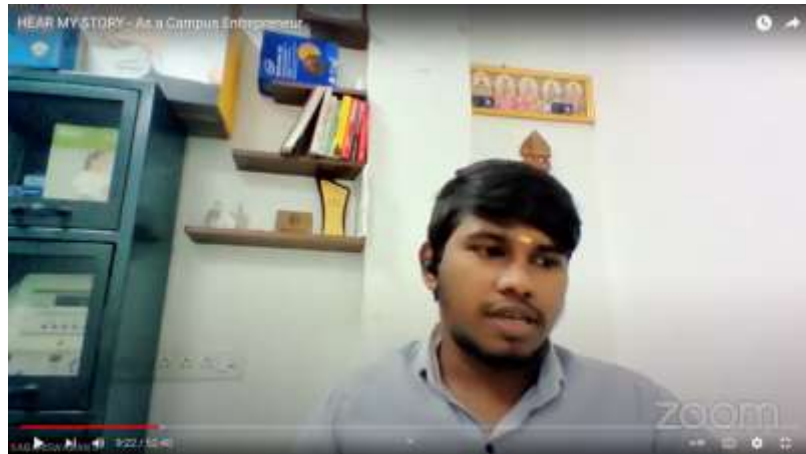
9. She Preneur by Ms. Varshitha Reddy on 08.04.2022

- An inspiration young women entrepreneur's story. An awareness about the hurdles faced by the entrepreneur and the opportunities available for women entrepreneurs were created



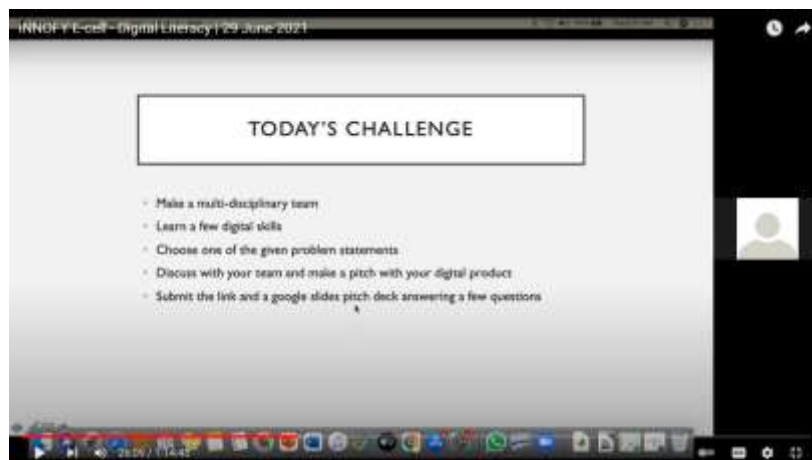
10. Hear my story as an entrepreneur by Mr. Sabariswaran on 26.11.2021

- This session was an inspiration for students since they heard a startup story from Mr. Sabariswaran who is an incubatee of the same incubation center. Despite he is a physiotherapist, he achieved greater heights.



11. Digital Literacy by Dr. Rama Vaidyanathan on 29.06.2021

- The program has created an awareness among incubatees about the digital and social platforms. How they can utilize the digital media for the commercialization of their products and personal branding



[B] To identify, develop & commercialize students' innovative ideas

1. Customer Discovery Lab with Mr. Shashank Rajurkar

- Incubatees have validated their customers by interacting with them as well as they have iterated their ideas based on the need of the customers. This made the incubatees understand their customer base and their market

2. Session on Intellectual Property Rights with Mr. Balaji D, Head of Center of IPR, KPR institute of E&T, Chennai on 28.04.2021

- Awareness created about Intellectual Properties among the incubatees and after this program, 14 teams have applied for patent prior art search and one team has applied for design patent
3. MGR Startup Mission on 14.12.2021
 - Incubatees received their agreements and the start-up policy of Dr. MGR Educational and Research Institute was release by the President
 4. Demo day for Incubatees on National Science day 28.02.2022
 - Incubatees interacted with school students on National Science Day and clarified their doubts. This public interaction has created a curiosity among school students and it has created the startup enthusiasm among the students. For the incubatees, it was a great experience on knowledge sharing and presentation.

[C] To enhance Industry-Academia interaction

1. Skills need to Learn to earn by Mr. MD Khan, on 24.08.2021
 - It Was a knowledge gaining lecture by Mr. Mohamed Khan of NIRD about the skills students need to learn to earn more



2. Innovation is key to entrepreneurship by Mr. Azhagu Pandia Raja on 23.08.2021
 - An eye opening session for the students about the opportunities available for the young entrepreneurs in Tamil Nadu by the Greater Chennai Corporation



3. Be your own Boss by Ms. Lakshmi Subramanian on 01.09.2021

- Around 100 students were benefited from the session – Be your own Boss. Students gained knowledge from Ms. Lakshmi Subramanian, Executive chairman of Global Adjustment Foundations about entrepreneurship ecosystem



4. Incubator Visit to Veltech TBI on 10.05.2022

- 25 Students from Dr. APJ Abdul Kalam CoE visited the Veltech Technology Business Incubator. It was a well exposure for the student incubatees as they have visited the outside incubator and gained knowledge about the startups incubated at Veltech TBI



5. Bootcamp at SRM Innovation an Incubation Center from (28.04.2021 - 01.05.2021)

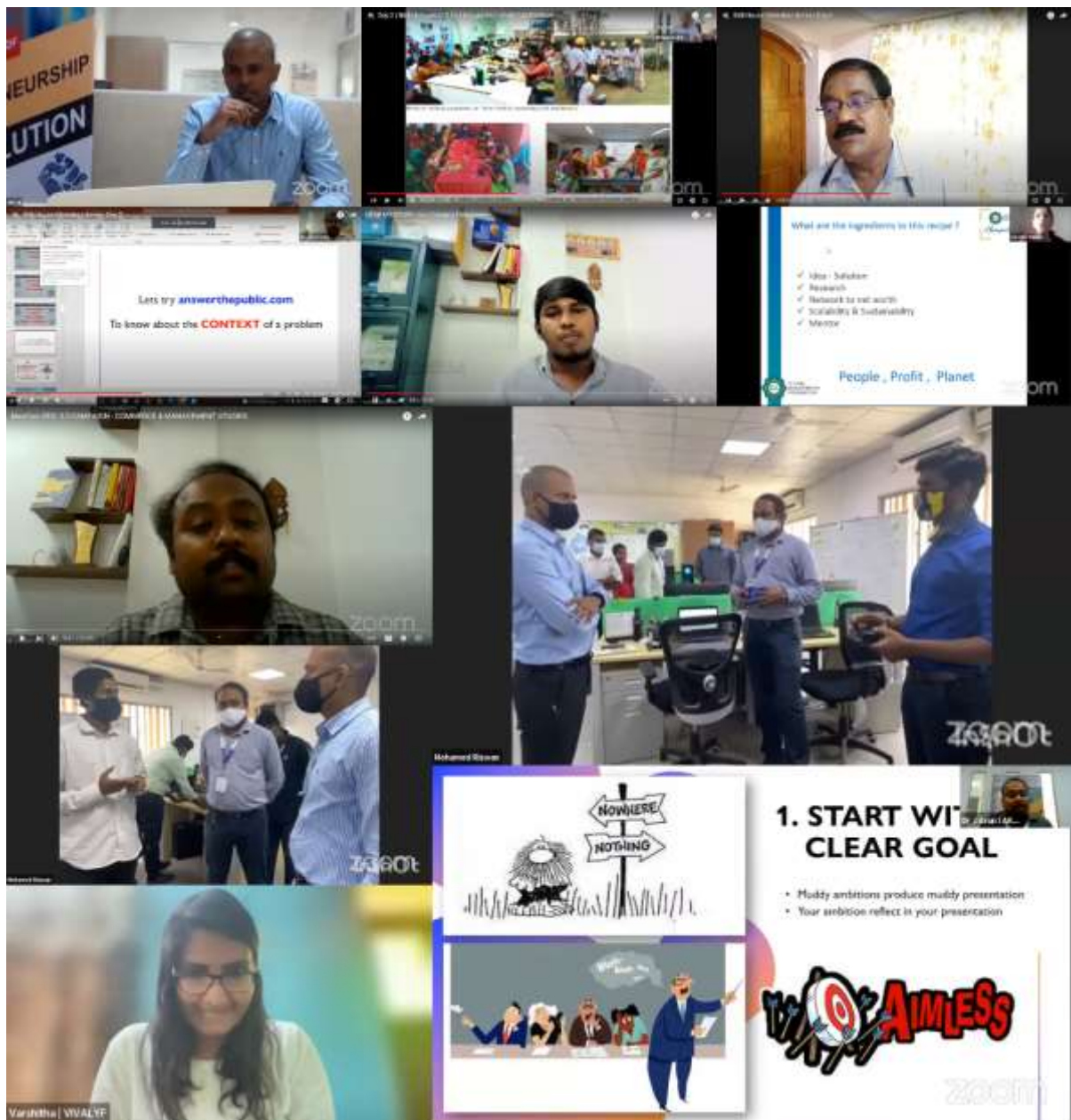
- 6 Students from MGR University have attended 4 days residential bootcamp about entrepreneurship and innovation. It was a great exposure for the students to visit the outside incubation center



6. Orientation Session series on Institution Innovation and Incubation to Saveetha University

- A Knowledge sharing experience with the students and faculties of Saveetha University about the innovation, incubation and entrepreneurship





Demo with City Innovation Officer, Greater Chennai Corporation



Visit to Central Institute of Palmsugar and Palm Products



Incubators meet at Anna University Incubation Center, Chennai



Participated in the NITI AAYOG's Indo Danish Water Expo 2022



With Atal Innovation Mission Director and Assistant Director of MoE's Innovation Cell

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:
NA

3. Other important highlights (new initiatives), if any:

- Customer Discovery Lab

CDL (Customer Discovery Lab) is our new initiative with the external expert Mr. Shashank Rajurkar – Startup mentor. Incubatees attended the entire session and shaped their ideas after interacting with their customers.

- Company Incorporation

Incubatee Teams were asked to incorporate their own start-ups as LLP / Proprietor / Pvt Ltd

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: BARCO – HYACINTH Collector

I. Project Title : BARCO – HYACINTH Collector

II. Mentors Name : Dr. J. Arunkumar

III. Student team details

i. Ms. Varsheni Nagarajan

IV. Brief description of the student start-up

- The student start-up registration is under progress

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

- The start-up had been selected as the best innovation in IIT PALS InnoWah Competition, Chennai and it had been selected for AICTE DTU (Technical University of Denmark)' water challenge at Delhi. It was awarded with 1000 Euros seed fund under Next Generation Water Challenge competition.






VI. Contribution of NewGen IEDC in the same

- Dr. MGR DST NewGen IEDC had provided the space and technology for developing the early-stage prototype. It also provided the testing facility, funding and mentoring support for the team to participate in IIT PALS InnoWah as well as in AICTE DTU' Next Generation Water Challenge.

VII. Future plan

- Future plan of the team is to register themselves as a Pvt Ltd Company and it is under pipeline. An adaptive design and development of the prototype. Testing the prototype on field and clear the actual hyacinth. Process the hyacinth and convert it into useful by-products like papers, bags etc., Patenting the technology under Indian Patent act. Demonstration to Government through proper channels to sell BARCO for the betterment of future.
- Even though we are living in technology advanced world, we are still having polluted water bodies across the human environment. Water hyacinth (Aagaya thamarai) is an invasive species growing in thick mats which crops up again even after it is removed. Human intervention in the process of collection is a major threat in causing water-borne diseases. During flood it clogs in pipelines, sewers and small channels causing transport delays. It requires huge structured transport to collect and accumulate on land. Very big machines are involved in the cleaning process. Because of this, huge amount of money is deployed for this particular activity by the government.

- I would like to admit that there are many weed harvesters currently running around the world but our BARCO segregates water hyacinth and contaminated wastes separately by automated method, thus making it a non-human intervention process. Collection and process takes place at the point source where the machine works in neutral buoyancy and it is easy to transport. Avoidance of garbage collection process and analyzation of water adds as a unique value proposition of this machine.
- 
- BARCO works in lower sea bed level. It has high end mechanical function to reduce the mass of polluted wastes. The unique value is the conversion of water hyacinth plants to fibres at point source and the size is compatible for easy transportation.
 - As we are currently in the stage of TRL-6, with the completion of working prototype, we would like to develop our product with customer discovery on market analyzation. In the month of February, we would like to use the timeline for analysing the smart and efficient way of equipment usage in and around the problematic areas. By March we will be working on the compact design of the machine and further by April-May product development will be completed.
 - Currently, we are in the stage of prototype development, further we would like to extend our market analysis in customer discovery part. After completing the analysis of the need of the product we would like to start it from our very own city (Cooum River). Chennai corp. spends around 7.5L approx. per lake in a year to clear WH plants. As an initial step we are seeking collaboration with metro water corp. undertaking rivers and ponds in their Taluks.
 - Weed harvester used to collect WH plants in rivers and ponds in countries like Kenya and Brazil. It lacks in mobility and adaptability towards low sea bed level and economically not feasible. JCB's and trucks definitely need human interference and it lacks in transportation. Our solution is unique because it reduces 90% of the weight in WH plants due to point source fibre conversion process.

VIII. Important highlights:

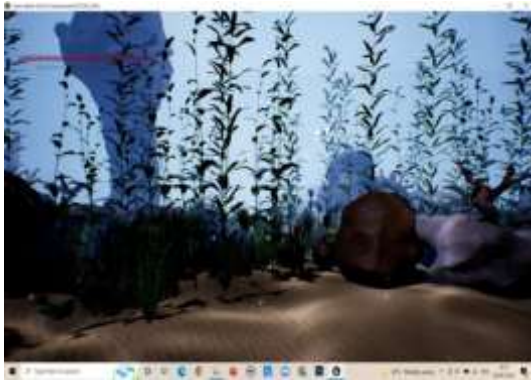
The team participated in the Indo-Danish Water Challenge conducted by NITI AAYOG, Delhi. The team had received a fund of 1,000 Euros for the further prototype development. Team BARCO also got selected in IIT Pals InnoWah Competition as Finalists. Currently they are working on the suggestions given by the industry experts. They are also in the track of Company incorporation. The team has manufactured their own by-product from the waste collected in Cooum river, Chennai. BARCO has the support of Greater Chennai Corporation as well.



Best Project-2: VR based Education Module

- I. **Project Title** : VR based Education Module
- II. **Mentors Name** : Mr. H. Mohamed Rizwan
- III. **Student team details**
 - i. Mr. Ganesh Babu M.
- IV. **Brief description about the student Project**
 - Meynikar Labs Pvt Ltd is a registered entity under Companies act. It was registered on 12th of April 2022. CIN: U72900TN2022PTC151327. It has received a fund of Rs. 2.5 Lakhs from Dr. MGR DST NewGen IEDC.
- V. **Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.**
 - The start-up was working on a problem statement regarding education sector. During pandemic students were completely lost their connection with schools and in particular with the laboratories. And in the laboratories, not all students are getting the chance for doing some experiments. So, keeping that in mind, Meynikar Labs Pvt Ltd had come up with an idea to implement Virtual Reality in practical learning. This applies to school students as well as medical practicing students.





Prototype of Underwater model for School Students



Underwater model under development

VI. Contribution of NewGen IEDC in the same

- Dr. MGR DST NewGen IEDC has provided contacts of schools in Chennai to test the demonstration among children. It has provided the computation facility for design and development of VR Modules.

VII. Future plan

- Future plan of Meynikar Labs Pvt Ltd is to develop the full module for students through which they can learn the concepts in practical manner. Demonstration to minimum 100 schools in and around Chennai including government schools for feedback. Iteration of module and the prototype. Launch of product. Entering the edu-tech market and show the traction for second level funding. To establish the Meynikar Labs Pvt Ltd as a leading Edu-tech Platform.
- Meynikar Labs Pvt Ltd is a educational technology startup incubated at Dr. APJ Abdul kalam Center of Excellence in Innovation and Entrepreneurship. Currently Meynikar is working on VR based education Module. The vision of Meynikar Labs is to enlighten the education system with the metaverse.
- Student's practical learning experience is very less. After this pandemic everything becomes online including the practical classes. Schools also become comfortable with online classes. Because of this student are not getting trained with the practical skills. For medical students, practicing with live models without any beforehand experience might be a problem either in student side or in college side such as wastage of specimen etc., So for these, Meynikar Labs Pvt Ltd is providing a solution with Virtual Reality.
- In the Virtual Reality experience, students can learn the practical experience. They can do surgeries, dissect, mix chemicals etc in the

metaverse along with their fellow classmates even though they are apart from each other. Teachers can monitor the students with their login.

- Currently Meynikar Labs Pvt Ltd has perceived a grant of Rs. 2,50,000 from DST NewGen IEDC through Dr. MGR DST NewGen IEDC. They have received best innovation award in a Bootcamp conducted by CIIC, Chennai. Customer interaction with the prototype has been made with Schools in Chennai. With the customer interaction, iterations and content creation is on progress. The Team has participated in the MIC IEV competition. The product will be a commercial hit since it is the right time to start with Virtual Reality and education module for practical learning is the need of the hour.
- Meynikar Labs Pvt Ltd has demonstrated their under-water VR model to the Jury panel and received their feedbacks. Currently, the model is being demonstrated in schools and waiting for their feedback responses.

Annexure-A

Details of Student Projects

Project-01: Local Market

1. **Project Title** : Local Market

2. **Mentor Name** : Mr. H. Mohamed Rizwan

3. **Student Team Names:**

I. Mr. Radhesh Sharma

4. **Project Description:**

One app for whole local market, this app will probably video facilities to people to purchase anything from local market within no time. And to sellers it will be boon for management sales, catalogue management, invoice complete solution. The project is all about connecting the local stores with the public. During the pandemic, it was a great issue that people couldn't even access the local stores. In such cases and during all the times, people can access the local stores from their mobile phone.

5. **Project status at beginning of the Year:**

- Ideation

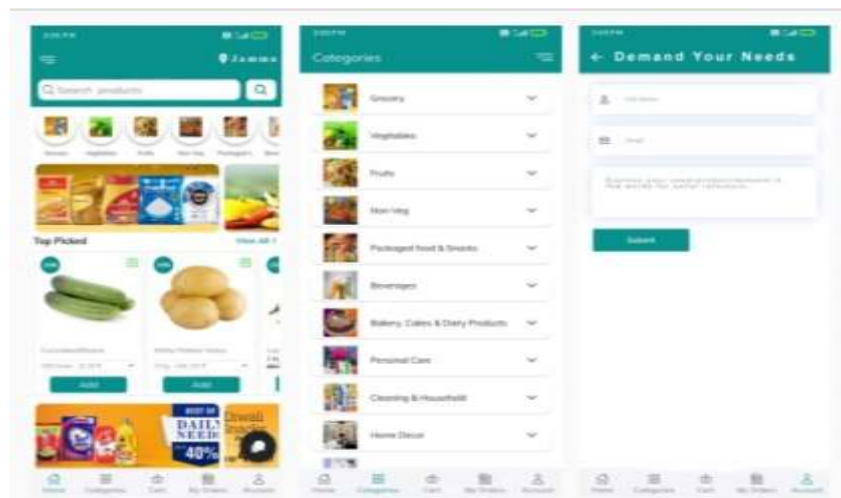
6. **Interventions made:**

- Interacted with local shop owners who will be the early adopters.
Designing the UI and the UX

7. **Current status:**

- Prototype Design

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-02: Health Saathi

1. **Project Title** : Health Saathi
2. **Mentor Name** : Dr. K. V. Gopal

3. **Student Team Names:**

- I. Mr. Vishwajeeth Kumar

4. **Project Description:**

Health Saathi is a project of a start-up called Endeavours Ally Pvt Ltd which focuses on both Digital and Physical aspect of rural health currently incubated at AKC. The start-up has also collected bootstrap money of Rs. 6 Lakhs. The start-up is providing services like Physical, Tele, Cloud and Text Consultation from Doctors/ Psychiatricians/ Dietitians/ Nutritionists/ Yoga Trainer, Booking Medicine/ Path Tests, SoS Ambulance Booking, Health Aide Appointments, Therapist Appointment, Home Care Assistant Booking, Child Care Support, Medical Social Workers Help. We have got recognition from DPIIT, MCA, STARTUP BIHAR.

5. **Project status at beginning of the Year:**

- Ideation

6. **Interventions made:**

- Interacted with many doctors and customers regarding the development and deployment of the project. Started a company registered as Pvt Ltd.

7. **Current status:**

- App Development

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-03: Comrade

1. **Project Title** : Comrade

2. **Mentor Name** : Mr. L. Madheshwaran

3. **Student Team Names:**

- I. Mr. Balaji
- II. Mr. Koushik

4. **Project Description:**

In this era, mostly females are afraid to step out of their houses because of sexual abuse and harassment at public places and also people are might get panic attacks, heart attacks. During such times, nobody would be available at that time to help them. Considering that problem, Comrade is being developed to safeguard and help people. Using this Comrade application, they can send SOS signal to the local comrades who are volunteers like friends of police. It will also send an SMS alert to the local police station as well as to the family members.

5. **Project status at beginning of the Year:**

- Ideation

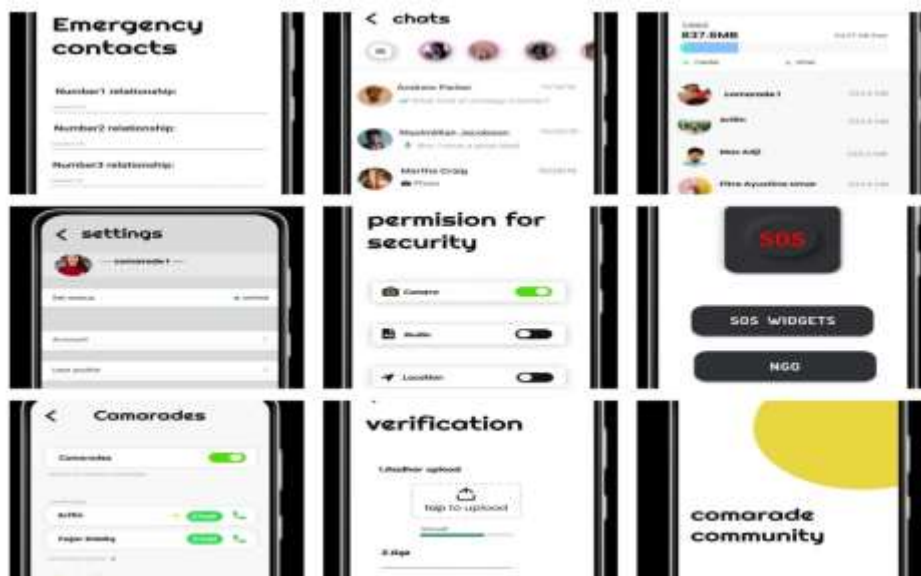
6. **Interventions made:**

- Design of User Interface and meeting industry experts and investors. Interacting with customers for development of application with necessary access

7. **Current status:**

- App Development

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-04: Aphonic Device

1. **Project Title** : Aphonic Device

2. **Mentor Name** : Dr. S. Nandhakumar

3. **Student Team Names:**

I. Ms. Karthika S.

II. Ms. Sneha Sri

4. **Project Description:**

People who are born aphonic (mute) couldn't communicate with public even for their basic needs. People who are born deaf will also be aphonic since they haven't heard any so they won't speak any. For them, developing a communication software/hardware for the purpose of ease of communication between hearing impaired and general population through help of Piczoji's, (pictographic emojis) also has special features in detecting traffic noises and alert system.

5. **Project status at beginning of the Year:**

- Validated Idea

6. **Interventions made:**

- Interacted with aphonic people in a special school at Chennai. Collected the necessary information regarding how they'll communicate with the common public. Design of UI is finalized. New Emoji's are developed.

7. **Current status:**

- Emoji & Software Development

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-05: Scanning Goggles

1. Project Title : Scanning Goggles

2. Mentor Name : Dr. Gomathy

3. Student Team Names:

I. Ms. Meena

4. Project Description:

People with partial blindness and vision disabilities find tough to read books and papers. Existing method for this is using brailey language and a major disadvantage in this is we can't read some written document. This project solves the issue by making a device which can recognize the text using OCR (Optical Character Recognition) technology and coverts the text into audio and let the users hear the handwritten as well as type written documents. It will be an eye opener for those who lost their vision and those who are visually challenged since birth. This device is a wearable one.

5. Project status at beginning of the Year:

- Validated Idea

6. Interventions made:

- Interacted with visually challenged people in a blind school and validated the idea. Design for the device is ready and algorithm is under development for the software.

7. Current status:

- Design & Software Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: E-Brick

1. Project Title : E-Brick

2. Mentor Name : Mr. Madheshwaran L.

3. Student Team Names:

- I. Ms. Monisha
- II. Ms. Deepika
- III. Mr. Kalaiselvan

4. Project Description:

E waste is very dreadful to environment since it causes pollution to our environment by releasing toxic gases. These electronic waste management is really a tough one and many are working on the e waste management. Most of the electronic waste are recyclable except few such as Printable Circuit Boards. The Lead content of this board is really high. This project's idea is to de-solder the lead and collect the electronic components aside. The rest, we can use it for making construction bricks. E bricks will be a great replacement in construction industry and it will be an eco-friendly one since it is a waste to wealth product.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Validated the problem and idea. Currently working on developing PoC with the waste PCBs. Interacted with industry experts for the problem validation

7. Current status:

- PoC Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Med-Tor

1. Project Title : Med-Tor

2. Mentor Name : Mr. Madheshwaran L.

3. Student Team Names:

- I. Mr. Praveen Kumar
- II. Mr. Trivikraman
- III. Ms. Sneha

4. Project Description:

Medical waste management is one of the needs of the hour since. We can't recycle medical wastes since it contains toxic microorganisms and some biological samples. Only way is incineration and that faces a major problem in operating the incinerators. This project's idea is to design a mobile incinerator. This incinerator releases the toxic gases inside a coolant which resist the gases to be released into environment.

5. Project status at beginning of the Year:

- Ideation

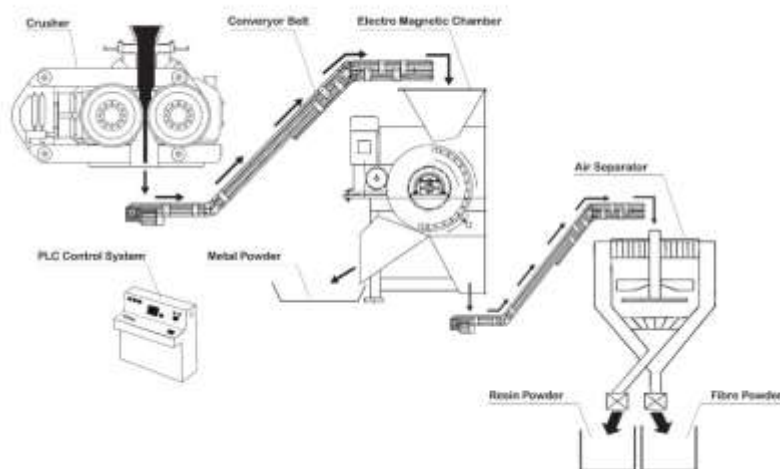
6. Interventions made:

- Customer validation is done by interacting with medical personals and hospitals. Idea validation is done by iterating the initial idea

7. Current status:

- PoC Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: BARCO

1. Project Title : BARCO

2. Mentor Name : Dr. J. Arunkumar

3. Student Team Names:

I. Ms. Varsheni Nagarajan

4. Project Description:

Water hyacinth is a water weed which prevents sunlight to enter into the water and causes Biological Oxygen Demand to the aquatic eco system. To remove this, government spends a lot of money by renting or using heavy machineries. Though it will regrow in 12 days. This weed arrests water during flood times which causes the flood water to enter into cities. Though the heavy machines collected the hyacinth, after harvesting it is been dumped into grounds. To resolve this team BARCO came with an idea with a simple machine which is a battery-operated boat. It collects the water weed and crush it, process it in the site of collection itself. Later, the fibres are converted into useful products such as papers.

5. Project status at beginning of the Year:

- Proof of Concept

6. Interventions made:

- Minimal Usable Prototype has been developed and tested in the laboratory environment. Interacting with international experts by participating in the IIT PALS InnoWah competition and in Indo-Danish Water Challenge competition.

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: VR based EduTech module

1. Project Title : VR based EduTech module

2. Mentor Name : Mr. H. Mohamed Rizwan

3. Student Team Names:

I. Mr. Ganesh Babu

4. Project Description:

Practical Learning experience is lagging in our education system. All students have lab facilities but not all of them are getting chances for practical learning. Especially in medical practice, if one mistake is done with patients, it is a huge problem. To rectify all these, Meynikar Labs Pvt Ltd has come up with an idea – integrating the practical learning experience with the virtual reality. Providing students new learning opportunity where they can practice, practice and practice until they become ready to do it on field. This product provides students a confidence and also a hands-on learning experience. In this, modules will be given along with one VR device. Teachers can monitor the students and their activities from elsewhere.

5. Project status at beginning of the Year:

- Validated Idea

6. Interventions made:

- Customer Validation is done and reverse engineering is made with VR gadget from Oculus. Module is under development

7. Current status:

- Module & Demo Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Preserve Pathaneer

1. **Project Title** : Preserve Pathaneer

2. **Mentor Name** : Dr. Reena Das

3. **Student Team Names:**

I. Ms. Ulfath Fathima

4. **Project Description:**

Pathaneer (Palm Juice) is a seasonal but healthiest food. Preservation techniques are not available for this palm juice. If we leave it as such, it will become palm wine in which alcohol content will be high. Considering this, preservation technique for palm juice is under research and development. Using biological preservatives such as nisin are suggested through this project

5. **Project status at beginning of the Year:**

- Research and Ideation

6. **Interventions made:**

- Hydraulic pressure set up which filters the pathaneer even faster while purification process. Interacted with Industry experts (Central Palm Sugar and Palm Products Institute)

7. **Current status:**

- Research & Development

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-11: Zebrafish Test Facility

1. Project Title : Zebrafish Test Facility

2. Mentor Name : Dr. Anand Babu K.

3. Student Team Names:

I. Mr. Udhayakumar

4. Project Description:

Aim of this project is to develop a system which leads to help the Fish Keepers and Zebra fish researchers. Nowadays keeping ornamental fishes in houses and other public places like hotels, Restaurants.,etc are growing. Due to poor maintenance of the aquarium like poor water management and Tank cleaning the fishes sometimes found died. So we found a solution to clean the tank and managing the water automatically. Our water filtration system mainly designed to eliminate Nitrogen compounds. In addition to we add some extra features like Mobile application for disease control using pictures and videos of the fishes, Automatic Temperature and pH maintaining, Automatic food and Drug dispenser. Using our system anyone can grow fishes without any practice. For researchers we add some extra Facilities specifically to Zebrafish which are Breeding facility, Egg collector, Egg hatching monitor, Swim pattern analyser, Fish Body temperature Identifier, Feacus collector, Fish growth and size analyser, Gender Identifier, and Remote monitoring facility.

5. Project status at beginning of the Year:

- Research & Ideation

6. Interventions made:

- Analyzed the fish pattern by setting up a zebra fish lab facility in our institute. Currently working on elimination of nitrogen compounds from water.

7. Current status:

- Research & Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Jesso

1. **Project Title** : Jesso
2. **Mentor Name** : Dr. J. Arun Kumar

3. **Student Team Names:**

- I. Mr. Joel Andrews

4. **Project Description:**

Jesso is an education tech company aiming to make educational activities smart, easy, error-free, accessible at any time, and monitor them at any time. We started this venture to upgrade education in the path we wished for things to happen in reality when we were students. To give a brief tour of our application, Jesso helps to bridge the connection between Management - Teacher-Student- Parents. Every group's need and expectation is met in the form of a feature modules in this software and application.

5. **Project status at beginning of the Year:**

- Prototype

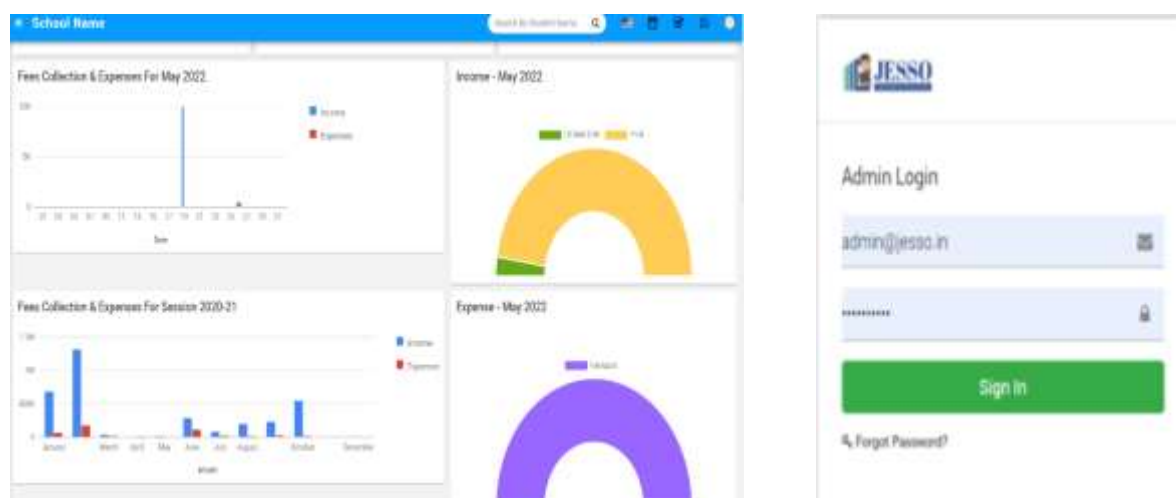
6. **Interventions made:**

- Product is under testing with Schools around Chennai. Sold other education systems and generated revenue of Rs. 1,50,000/- Networking with the schools is being constantly done.

7. **Current status:**

- Testing Prototype

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-13: E Midwife

1. **Project Title** : E Midwife

2. **Mentor Name** : Dr. Hepsibah Sharmil

3. **Student Team Names:**

I. Ms. Santhoshkumari

4. **Project Description:**

Ability of nurse-midwives in diagnosis and immediate management of obstetric complications: Effectiveness Of mobile application. Development of mobile application on obstetric complications. An obstetric complication is an acute condition arising from a direct cause of maternal death, such as antepartum or postpartum haemorrhage, obstructed labor, postpartum sepsis, complications of abortion, pre-eclampsia or eclampsia, ectopic pregnancy, and ruptured uterus, or indirect causes such as anaemia.

5. **Project status at beginning of the Year:**

- Proof of Concept

6. **Interventions made:**

- Development of Mobile application and pretesting of previously collected data.

7. **Current status:**

- Data Collection

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-14: Retractable Helmets

1. Project Title : Retractable Helmets

2. Mentor Name : Ms. Sandhya Vannan

3. Student Team Names:

- I. Mr. R. Vignesh
- II. Mr. Praveenkumar R.

4. Project Description:

Carrying around a helmet to wherever we go, is really uncomfortable for the bikers. Keeping the helmets in the bike itself has theft issues. This team came up with an idea, called retractable helmet. This helmet is designed to be foldable. People can carry the helmet around wherever they go.

5. Project status at beginning of the Year:

- Design

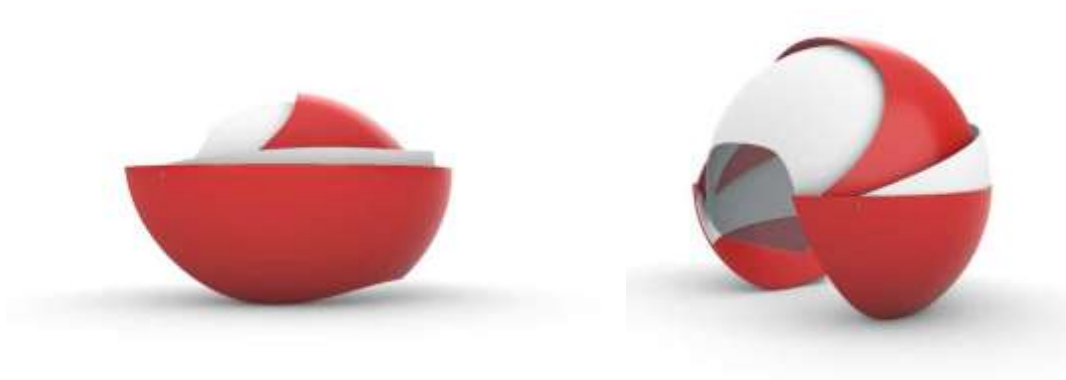
6. Interventions made:

- Customer Validation is done and prototype was designed

7. Current status:

- PoC Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Pain Assessing Device

1. Project Title : Pain Assessing Device

2. Mentor Name : Dr. Veena @ Kirthika

3. Student Team Names:

I. Ms. Srisaisantoshini S.

4. Project Description:

Pain is a sensory action in our body which is the response of our brain sensing something painful. While treating patients, always pain identification will be a subjective one which means only the patient can tell whether they feel the pain or not. They can't say the exact site of pain and due to this, treatment for their pain would be in some other site. This will make the treatment process ineffective. Sometimes patients' sensory nerves might be bruised. Due to that they can't sense the pain which occurs to them. To rectify all these and identify the exact pain site to treat them, the team has come up with a device that measures pain and quantifies it as pain measurement so far is only subjective based on the responses obtained from the patient. This device would assess and measure the pain objectively. It is based on thermal response of our body.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Idea Validation

7. Current status:

- PoC Design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Fall Prev-Footwear

1. Project Title : Fall Prev-Footwear

2. Mentor Name : Dr. Veena @ Kirthika

3. Student Team Names:

I. Ms. Ashrin

4. Project Description:

Elderly people and people with nervous disorders are tend to fall normally. While falling, they hurt themselves. There might be a chance of getting fractured. To prevent this team have come up with an idea called fall preventive footwear. This footwear has sensors which will detect the irregular motion in our body and sense the fall before falling. This will activate the wearable air sacs by the patients. That will prevent them from getting hurt.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Problem validation and Idea Vaildation

7. Current status:

- PoC Design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Physio Genics

1. Project Title : Physio Genics

2. Mentor Name : Dr. Sathyaraja

3. Student Team Names:

I. Mr. Ranjith

4. Project Description:

Posture maintenance is a serious issue nowadays. People working in IT sector and desk workers are facing many spinal cord. For this, sitting posture is the major cause. Prolonged sitting at one place in wrong posture might affect us really bad. To avoid this the team have come up with an idea called Ergonomic Posture Chair.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Problem validation and Idea Vaildation

7. Current status:

- Design of PoC

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Bus Live Tracking

1. **Project Title** : Bus Live Tracking

2. **Mentor Name** : Mr. Venkatesh V.

3. **Student Team Names:**

I. Mr. Harsha

4. **Project Description:**

School students, college students and their parents are struggling everyday finding where their bus is. Tracking a bus lively is not being followed in any educational institutions. Management don't have the control of tracking and update as well. This team has come up with an idea of tracking school and college busses lively with ID Card scanning to find whether the student have boarded the bus or not. This will be a helpful tool for the parents and students to track where their children is and where their bus is. Through management login, management can track the data of bus running time, starting time and finishing time and also if anything critical happen to the bus.

5. **Project status at beginning of the Year:**

- Ideation & Customer Interaction

6. **Interventions made:**

- Problem is validated with customers

7. **Current status:**

- Customer Validation

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-19: Postural Drainage

1. Project Title : Postural Drainage

2. Mentor Name : Dr. G. Vaishnavi

3. Student Team Names:

I. Mr. Pradeep

4. Project Description:

It is a new idea about removal of secretions from the lung with using tilting cot connected with chest vibrator that will around the person chest, we can easily change the position of patient to drain the secretion from the lung.so it's specifically useful for lung disease patient e.g.: bronchiectasis, cystic fibrosis, bronchial asthma, bed ridden patients, post-surgical patients and also COVID-19 patients etc. Mostly nowadays because of covid most of the people are suffered by lung secretions in worldwide, specifically in India around 3.2 million people affected.so this PDAB is useful for drain secretion.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Problem and idea is validated

7. Current status:

- PoC Design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Dexterity Dynamics

1. Project Title : Dexterity Dynamics

2. Mentor Name : Dr. K Kamatchi

3. Student Team Names:

- I. Mr. Edward Thainess Durai
- II. Ms. Pavithra

4. Project Description:

Patients who are affected by nervous damage like stroke and the fracture patients can use this equipment. This physiotherapy equipment can aid the physiotherapists. They can treat the patients and using this equipment and also use modality in this. Dexterity Dynamics is a modality intervention developed with sensors by generating the kinesiology movements in appropriate range of motion to produce fine and gross motor movements thereby improving Activities of daily Living (ADL) of patients with neurological disorders.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- We took a survey on existing solution and found out drawbacks of existing solution and we made our final proposed solution in accessible way

7. Current status:

- PoC Design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: National Engineering College

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	National Engineering College, Kovilpatti		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. K. Kalidasa Murugavel		
Name of NewGen IEDC Coordinator	Dr. I. Sankar		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> Mobile Number e-Mail ID 	9894697322 sankarmech@nec.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/10 Date 15.06.2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Innovations in NEC: Exclusively for freshman Engineers – 1st year students, 30th October 2022. NewGen IEDC Coordinators handled the sessions.
 - All the 1st year students participated in the orientation programme, and now they will be able to understand and describe the following
 - New product development process and its impact on social welfare
 - Achievements of NEC NewGen IEDC in new product development sector.



2. Orientation Programme on Entrepreneurship- 1st year students , 02nd April 2022, NewGen IEDC Coordinators handled the sessions.



3. "Shoppers Corner"



[B] To identify, develop & commercialize students' innovative ideas

1. **Put your Idea Get our Approval (PIGA)** - selecting the right projects – 2021-2022
2. **Periodical** review meetings - to monitor the progress of the 2020-21 batch projects on 27th January 2022, 28th January 2022 & 29th January 2022
3. A **review** on patentability of the 2020-21 batch products on 16th May 2022 by Mr. P. Ramesh Kannan. Intellectual Property Consultant, Vidarzana, Chennai, was invited as a review member to analyse the patentability of the 2020-21 batch products



4. **Awareness** Camp for TNSI, 14th December 2021. Event organized in association with Anna University Regional Centre Tirunelveli-IEDP Hub and EDII, Chennai



[C] To enhance Industry-Academia interaction

1. RYLA 11.0 Be an Entrepreneur event participation on 18th March 2022, 20th to 22nd May 2022. Event organized by Rotary club of Virudhunagar



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Due to the COVID-19 pandemic situation impacts, many of the planned events were could not be conducted as per the action plan and scheduled to conduct in forthcoming days.

3. Other important highlights (new initiatives), if any: NA

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

The respective details will be sent after the product development activities get completed

Best Project-1 : AI Based Soil Nutrients Prediction and Plantation Assistance Device

I. Project Title : AI Based Soil Nutrients Prediction and Plantation Assistance Device

II. Mentors Name : Dr. B. Paramasivan, Dr. S. Raja Gopal & Mr. N. Arumugam

III. Student team details

- i. Kailaash Jeevan J
- ii. Sri Sutharsan MV
- iii. Kishore Kumar C.

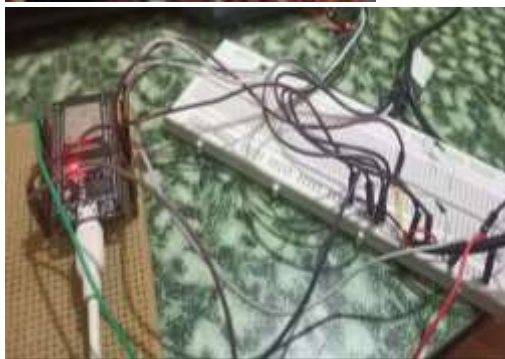
IV. Brief description of the student start-up

- The product which we have developed is an Agricultural IoT-based product. The product's functionality is to record the environmental conditions in which it's placed and to find if it's suitable for plantation. Thus, we have formed a start-up named Tersbyte Technologies to establish a business by giving out the product in the market and developing a database of plantation environments.
- The significant advantage we see here is that we could promote house farming and enable our customers to sell their cultivations. Through this, we could establish a market for home-cultivated vegetables, which are in great demand now.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

- During our ideation process, we visited Agricultural Research centres and discussed this idea with some officials. Then, we noted all the key points they provided during our visit and constructed a rough idea about what our product will be focusing.
- Later then, we also did some open surveys and recognized that people were interested in doing house farming. Some were interested in producing on a bit large scale and selling it. Meanwhile, some wanted it just for their home needs. The common problem we have found here is that the production quality and quantity vary, and they are not well aware of its cause—another set of customers asked for automation in irrigation and other functionalities to alert about any anomalies.

- Then having all this data, we started to choose the sensors we required to develop the product. Then we argued about the size and power source of the product. Later we came up with a prototype idea and made some trails on it. Then, we need to calculate the soil's Nitrogen, Potassium and Phosphorus values. We tried many methods, including spectroscopy but were unsuccessful. Later we discovered that the NPK sensor was available, and we purchased it.
- Then we formed the structural prototype of the device, connected all the sensors, and finally, our prototype was successfully developed.



VI. Contribution of NewGen IEDC in the same

- NewGen IEDC has supported us in visiting the agricultural research centre and collecting the required details. They have also provided sufficient components and tools to develop the product

VII. Future plan

- We have planned to develop an irrigation automation system and open an E-market for the customers to sell their products. Alongside we are working on developing this sensor for large-scale monitoring.

VIII. Important highlights

- We provide a mobile application for live monitoring and guidance support. We have also developed a forum where our customers could post their queries and get support.

Best Project-2: Multipurpose Walker Aid for Elders

I. Project Title : Multipurpose Walker Aid for Elders

II. Mentors Name :Kalyana Sundaram, Bhuvanesh R, Heena Fathima P,
Karthikeyan K & Sivaganesh J

III. Student team details

I. D. Vijayakumar

II. S. Rajeshkumar

III. Dr. P. Ramanan

IV. Brief description about the student Project

- Multi-Purpose walker support aims to provide easeness for the elders and orthopatinets while walking within and outside the house. Based on the needs collected from surveys with elders and ortho patients, we offer the following features in the walker system. The Walker is designed with Automated Movement Provision. A Control System with Different Speed Controls will manage the automatic movement of the device with the help of movement chassis. In addition to tracking health and emergency information sharing, it includes Health tracking sensors and IoT components. The product uses solid, lightweight parts with Feels Good DesignSeat set up to sit on need, Goods Container Add On. The user will Take the complete product as walker support to balance and track health and purchase support goods carrying container.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Phase 1:

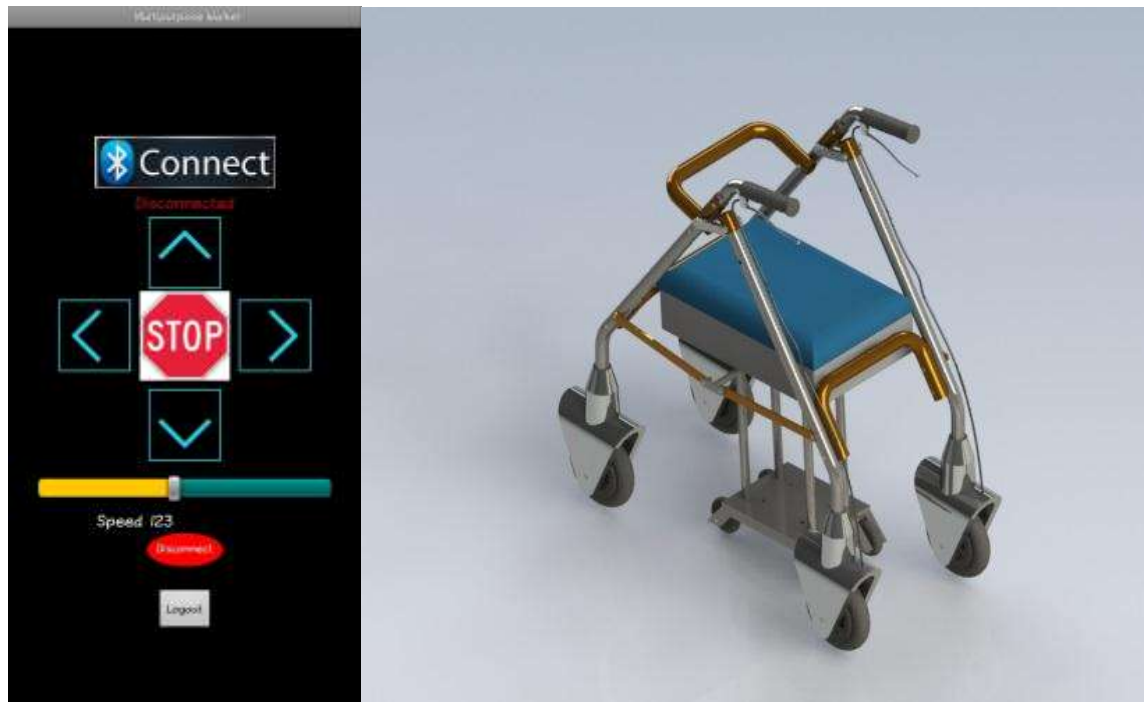
- Survey related to the implementation of Product design.
- We have finalized the product hardware and software modules.
- It is initialized to sort the components needed for phase 1 development.

Phase 2:

- Implementations of NewGen IEDC panel members' suggestions
- Communicated with the physiotherapy clinics for suggestions
- Collected the information regarding adding technologies in the product.

Phase 3:

- Implementation of prototype
- coding and debugging the Arduino program and android application
- Assembling the prototype



VI. Contribution of NewGen IEDC in the same

- With Newgen IEDC, we are communicating with Ortho hospitals to improve the real-time working product to make our product Commercially sellable.

VII. Future plan

- The commercial viability of the products will be evaluated through first-end customers' feedback, and a robust version of the product will be released.

Annexure-A

Details of Student Projects

Project-01: Automated Cast Trolley for Isolated Patients

1. Project Title : Automated Cast Trolley for Isolated Patients

2. Mentor's Name : Dr. J. Naskath & Mrs. B. Shunmugapriya

3. Student Team Names:

- I. Mr. Alhaseena KM
- II. Mr. Francis Selvaraj Pandian R

4. Project Description:

- The automated cast trolley is an electronic device that avoids direct contact with isolated patients and delivers medicine and other basic requirements.
- The trolley is programmed with the help of Arduino and sensors and thus enable movement.
- Sensors are incorporated hence it helps in monitoring temperature and blood oxygen level communication setup is made to interact with patients.
- A sanitizer module is made which includes level detection and sanitizing patients.
- The whole functionality of this trolley is controlled with the help of a mobile application by the station in charge.

5. Project status at beginning of the Year:

- Sanitizer modules and physical frames were made

6. Interventions made:

- Sensors, power source and communication of trolley are set up.
- An application developed to monitor trolley.

7. Current status:

- Integrating modules to develop a full-fledged product

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Multipurpose Walker aid for Elders

- 1. Project Title** : Multipurpose Walker aid for Elders
- 2. Mentor's Name** : Mr. S. Rajeshkumar, Mr. D. Vijayakumar & Dr. P. Ramanan

3. Student Team Names:

- I. Mr. Kalyana Sundaram M.
- II. Mr. Bhuvanesh R.
- III. Mr. Karthikeyan K.
- IV. Mr. Sivaganesh J.

4. Project Description:

Multi-Purpose walker support is aiming to provide easiness for the elders and ortho patients while they are walking within and outside the house. Based on the needs collected from surveys with elders and ortho patients we provide the following features in the walker system. The Walker is designed with Automated Movement Provision. A Control System with Different Speed Controls will manage the automatic movement of the device with the help of movement chassis. In addition to that for tracking health and emergency information sharing it includes Health tracking sensors and IOT components. Product is using strong and Lightweight component with Feels Good Design Seat set up to sit on need, Goods Container Add On...The user will Take the complete product as walker support to balance and tracking health as well purchase support goods carrying container.

5. Project status at beginning of the Year:

- Literature survey related to implementation of Product design.
- Consulted doctors for improving the product design and to make it more users friendly. Analyzed various components and software's for product implementation.

6. Interventions made:

- Multipurpose walker with wired and wireless control.
- Mobile application is developed for wireless control using Bluetooth.
- Unique design is implemented using lightweight materials for the multipurpose walker.

7. Current status:

- Currently working on movement chassis
- A mobile application is being developed for wireless mode of control.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Smart Aquarium

1. Project Title : Smart Aquarium

2. Mentor's Name : Dr. J. Naskath & Dr. K. Vivekrabinson

3. Student Team Names:

- I. Mr. Venu Vignesh T.
- II. Mr. Esakki Ram R.
- III. Mr. Maniazhagan M.
- IV. Mr. Nithish Kumar R.

4. Project Description:

Automatic fish feeders are electronic devices capable of dispensing fish food at preset intervals. It consists of a timing circuitry to keep track of time and a trigger or switch to activate the dispensing mechanism which usually employs a motor. The system supports remote dispensing where we can feed foods from anywhere using a Smartphone. The different sensors used to measure the physical and chemical parameters of the water are temperature, PH, TDS (Total Dissolved Salts). The smart fish tank also consists of a water purifier, which automatically absorbs feces, debris, and residues in water when the water purity level reaches a certain threshold. With the help of monitoring all the parameters, we can ensure the quality of water and also ensure the safety of the fish.

5. Project status at beginning of the Year:

- Model prototype using blynk software and Aurdino UNO had been designed.

6. Interventions made:

- Conceptual design of fish feeding system and various components
- Detail design and fabrication of Aquarium
- Integrating various units

7. Current status:

- Printed Circuit Board (PCB) design is in progress to combine all the sensors

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Auto Low cost commercially viable composite Block

1. Project Title : Auto Low cost commercially viable composite Block

2. Mentor's Name : Mrs. M. Balamaheswari, Mr. S. M. Murali Ram Kumar &
Ms. B. Anitha

3. Student Team Names:

- I. Praveen Kumar A.
- II. Siva Prakash K.
- III. Sheba Battista P.
- IV. Siva Subramanian S.

4. Project Description:

The 'Low cost Commercially Viable Composite Block' is planned to develop with the composition of crushed waste alcoholic glass bottles and black cotton soils & Hydrated Lime as a partial replacement for M-Sand and Cement respectively.

The blocks are casted with locally available clayey soil, Baby chips, and M-Sand which are mixed along with hydrated lime and cement. The waste alcoholic glass bottles are crushed and added to the matrix where the binding is enabled by means of highly alkaline solutions (sodium hydroxide and sodium silicate). The blocks of size 400 mm x 200 mm x 100 mm are casted and subjected to curing. The Compressive Strength of Blocks are tested and compared with conventional concrete blocks

5. Project status at beginning of the Year:

- Literature study and concept trials

6. Interventions made:

- Trial mix for M25
- Comparison of methods of Water Curing and Steam Curing for casted Blocks.
- Water Absorption in Percentage.
- Comparing the Weight of composite block to conventional Concrete Block.
- Compressive strength test of block.

7. Current status:

- On-going (To achieve Target Mean Strength for the casted Blocks)

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Automatic Threat Recognition System Using Surveillance Camera

1. Project Title : Automatic Threat recognition system using surveillance Camera

2. Mentor's Name : Dr. T. Vijayanandh & Mr. K. Subramanian

3. Student Team Names:

- I. Mr. Naveen Kumar M.
- II. Mr. Jegan M.
- III. Mr. Azhagan S.
- IV. Mr. Guru Ganesh S.
- V. Mr. Arun Prasath S.
- VI. Mr. Alex J.

4. Project Description:

The installation of CCTV cameras in homes/offices has been prevalent to detect people movement. Camera recordings needed to be stored in Hard disks and the visuals must be revisited to identify the movement. In general, it is passive method. Event detections are known after the occurrence of the event and its impact been realized. Dynamically understanding the scene and detection and sending the alert message would prevent the event/accident and could initiate actions to reduce the effect of the damage.

5. Project status at beginning of the Year:

- Dataset collection of the various threats
- Modelling of the system

6. Interventions made:

- Design and development of image processing systems
- Purchase of NVIDIA Jetson Nano Developer kit
- Testing of equipment

7. Current status:

- Design modifications and Fine tuning of the product is in progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Domestic Multipurpose Cleaner

1. Project Title : Domestic Multipurpose Cleaner

2. Mentor's Name : Dr.V. R. S. Mani & Dr. M. Ravindran

3. Student Team Names:

- I. Ms. Banupriya R.
- II. Ms. Suvalakshmi S.
- III. Ms. Uma Raja Selvi M.
- IV. Ms. Akshaya P.
- V. Ms. Jaanu A. S. N.

4. Project Description:

The proposed Domestic Multipurpose Cleaner has simple operation, produce consistent clean results, and predictable wash times. The proposed cleaning system consists of fully automatic Flexible Silicone brush assembly, which can move and clean both in horizontal and vertical direction. It is fixed tightly to the toilet bowl / Tank / Wash basin. It consists of a micro controller to perform different cleaning actions. The brush assembly can be moved in both horizontal and vertical directions with the help of motors. Cleaning chemicals can be added along with water through a separate pipeline. Switches are provided to perform different operations. The features of the products are as follows. The product

- Cleans multiple Round and Elongated toilets.
- Systematically scrubs the top, inner & under rim, and bowl interior.
- Brushes in radial, wavy and vertical motions with optimal pressure.
- Suspends over the toilet during use and removed after, to stay clean.
- Uses water-proof components for electrical safety.
- Is great for people who find toilet cleaning gross, difficult or tedious.
- Is simple to install and operate.

5. Project status at beginning of the Year:

- Literature study and Concept design

6. Interventions made:

- Detail design of the bowl, structure, and electrical systems
- Fabrication of the units

7. Current status:

- Fabrication and assembly is under progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: IoT Based Chick Incubator

1. Project Title : IoT Based Chick Incubator

2. Mentor's Name : Dr. R. V. Maheswari & Dr. B. Vigneshwaran

3. Student Team Names:

- I. Mr. L Jagathish
- II. Mr. J S Jekhan
- III. Mr. S Pon Saravana Kumar
- IV. Mr. M Arif Naushath
- V. Mr. E. Nithin Durai

4. Project Description:

The main objective of our project is the broody hen sometimes leaves the hatching eggs before the eggs are hatched. Due to this we can't produce the require amount of egg. The breaking of eggs may occur due to faulty sitting of broody hen. Diseases can spread during the incubation. Temperature, humidity, and environmental condition can affect the egg. The hen does not lay egg so long they are engaged in hatching of eggs. The total production of eggs may be hampered for this. Conventional incubators require more human intervention, and the efficiency is around 70% because of lagging in monitoring of rotten egg.

5. Project status at beginning of the Year:

- Studies on traditional available chick incubator model & Conceptual Design

6. Interventions Made:

- Started collecting details from different chick incubator manufacturing companies to study its drawback for further improvement and discussion with industries to know their problems during manufacturing the products.
- Design and fabrication of incubator
- Create an app to monitor the development of chick

7. Current status:

- 65% of the project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Third Eye for Visually impaired people

1. Project Title : Third Eye for Visually impaired people

2. Mentor's Name : Dr. S. Chidambaram, Mr.G. Pandiyarajan &
Ms. J. E. Jeyanthi

3. Student Team Names:

- I. Ms. Anusiya G
- II. Ms. ShunmugaLakshmi P
- III. Mr. Lokeshdurai V

4. Project Description:

The purpose of this product is mainly concentrated on visually impaired people. It is an electronic tool which contains Ultrasonic Sensor, GPS, and GSM module. The role of the components as, Ultrasonic Sensor is to detect object by echo i.e. (that measures the distance of a target object by emitting ultrasonic sound waves and converts the reflected sound into an electrical signal). GPS modules contain tiny processors and antennas that directly receive data sent by satellites through dedicated RF frequencies. GSM module is a hardware device that uses GSM mobile telephone technology to provide a data link to a remote network and it is designed to enable wireless communication for radiation monitoring instrument intended for continuous data monitoring and emergency alert. GSM is also associated with specs along with the scanner and headphones. With this visually impaired people can easily identify the obstacle, able to read books by their own, can be walked alone independently. By this they can even share their location to their guardian in case of misplaced. It concludes that this tool acts as supporter for them.

5. Project status at beginning of the Year:

- Conceptual design of the product and literature study

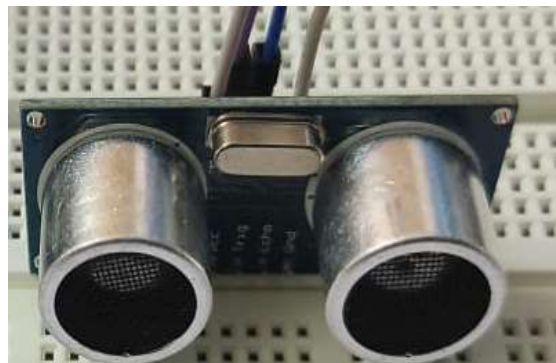
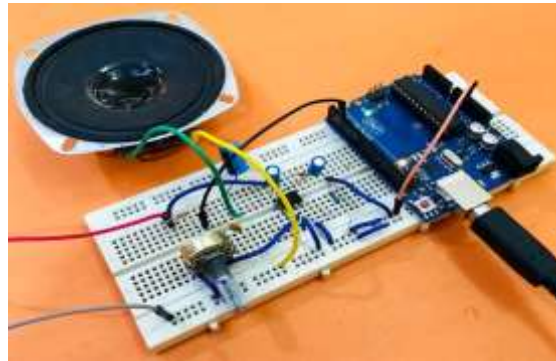
6. Interventions made:

- Design of intelligent systems
- Fabrication of the systems

7. Current status:

- 90% of the fabrication completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: AI based Soil Nutrients prediction and plantation assistance device

1. Project Title : AI based Soil Nutrients prediction and plantation Assistance device

2. Mentor's Name : Dr. B Paramasivan, Dr. N. Arumugam & Dr. S Raja Gopal

3. Student Team Names:

- I. Mr. Kailaash Jeevan J
- II. Mr. Sri Sutharsan M V
- III. Mr. Kishore C

4. Project Description:

- The device monitors the soil condition and uses those physical data to find the types of plants that can be grown on that particular soil.

5. Project status at beginning of the Year:

- The hardware sensors were decided based on the required parameters. A prototype was developed to monitor the soil and send the data to the cloud.

6. Interventions made:

- The cloud and the mobile application were built.
- The PCB design for the project was made.
- Some changes were done on the prototype as it was not feasible in certain functions.

7. Current status:

- The PCB is being ordered and the training models for the AI is being collected.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Personalized Drone for Pesticide Spraying

1. Project Title : Personalized Drone for Pesticide Spraying

2. Mentor's Name : Mr. C. Suresh Kumar

3. Student Team Names:

IV. Mr. Mohammed Ibrahim Rashid

V. Mr. Anandhavel T.

VI. Mr. Santhosh V.

4. Project Description:

Drone technology is expanding its application in many fields like civilian and military applications and lead to the enormous outcome and performance. The drones are designed in various sizes and weights based on the requirement of applications. In agriculture, the drones can be used to serve the functions like surveying farm land, monitoring livestock, irrigation, and spraying pesticide etc. However, the technology is accessible for the large-scale farmers due to the cost involved in buying and skills required in actuating the drones for the application.

The miniature drones for serving the multiple functions to small scale farmers needs to be developed to increase their performance. The technology reduces the time and cost involved in carrying out tasks in agriculture. Further, the availability of manpower is another big crisis in the present scenario. This could be greatly addressed by the effective employment of drones in agriculture. And the health hazards due to direct contact of chemicals can be avoided.

The proposed project of drone will be dealt with the development of a unique drone for multifunctional performance in agricultural field. It will primarily focus on spraying pesticide and spreading fertilizer in the agricultural field. In addition, the surveillance facility will also be integrated with the system. The drone system will be affordable for the small and medium scale farmers to buy and use it effectively for developing sustainable agriculture system.

5. Project status at beginning of the Year:

- Conceptual Design of the drone

6. Interventions made:

- Conceptual Design of the Drone
- Detail Design and Purchase of Raw materials and standard parts
- Fabrication of frame and testing
- Fine tuning of Design

7. Current status:

- Project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Fruit and Vegetable Powder Making Unit

1. Project Title : Fruit and Vegetable Powder Making Unit

2. Mentor's Name : Dr. P. Harihara Sakthi Sudhan & Dr. M. Bakrutheen

3. Student Team Names:

- I. Mr. K. V. Arun Kumar
- II. Mr. M. Lekshmi Narayanan
- III. Mr. A. Sudharssan
- IV. Mr. G. Sethuramalingam
- V. Mr. A. Abdul Aasim

4. Project Description:

The purpose of the project is to help the small-scale farmers who cultivate vegetables and fruits to add value to their products by changing their form as powder or Jam. The product will benefit the small-scale farmers to earn more profit rather than selling them to a merchant. The product consists of four subunits such as 1. Cutter 2. Grinder 3. Dryer 4. Pulverizer. The cutter cuts the vegetable / fruit into small pieces which will be taken to the Grinder. The grinder grinds the cut pieces of vegetable / fruit and make them to colloidal state. The colloidal state of fruit / vegetable will be dried in an oven and will be transferred to a Pulverizer to convert them as small particles to be preserved for a long shelf life.

5. Project status at beginning of the Year:

- Conceptual Design of the Unit

6. Interventions made:

- Design of cutter, Grinder, and structures
- Design of Pulverizer and structure
- Purchase of raw materials and standard parts
- Fabrication and testing of the Guava powder

7. Current status:

- Project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Semi-Automated Ice-Cream Cone Crimping Machine

1. Project Title : Semi-Automated Ice-Cream Cone Crimping Machine

2. Mentor's Name : Mr. A. Andrews

3. Student Team Names:

- I. Mr. Lakshman G.
- II. Mr. Narayanan M.
- III. Mr. Rameshkrishnan M.
- IV. Mr. Sivakumar G.
- V. Mr. Anandhavel T.

4. Project Description:

This machine must be designed to reduce the production cost of the cone ice cream by increasing the production rate and reducing human effort.

- The loading process is to be done manually.
- At the same time, the crimping and the unloading are to be carried out automatically.
- Consequently, the labor required for the entire operation is reduced to one.

5. Project status at beginning of the Year:

- Concept Design

6. Interventions made:

- Detailed design
- Design for manufacturability
- Fabrication

7. Current status:

- 80% of the Project Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Peanut crushing and grinding machine for soft peanut Candy Industries

1. Project Title : Peanut crushing and grinding machine for soft peanut Candy Industries

2. Mentor's Name : Mr. R. Vignesh Kumar & Mr. K. Sudalaiyandi

3. Student Team Names:

- I. Mr. Aakash Edwin. A
- II. Mr. Sanjay. R
- III. Mr. Venkatesh. B
- IV. Mr. Vignesh. D

4. Project Description:

The proposed unit comprises the following subsystems

- Crusher unit for crushing a peanut which includes wooden hammers, fan, and sleeve.
- Vibrating table to remove the radicle from the peanut.
- Grinding unit for grinding the peanut in small granules.
- High performance Motor is used to run the three units by means of pulleys.

The proposed unit yields the following benefits.

Reduction in time and work – Combining both crushing and grinding process in a single setup will reduce both time and work

Removal of stones and radicle in crushed peanut- Vibrating table is used to remove the stones and radicle in crushed peanut.

Quality and Quantity- Quality of candy is increased due to removal of stones and radicle and quantity gets increased due to high production in short time.

5. Project status at beginning of the Year:

- Conceptual Design of the Peanut crushing and grinding machine for soft peanut candy industries

6. Interventions made:

- Configuration design and detail design of crusher unit, and vibrating table
- Configuration design and detail design of grinding unit
- Fabrication of all units

7. Current status:

- 70% of fabrication completed – Assembly and Testing yet to be done

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Small Onion Skin Peeler and Slicer

1. Project Title : Small Onion Skin Peeler and Slicer

2. Mentor's Name : Dr. K. Manisekar, Dr. P. Harihara Sakthi Sudhan,
Dr. M. Kathiresan, Mr. K. Thoufiq Mohammed &
Mr. B. Ganapathy Ram

3. Student Team Names:

- I. Mr. Edwinwesly A.
- II. Mr. Mathan B.
- III. Mr. Shanmuga Sundaram M.
- IV. Mr. Sivaramakrishnan A.

4. Project Description:

It is proposed to design and fabricate equipment to peel off the small onion skin and the slicing process. These processes are to be carried out in two stages, one will be a small onion skin peeler called a peeler unit, and another will be an onion skin slicer. The onion will be dumped through the feeder and allowed to fall over the stainless-steel rotating drum with nylon post in the peeler unit. The flexible nylon stick will create an impact load on the surface of the small onion, and the outer skin will be peeled off. The rotation drum will enhance the multiple impacts during its rotation. In this regard, an electric motor is to be used. Then the onion will be taken out for the cleaning process, which is to be done manually.

In the second stage, the slicing process is initiated by the set of blades arranged on a common shaft (screw press). In this regard, an electric motor with screw and barrel units are to be used. An array of knives would be placed at the end of the screw and barrel unit, randomly slicing the onion. The sliced onion will be collected through a funnel attached at the end of the screw and barrel unit

5. Project status at beginning of the Year:

- Conceptual Design

6. Interventions made:

- Conceptual Design of Unit
- Detail design of onion skin peeler and slicer
- Fabrication of peeler and slicer
- Assembly and fine tuning of design

7. Current status:

- Project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Tender coconut waste to Fuel / Soil Alternatives

1. Project Title: Tender coconut waste to Fuel / Soil Alternatives

2. Mentor's Name: Dr. S. Iyahraja & Dr. D. Vignesh Kumar

3. Student Team Names:

- I. Mr. M. Vengatesh
- II. Mr. M. Siva
- III. Mr. S. Manoj
- IV. Mr. R. P. Muthu Rahul

4. Project Description:

Tender coconut shell is the toughest and heaviest single item among the biodegradable waste. It takes long time to decompose and if not collected from the streets or the sidewalks, poses a challenge to vehicles as well as pedestrians. Also, it is made as garbage mostly in all places where they are being sold. In few places, it is used as fuel after drying. So, in this project, it is proposed to develop a a product as machine to convert the tender coconut waste into a cocopeat block which can be used as soil alternative or fuel.

Application:

- The cocopeat can be used in nursery gardening as soil alternative for its compact size because it can store water content as equal as normal sand.
- It can use as a soil fertilizer in farming fields.
- By adding charcoal binder with this powder, this product can be used as a fuel in furnace.

5. Project status at beginning of the Year:

- Concept design of the Tender coconut waste to fuel / soil alternatives

6. Interventions made:

- Detail design of shell for waste processing
- Fabrication of the system

7. Current status:

- Fabrication 75% completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Cricket Bat Seasoning Machine

1. Project Title: Cricket Bat Seasoning Machine

2. Mentor's Name: Mr. R. Vijayakumar & Mr. R. Vigneshkumar

3. Student Team Names:

- I. Mr. P. Boopathi Raja
- II. Mr. Chidambaranathan
- III. Mr. A. Etraj
- IV. Mr. S. Esakimuthu

4. Project Description:

The purpose of the product is to effectively season (harden) the cricket bat to improve bat power and play the ball better. The features of the product are as follows.

- Fully Automatic Bat seasoning mechanism to eliminate operator thrust.
- Automatic Knock counter with functionality to set up desired input knocks.
- Ball mallet arrangement used for the knocking device.
- Buzzer Alarm on completion of Knocking. Moving bed arrangements for bat holders that used to knock the bat in consistently from all sides.

5. Project status at beginning of the Year:

- Concept Discussion was made to season the cricket bat.

6. Interventions made:

- Brainstorming session.
- Survey
- Concept discussion
- Concept model using Solidworks

7. Current status:

- 90% of the project completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Smart Featured LPG Trolley

1. Project Title : Smart Featured LPG Trolley

2. Mentor's Name : Dr. F. Michael Thomas Rex & Dr. J. Jackins

3. Student Team Names:

- I. Mr. David Rajkumar T.
- II. Mr. Aravind Maharajan T.
- III. Mr. Santhosh Ram V.
- IV. Mr. Deepak Kumar P.

4. Project Description:

The difficulty to handle the household LPG cylinder homemaker can be solved. Difficulty in carrying the LPG cylinders through stairs can also be solved. The fear of unnoticed gas leakage from LPG cylinders is overcome.

- Gas cylinders can be easily carried through the stairs by tri-wheel mechanism.
- Leakage of gas from the cylinder can be found by MQ-5 sensor.
- Cylinders can be loaded to the trolley easily by means of clamps.

5. Project status at beginning of the Year:

- Concept development of the project

6. Interventions made:

- Configuration design of trolley structure
- Concept development of IOT and system
- Fabrication of the structure and purchase of sensors

7. Current status:

- Fabrication under progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Coconut Breaker and Milk Extractor

1. Project Title : Coconut Breaker and Milk Extractor

2. Mentor's Name : Mr. Thoufiq Mohammed K. & Mr. Veera Ajay C

3. Student Team Names:

- I. Mr. Muthu Krishnan M
- II. Mr. Muthu Nitish M
- III. Mr. Nagarajan M
- IV. Mr. Saravanaganesh S

4. Project Description:

The Purpose of the project is to extract the coconut milk without mixing any water. For that, the coconut should be broken into two halves to for the coconut scrapping the milk extraction. The coconut is cut by rotating cutter continuously, the coconuts are fed into the cutter by the rotating feeding mechanism. After the splitting of coconuts are scraped manually using the rotating scrapers. The Scraped coconut is further sent to Screw presser to extract the coconut milk. The highly compressed scrapped coconut after milk extraction can be sent again to the extraction process to increase the efficiency. The product can be used in Hotels, Bakeries and Food industries.

5. Project status at beginning of the Year:

- Concept development of the project

6. Interventions made:

- Detail design of cutter and extruder screw
- Design of structure
- Purchase of standard parts and Fabrication works
- Assembly and test

7. Current status:

- Fabrication is under progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Cylindrical smokehouse rubber sheet dryer

1. Project Title : Cylindrical smokehouse rubber sheet dryer

2. Mentor's Name : Dr. W. Beno Wincy & Mr. A. Arul Marcel Moshi

3. Student Team Names:

- I. Mr. Kasi Viswanathan S.
- II. Ms. Uvarani Alias Uktha K.
- III. Mr. Manivannan S.
- IV. Mr. Siva U.

4. Project Description:

The purpose of the project is to design and fabricate a cylindrical shaped smokehouse rubber sheet dryer for drying the natural rubber sheets to improve its drying nature and quality of the product.

Objective:

- To design a cylindrical shaped drying chamber
- To select suitable materials for the fabrication of the dryer
- To fabricate the cylindrical smokehouse rubber sheet dryer
- To conduct the experimentation to evaluate the drying nature, performance, and quality

Application:

This will be a best dryer for replacing the existing conventional type of rubber sheet dryer in the small-scale industries with improved drying performance and product quality.

5. Project status at beginning of the Year:

- Conceptual design of the project

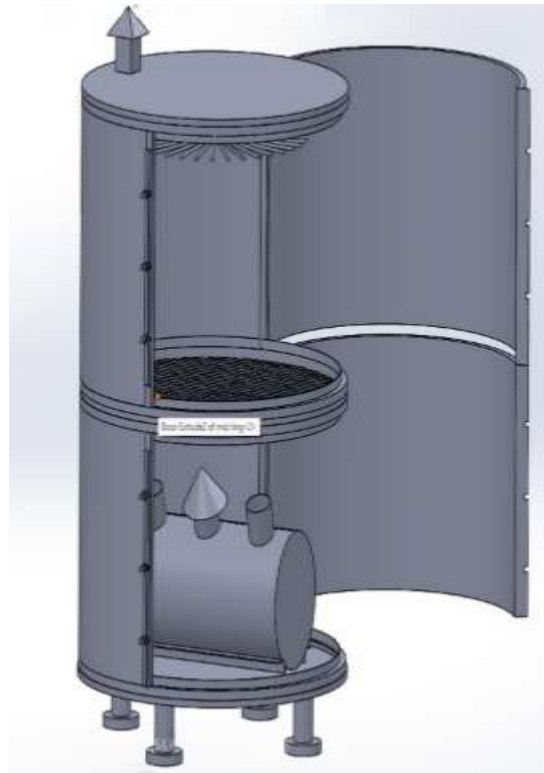
6. Interventions made:

- Configuration design of the drying chamber and smoke house
- Fabrication of chamber and dryer
- Assembly and testing

7. Current status:

- Fabrication is under progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Mini Vertical Axis Wind turbine for Household applications

1. Project Title : Mini Vertical Axis Wind turbine for Household Applications

2. Mentor's Name : Dr. N. Karthikeyan

3. Student Team Names:

- I. Mr. Esai Rajesh
- II. Mr. Esakkimuthu Raja
- III. Mr. Esakki Shankar E.
- IV. Mr. D. Karthick
- V. Mr. Karthiya Sudhan M.

4. Project Description:

The existing Vertical axis wind turbine rotors are manufactured through carbon/glass fiber reinforced composites by which the making of mold required advanced machining, most of the turbines in the market designed to operate for higher rated wind speed and conventional supporting structures made the turbine most expensive in the market. The vertical axis wind turbines are known to be a drag-based devices. Hence, it is the time to concentrate on the economic and manufacturing feasibility to reduce the cost of the vertical axis wind turbine without compromises in the efficiency of the operation. Therefore, this proposal considers the fabrication of rotor through easily accessible and robust technologies available in market to fabricate the rotor as well as the supporting structures of turbine.

Objectives

- To design and build a self-starting vertical axis wind turbine to operate in low wind speed condition.
- To manufacture the blade and supporting structure through cost effective materials and simple manufacturing processes.
- To accommodate the Vertical axis wind turbines in individual houses, accordingly rotor and supporting structure to be modified.

5. Project status at beginning of the Year:

Concept Design

6. Interventions made:

- Design of blade profiles and wind turbine system
- Fabrication of wind turbine
- Testing and fine tuning

7. Current status:

Fabrication works completed. Assembly works under progress.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Velammal Engineering College

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Velammal Engineering College, Chennai		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. S. Satishkumar		
Name of NewGen IEDC Coordinator	Dr. Jeevaa Kathiravan		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> Mobile Number e-Mail ID 	98406 59486 velammaliedc@velammal.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen-IEDC/17-18/11 Date:15.06.2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Start-up Opportunities for Engineers conducted on 24th Aug 2021
 - 143 participants, learned various opportunities
2. Entrepreneurship & Start-Up Development – MDP, 25th August - 4th September 2021
 - 80 participants; Various sessions conducted relevant to start-up
3. The Role of Banks in the development of entrepreneurship in India, 25th Sep 2021
 - Banking policies towards start-up and entrepreneurships
4. Workshop on Comprehensive Business Management & Entrepreneurship- The Board Room"Dynamic competition to turn struggling companies into successful, profitable businesses, 09-10th Dec 2021
 - 60 participants, demonstrated and understood the comprehensive business management
5. Awareness program on Innovation, Entrepreneurship, IPR & Start, 11th Feb 2022
 - Created an awareness on relevant topics
6. IPR -Process Design development, 25th March 2022
 - 83 participants; Various IPR components explained

[B] To identify, develop & commercialize students' innovative ideas

5. Two Days Student development programme on Innovation Development on Artificial Intelligence for Industrial IoT with hands on training
 - More projects relevant to AI identified
6. Start-up with Machine learning & Big Data, 13th Sep 2021
 - Students startup with machine learning aspects mentored

[C] To enhance Industry-Academia interaction

5. KONE Elevators and Ambattur Industrial Estate
 - MoU to be signed

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Nil

3. Other important highlights (new initiatives), if any:

- i. Startup Cubicles – Inaugurated in IEDC

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Saki Navigator

I. Project Title : Saki Navigator

II. Mentors Name : Mr. K. Sundar

III. Student team details

- 1. Rakhul K R

IV. Brief description of the student start-up

To develop a robotics framework and a base workspace mapping robot implementing stereoscopic vision and composite sensor data to achieve it's functionality.

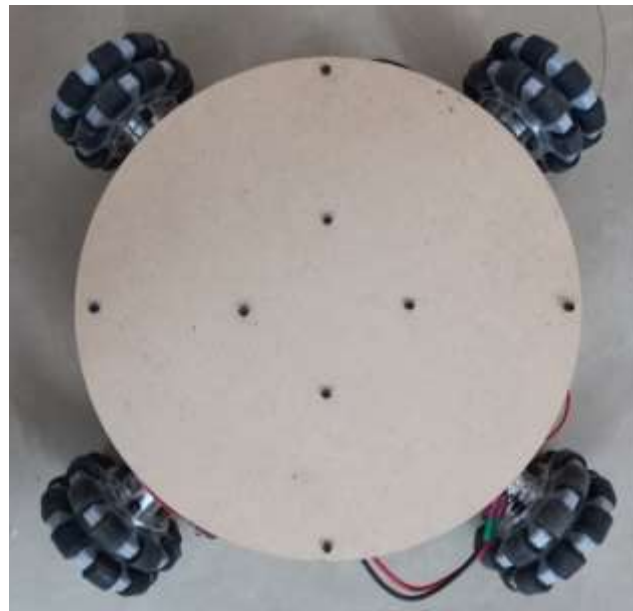
It is estimated that the shipment of domestic consumer robots worldwide will reach nearly 30 million units by the year 2025, yet the majority of those shipments are comprised of robotic-vacuum cleaners as opposed to the futuristic robotic home assistants so promised by the 20th century.

The solution proposed in this project is the development of an adaptive, scalable robotics framework that can be implemented under various usage scenarios. Functionality, practicality and adaptability are the primary focal points of this project. The framework will also be designed with safety in mind to ensure it's applicability around children and pets in a domestic use case

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

Requirement Gathering: Measurements and design considerations of the robot to be developed have been decided upon and the required components to design and develop a single omni-wheel based robot have been gathered as listed below.

Design and preparation of prototype: Virtual model of the robot has been developed using 3D modelling software for fabrication purposes. Due to the current scale of the robot, 3D printing has been deemed impractical and the prototype will be fabricated using MDF boards as shown below. Upon further development, the product can be scaled down to make it more convenient and simplify fabrication. The gathered components have been altered as required by the design and have been assembled to form the basic robot to test simple functions such as locomotion and network communication before moving further with advanced functionalities



VI. Contribution of NewGen IEDC in the same

- Provided funds and infrastructure to prepare and synthesize the materials.
- Provided patenting support
- Provided company registration and mentoring support

VII. Future plan

Basic mobility functions of the prototype being tested: Using the simple robot so developed, the ability to perform translatory movement about two axes and rotary motion about one axis have been established. This allows the robot to move about using commands it receives via network communication. Currently the commands are being sent via UDP from a mobile application for manual operation, however a means to autonomously operate the robot is being developed alongside the advanced functionality mentioned below. Once implemented, the robot shall be able to make low level decisions such as movement on it's own without directives over the network.

Core functionalities (stereoscopic vision) being worked upon: The capabilities of the stereoscopic camera system are being studied with regards to it's strengths and weaknesses. A system to efficiently handle the real-time information relay is being worked upon as it may require large amounts of RAM on the on-board computer or high bandwidth on the network to transmit raw data, thus a balance has to be maintained.

Furthermore, research is being done with regards to efficiently interpreting the point cloud data gathered into a workable 3D representation and to map out the navigable areas thereof. This may need large computational capabilities so considerations are being made with regards to how this data is to be handled.

Finally a system to infer the location of a robot in the scanned work space using camera data, scanned data and an AI based inference engine are being studied as a possible field of innovation.

VIII. Important highlights

- Patent to be filed
- Company registered

Best Project-2: Sustainable package container and methods of Improving shelf-time of food items thereof (AGRIVERY)

I. Project Title : Sustainable package container and methods of Improving shelf-time of food items thereof (AGRIVERY)

II. Mentors Name : Dr. Ganapathy Sundaram E & Dr. Suresh S.

III. Student team details:

- i. Ananth Sai Shankar V.
- ii. Sathiyar AR.
- iii. Dhanalakshmi P.
- iv. Deepak Krishna P

IV. Brief description about the student Project

The present invention herein relates to a packaging container material, particularly the packaging container made using agricultural waste products significantly, the package container material incorporated a plurality of layers, comprising longevity layer, anti-microbial layer, rodent repellent layer, rugged layer, super-hydrophobic layer to protect the freshness and to improve shelf time of a plurality of food items. The layers can be combined in a number of ways in order to meet the needs of the customer and reduce the cost.

Longevity Layer: The primary composition of the longevity layer involves chitosan and rice starch. The rich starch-chitosan film is prepared by adding 100 ml of 2% rice starch solution with 100 ml of 2% chitosan solution. After that, 40% of glycerol as a plasticizer is mixed into the final solution. The blend film is stirred at 800 rpm for 5 minutes, then the lumps are filtered through a polyester screen. Then the solution is added into the ultrasonic bath by utilizing a constant 35 kHz frequency for 15 minutes. The solution was dried at 55 °C for 10 hour which results in a chitosan film.

Antimicrobial Layer: Aqueous leaf extracts were prepared by collecting fresh leaves of Impatiens balsamina and washed until no impurities remained. Then, 10g of fresh leaves were put into a beaker with 100 ml of distilled water. The mixture was heated and stirred for 20 minutes at 60°C and allowed to cool at room temperature. The mixture was filtered using the Whatman 42 filter paper and then centrifuged at 81 G-force for 20 minutes. The extract was stored in the refrigerator for further use to synthesize Ag nanoparticles from the AgNO₃ precursor solution. AgNO₃ powder was dissolved in distilled water to prepare a 10 mM AgNO₃ stock solution. The AgNO₃ solutions were mixed with the

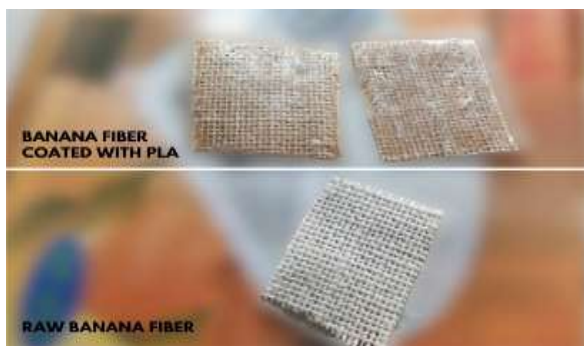
aqueous extract of *Impatiens balsamina* fresh leaves at a ratio of 1:1 (v/v) to a volume of 50 mL in a flask. The flask was wrapped with an aluminium foil and was then heated in a water bath at 60°C for 5 hours. Furthermore, the mixture was stored in the refrigerator for the antibacterial activity test and further analyzed by using a UV-Vis spectrophotometer and TEM

Rodent Repellant Layer: To afford protection to our agricultural produce from rodents, we have come up with an ingenious layer with the extracts of *Hibiscus sabdariffa*, *Trifolium alexandrinum* which acts as guards against rodents and pests. To incorporate these extracts into layers we have used tapioca starch as our base material. The tapioca that is going to waste is collected from the local markets, peeled and diced, and sundried for 1 week, then it is finely powdered with the help of machinery to obtain tapioca starch. A perfect measurement of 25 gms of tapioca starch is taken and combined with 150 ml of tap water to dissolve the starch completely. Then 1 tablespoon of synthetic vinegar and 1 Tablespoon of polyol compound-C₃H₈O₃ is added (Glycerol is used). The air-dried calyx of 140 g was macerated in hot water of 1.5L for 24h. The macerate was filtered, concentrated and freeze-dried. The yield of the extract was 12.5 g. Four Kg of clover plants were cleaned from weeds and dirt. Two Kg were juiced and filtered as fresh clover juice and the other amount was fermented in plastic black sacks for ten days in the absence of oxygen until completely dissolved, squeezed and filtered. Both the plant extracts are mixed with the base mixture. Then the resultant slimy layer is spread according to the shape required and sun-dried completely.

Super-Hydrophobic Layer: Fresh taro leaves were collected, measured, and washed with deionized water to eliminate impurity. The leaves must be rinsed carefully to avoid destroying the wax coating and are left to dry under convenient temperatures and conditions. The taro wax extraction is done by soaking the dried leaves in 500 mL at 50°C for about 30 seconds, this step is repeated with the same leaf samples using fresh chloroform. The wax is collected from the first step. The chloroform present in the raw wax is evaporated with help of a rotary evaporator and ambient evaporating process and further, it is refined using filter paper. Following this, the wax is mixed with hot acetone and cooled at room temperature to get the crystallized form.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

- Initial prototypes were made and tested based on the following methodology.
- Preparation of PLA film : Constant stirring of 4gm of PLA pellets + 250ml Chloroform + 1ml Cardanol oil + 1g MAH. It is then poured into a 30*30cm container and dried for 8hrs.
- Four types of Samples have been prepared as per the given condition.
- Sample 1: PLA film + PLA film + Banana Fiber + PLA film + PLA film
- Time duration: 5min
- Sample 2: PLA film + PLA film + KENAF Fiber + PLA film + PLA film
- Time duration: 7min
- Sample 3: PLA film + PLA film +PLA film+ Banana Fiber + PLA film + PLA film+ PLA film (Time duration: 7min)
- Sample 4: PLA pellets (4gm) + Banana Fiber (Time duration: 20min)
- The samples were kept inside the hot press unit at 135 °C and the temperature was steadily increased to 150 °C, the pressure was kept constant at 50 kg/cm²



VI. Contribution of NewGen IEDC in the same

- Provided funds and infrastructure to prepare and synthesize the materials.
- Provided patenting support
- Provided company registration and mentoring support

VII. Future plan

- The prototypes are given for testing at CIPET. Furthermore to improve the quality and reduce the capital cost we are trying to do the same procedure with much more affordable and cheap alternatives

VIII. Important highlights

- Patent filed
- Company registered
- MoU with NACL, Hyderabad

Annexure-A

Details of Student Projects

Project-01: Criminator

- 1. Project Title** : Criminator
- 2. Mentor Name** : Dr. P. Visu & Dr. P. S. Smitha
- 3. Student Team Names:**
 - I. Harish M.
 - II. Harish G.
 - III. Sai Ramya M.

4. Project Description:

The number and forms of criminal activities are increasing at an alarming rate, forcing agencies to develop efficient methods to take preventive measures. In the current scenario, traditional crime-solving techniques are unable to deliver results, being slow paced and less efficient. This project can solve this issue. This is a real-time crime detection tool, which will instantly alert the Control Room if a crime is taking place. If we can come up with ways to detect crime, on time or come up with a “machine” that can assist police officers, it would reduce the burden of police and help in preventing crimes. To achieve this, we are creating this real-time crime detector using machine learning (ML), Computer vision algorithms and techniques. This can be implemented along with Surveillance cameras installed by the Police Department. The working flow of this model is in such a way that when place an IP camera in public place, these camera will detect the persons who were previously involved in criminal activities. After detecting those criminal activities made by those peoples, our system will alert the nearby police station so that we can prevent the scenario from criminal activities which also reduce the workload of the police department. The system is capable of upgrading the criminal data base so that when a new criminal activities taking place, that person will be recorded in our online criminal database. Later when those people come alive in public place where we installed our IP camera, that camera will detect that particular person and alert the nearby police station.

The work flow of our design will be in way that first we will install the latest IP cameras in particular selected public places (where there are highly capable of crime happening) after installing the IP cameras, we will communicate with that IP camera using our own customised system which have high capabilities of fetching the data from the IP camera and storing it in our data base while not only storing the data and also informing nearby police station.

5. Project status at beginning of the Year:

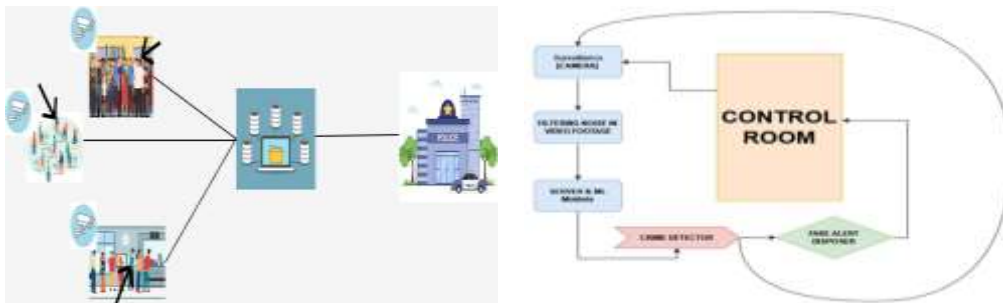
At the beginning we have identified what are major problem faced by the police departments. After analyzing with the police departments we have concluded that identifying criminal is one of the major problems faced by police departments. To help the police department we came up with different

type of methodologies and finally we decide to use the IP cameras which can be customised according to the police station. We have also created our own algorithm which will detect the criminal and will be updated in our system. we have decided what are the required components to create the model and completed the systematic procedural working model (simulation).

->IP camera ->coaxial cable ->system

6. Interventions made:

- Software Working model is ready for demonstration (Simulation)
- The above flow chart process has been successfully simulated and got accurate output where we have created our own sample criminal database in which we have uploaded some sample footage consisting of the criminals in it. Our system successfully identified the criminals presenting in the footage. The above demonstration can be implemented in real life.
- The above figure demonstrate our current working model. The one of the main component we were going to use in this project is the IP cameras
- An article says that the usage of ip camera is not safe. To resolve this we were going to use the encrypted ip cameras. Which make sure that none of the video is been leaked outside. This encrypted video will be consisting of “AES 128 Bit Encryption” which makes sure that video is not been leaked while streaming. To achieve, we will be using the PTZ POE IP CAMERA. This camera having all the required functionality to integrate it with our system



7. Current status:

- Our current project has successfully completed the first stage process. The first stage process includes the method of designing the components and integrating those components with our own customised system to run those inputs and get accurate output.
- To complete the stage one, we created the program which execute several algorithms, based on the input given our program checks with the pre made sample criminal database and finds out that particular persons in the video footage.
- Now after our team successfully completed the stage 1 we moved to stage 2. This stage 2 includes the buying of the component's based on the real time scenario and integrating those components with our system.
- At the current moment our team is working on patent documentation of this project.

- The none of the video is been leaked outside. This encrypted video will be consisting of “AES 128 Bit Encryption” which makes sures that video is not been leaked while streaming. To achieve, we will be using the PTZ POE IP CAMERA. This camera having all the required functionality to integrate it with our system.
- After the patent documentation, we will start to develop the entire model for the beta testing by integrating it with our systems which will be running many algorithms to find that particular persons

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Development of Insulated Masonry Blocks from C & D Waste

1. Project Title : Development of Insulated Masonry Blocks from C & D Waste

2. Mentor Name : T. A. Rajha Rajeswaran

3. Student Team Names:

- I. Ms. Sweetha D.
- II. Ms. Nandhini S.
- III. Ms. Rethiksha V.
- IV. Ms. Raghavi M.

4. Project Description:

The proposed masonry unit is a substitute for conventional burnt clay bricks and conventional concrete blocks. Instead it is proposed to use minimum amount of natural raw materials like Lime as cementing binder and M Sand or any other soil as fine aggregate and mainly use Waste Saw Dust obtained from Timber Saw Mill as the main material for the manufacturing of the masonry brick / block unit. This minimizes not only the cost of the product but also ensures environmental sustainability at all stages of the manufacturing and life long utilisation in the building wall. Also presence of the saw dust makes the brick lighter in weight and thermal insulating making it structural friendly against seismic attack and eco-friendly against building thermal effects. Thus the saw dust based brick aims to achieve multi-purpose advantageous behaviour and savings on all fronts - Cost, Energy in Manufacturing, Energy in Space Utilisation. At the same time though saw dust is present predominantly in the brick, still it will be rendered fire resistant by proper mix composition and addition of appropriate chemicals. The simultaneous reduction in self weight and increase of block size ensures mason comfort and hence higher productivity and also seismic friendly wall behaviour. Also so far the saw dust has been put to use as a firewood fuel which is a less efficient utilisation. Instead when used as filler material for masonry block, this application helps to save tons of fresh agriculturally fertile clay and tons of stones, the extraction of both of which are polluting the earth.

5. Project status at beginning of the Year:

- 60% of the experiments have been completed. The task of achieving light weight composition has been realized adequately. The next tasks of achieving thermal insulation and increasing the strength of the block have to be continued

6. Interventions made:

- Lightweight block cast and found to be of minimum strength

7. Current status:

- Two rounds of trials have been completed with adequate successful outcomes. The fundamental objective of preparing a light weight concrete masonry block has been realized. The density of the blocks is in the

range of 40 to 70 % of the conventional materials. This is an encouraging sign of the progress towards achieving light weight block

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Saki Navigator

1. Project Title : Saki Navigator

2. Mentor Name : Mr. K. Sundar

3. Student Team Names:

I. Rakhul K R

4. Project Description:

To develop a robotics framework and a base workspace mapping robot implementing stereoscopic vision and composite sensor data to achieve it's functionality.

It is estimated that the shipment of domestic consumer robots worldwide will reach nearly 30 million units by the year 2025, yet the majority of those shipments are comprised of robotic-vacuum cleaners as opposed to the futuristic robotic home assistants so promised by the 20th century.

The solution proposed in this project is the development of an adaptive, scalable robotics framework that can be implemented under various usage scenarios. Functionality, practicality and adaptability are the primary focal points of this project. The framework will also be designed with safety in mind to ensure it's applicability around children and pets in a domestic use case

5. Project status at beginning of the Year:

- Objectives and Methodology Defined

The objectives of the project have been decided upon and the approaches to achieving these goals have been ascertained. The primary objectives of the project are as follows:

- Develop a mobile platform i.e a robot equipped with the ability to scan it's surroundings using stereoscopic cameras and other sensors.
- Device an approach to accept the sensor readings from the robot to generate a virtual model of the workspace the robot has been deployed in and to generate a movement map indicating the possible routes that robots can traverse when navigating the same workspace.
- Develop a networked approach to sharing this data in real-time with other robots also operating in the same workspace to ensure the latest information is used by all the robots.

The means to achieve this goal is to develop a omni-wheel based robot equipped with the necessary sensors and cameras to deploy and test the defined objectives

6. Interventions made:

- Requirement Gathering

Measurements and design considerations of the robot to be developed have been decided upon and the required components to design and develop a single omni-wheel based robot have been gathered as listed below.

- Design and preparation of prototype

Virtual model of the robot has been developed using 3D modelling software for fabrication purposes. Due to the current scale of the robot, 3D printing has been deemed impractical and the prototype will be fabricated using MDF boards as shown below. Upon further development, the product can be scaled down to make it more convenient and simplify fabrication.

The gathered components have been altered as required by the design and have been assembled to form the basic robot to test simple functions such as locomotion and network communication before moving further with advanced functionalities

7. Current status:

- Basic mobility functions of the prototype being tested

Using the simple robot so developed, the ability to perform translatory movement about two axes and rotary motion about one axis have been established. This allows the robot to move about using commands it receives via network communication. Currently the commands are being sent via UDP from a mobile application for manual operation, however a means to autonomously operate the robot is being developed alongside the advanced functionality mentioned below. Once implemented, the robot shall be able to make low level decisions such as movement on it's own without directives over the network.

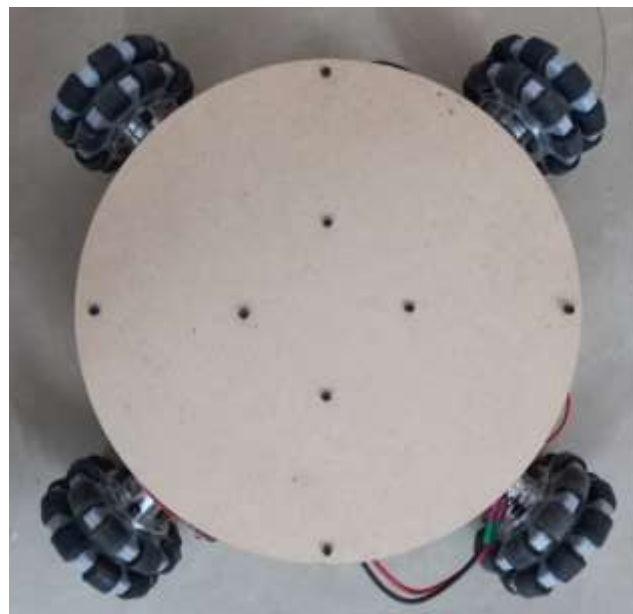
- Core functionalities (stereoscopic vision) being worked upon

The capabilities of the stereoscopic camera system are being studied with regards to it's strengths and weaknesses. A system to efficiently handle the real-time information relay is being worked upon as it may require large amounts of RAM on the on-board computer or high bandwidth on the network to transmit raw data, thus a balance has to be maintained.

Furthermore, research is being done with regards to efficiently interpreting the point cloud data gathered into a workable 3D representation and to map out the navigable areas thereof. This may need large computational capabilities so considerations are being made with regards to how this data is to be handled.

Finally a system to infer the location of a robot in the scanned work space using camera data, scanned data and an AI based inference engine are being studied as a possible field of innovation.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Monitoring and tracking of babies discharged from S.N.C.U

1. Project Title : Monitoring & tracking of babies discharged from S.N.C.U

2. Mentor Name : Mr. K. Radhakrishnan

3. Student Team Names:

- I. Sherly Angeline J.
- II. Sruthi S.
- III. Brindha M.
- IV. Janani C.
- V. Aishwarya Lakshmi R.

4. Project Description:

Labeled sensors modules to monitor the baby's basic health parameters like heart rate, blood pressure, and pulse rate and send an alert message to the concerned doctor and parents if any of them fails below the fixed clinical threshold. A smart cart is provided with an automatic pod opening system. Also integrated with a fingerprint sensor along with the pi camera to monitor the infant and send an alert message when someone tries to abduct the infant. The pod contains a net-like model so that aeration and ventilation will be provided for the baby. The cart also contains a bottle heater so that the milk in the feeding bottle will be kept warm. Baby monitoring systems are tools that ensure their safety and offer parents total peace of mind during the night and during their time away from home. It allows parents to monitor a baby from a web application on a remote network. The goal of this project is to provide parents with an intelligent, user-friendly, and cost-effective system that makes the monitoring of their baby much easier. It should also be noted that our solution could also be used effectively in the hospital environment

5. Project status at beginning of the Year:

- Literature survey
- Analysis
- Purchasing components

In the beginning, we have identified what is the major problem faced by neonatal care unit (Sick and newborn care unit). After analyzing with the Neonatal care unit, we have concluded that the kidnapping of newborn is the major problem faced by the Institute of Obstetrics and Gynecology. To help the health department we came up with the different types of methodologies like tracking of babies from kidnapping by adding a pi camera and fingerprint sensor to the cart so that if an unknown person tries to kidnap the baby alarm will sounds on and the image of the kidnapper is clicked and send with the alert msg to parents and doctors

6. Interventions made:

- Designing
- Prototype preparation
- Testing

Module-1 Working model is ready for demonstration: The wristband contains Health measuring parameters like a Heartrate sensor, Temperature sensor, and SPO2 sensor for the baby. The readings will be displayed on the OLED display. The biodata and required details will be uploaded to Hospital's database, also the readings are continuously Uploaded to the database. If any parameters are above the normal level or below the normal level then the sensors detect it and alert it through the alarm and give alert messages to doctors' and parents' mobiles. While the baby is in hospital then the message should be sent to the doctors mobile and they will give treatment to the baby. When the baby is discharged it also continuously tracks the baby's health, if any abnormal measure occurs then the message is sent to the doctor's mobile and they monitor it and ask them to admit the baby. If the parameters are normal then no problem for the baby. We connected all these sensors and completed the first module. The above demonstration can be implemented in real life

- I. Real-Time Alerts
 - Unauthorized location changes (abduction attempt)
 - Hospital infant protection band is cut
 - Infant security sensor is not touching the skin
 - Baby is brought into the wrong room/paired with the incorrect mother
 - Infant strays from the designated transfer or transport route
 - Infant fails to return to their designated area after a transport
 - Infant does not arrive at the receiving unit during a transfer
- II. Tamper Detection
 - The tamper sensor detects if the band is cut or the tag is no longer touching the skin.
 - The system notifies workers by displaying an alert on the application workstation and logging the occurrence in the system's database.
- III. Mother-Baby Matching
 - Encourage the proper placement of infants with their relatives. If a baby is brought into the wrong room or placed with the improper mother, staff members are alerted right away.
- IV. Exit Protection
 - Escalating system of alerts and security measures as infants approach unauthorized zones or points of egress, including automated door locks and disabled elevator access.
- V. Location Accuracy
 - Our project captures the movement of infants, visitors, and staff within seconds. Speed up emergency response times and efficiently locate infants for routine vital checks.

VI. System Performance:

- Advanced system management ensures critical location data is consistently transported to the application. Devices are equipped with long-lasting batteries for enhanced reliability

7. Current status:

- Wrist band model is prepared
- A necessary study related to health parameters is completed

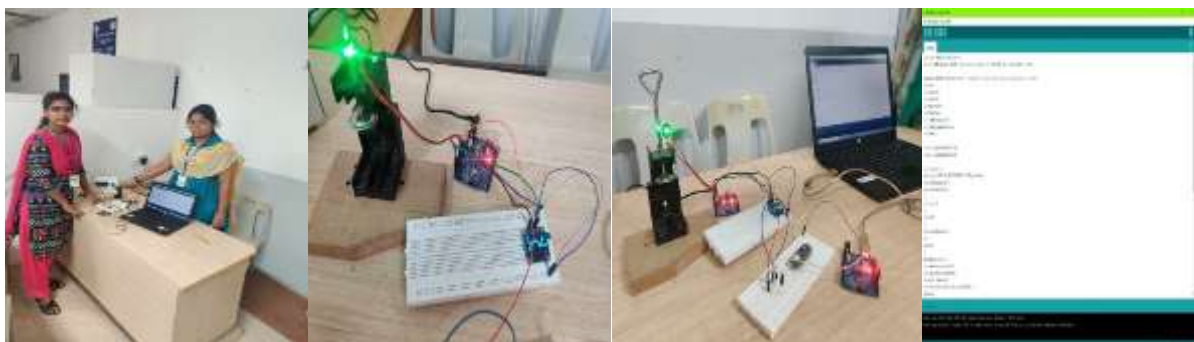
The building stage of the first prototype and patent document is being prepared. Components were purchased and started working on the first module of the project. Connections are made to the Arduino UNO and sensor is connected with an OLED display and code is written in Arduino Software and compiled successfully. It is also uploaded to the UNO and power supply is given and readings for heart rate were obtained. Started working on other sensors and their readings

Our current project has been completed the first stage process. The first stage process includes the method of designing the components and integrating those components with our customized system to run those inputs and get the accurate output. to complete stage one, we created a program that executes several algorithms and monitors the basic health parameters. We connected heart rate, temperature, and SPO2 sensor to the arduino. To display the readings, we also connected an OLED display to the arduino. The program was written in the software and uploaded to the arduino. The power supply was given and readings were taken. And we started working on the second module of our project which involves tracking through a camera and fingerprint sensor.

At the current moment, our team is working on patent documentation of this project.

After the patent documentation, we will start to develop the entire model for testing and then integrate it with our systems which will be running many algorithms to track and monitor the infants in S.N.C.U

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Smart Sealing System for Indian Railways

1. Project Title : Smart Sealing System for Indian Railways

2. Mentor Name : Dr. M. Karthikeyan

3. Student Team Names:

- I. Harini R
- II. Gayathri B M
- III. Purushothaman R
- IV. Yokesh Vaasan V.M

4. Project Description:

In this project, we propose a smart sealing system which can be used for Indian railways. The present sealing system uses a conventional lock along with paper and wax to lock the luggage or goods compartment in the train. Security persons check the seals manually en-route at different stations and record the seal position. When goods/luggage is heisted, the seal positions are back-traced and reconciled to identify the location of occurrence. Errors in recording the seal position cause difficulty in finding the location. This security system increases vulnerability of theft of valuable goods. Hence, we intend to design a smart sealing system for Indian railways to detect tampering and unauthorized entry into luggage compartment. The proposed sealing system uses an electronic lock integrated with finger print sensor. Access to the luggage compartment will be provided for the registered railway employees. There will be a black box that will be placed in a hidden place of the train. This black box keeps record of all the users accessing the electronic lock with geo tagging and time stamp. It will also send alert information to the control room with geo tagging when tampered on a running train en- route. This avoids the manual checking of the lock and also improves the security and reliability. The proposed prototype system is reliable and reusable. Immediate alert system will be activated in cases of tampering the smart sealing system which will help in identifying the unauthorized persons accessing the sealing system. This system stores the user's data such as time of accessing, and the fingerprint images. The improved security system in the smart sealing system also gives alert at the time of tampering the lock to the authorities.

5. Project status at beginning of the Year:

Problem statement is analyzed in all aspects and review about the existing system is completed. First, we observed that the conventional sealing system used in the Indian railways. To improve security features of the existing system, we decided to use a fingerprint sensor , LCD display unit, servo motor. The lock and unlock functions of the module of the smart sealing system were finalized to improve security of luggage by monitoring the seal position throughout the train journey. The Concept behind the application is to

allow authorized officials to access (open/close) the seal through their fingerprint .If someone tries to tamper, instant alert along with train number, compartment number geo-location and time stamp will be sent to the control room and train engine .When an authorized person opens the seal, his details along with geo-location and time stamp will be recorded. Even when the authorized person fails to close the lock, the lock will be automatically closed after a specific time delay. In case of emergency situation, ultra secure two-factor authentication is used to access the lock, thus enhancing the reliability of the lock If anyone is trying to jam the signal (from the seal system to engine), it will be detected and alert will be sent to engine If seal tampering is detected, finger print images can be used for further investigations.. This system is highly secured than conventional system and reduces human efforts and errors in seal status monitoring. Since the alert is also sent to the engine, it enables the authorities in the train to take action immediately. Detailed study about image recognition and retrieval were carried out. Various lock system for the smart sealing system were discussed, among those locks system the effective lock system was finalized and implemented into the prototype. The proposed work for smart sealing system involves the usage of these digital components. These digital components enhance the security feature of the lock system and will reduce the crime rate. It not only improves the security but also gives alert message in case of tampering. Even on a running train journey alert message will be sent to the control room if any criminal activity is done along with location and time stamp. The data base of users with their fingerprint images and time of accessing of the smart sealing system are studied which can be accessible at any point of time by the authorities.

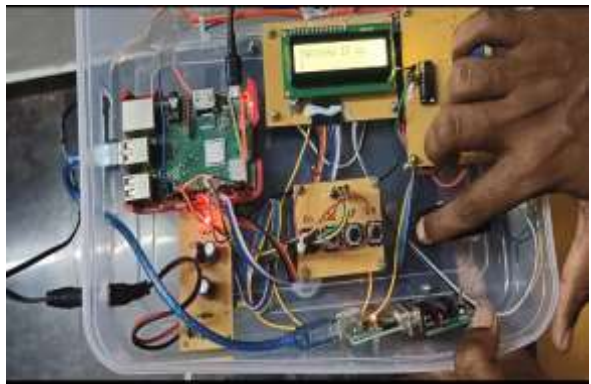
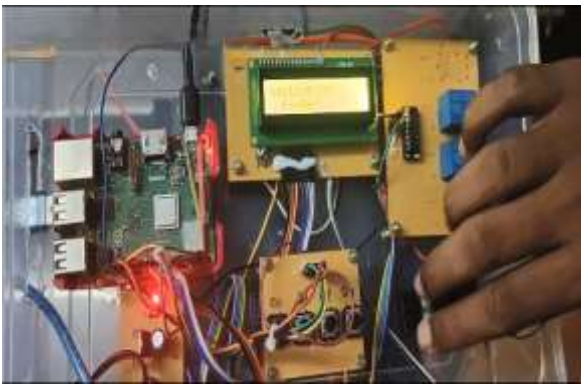
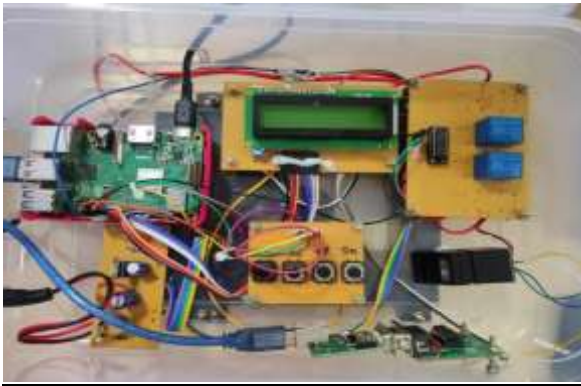
6. Interventions made:

We developed a prototype of the smart sealing system. The Finger print sensor is interfaced to the processing unit. Software program and their algorithm were developed to recognize and retrieve the images with time stamp. This system focuses on the use of fingerprints for door opening and closing. The fingerprint recognition software enables fingerprints of valid users of the vehicle to be enrolled in a database. Before any user can use the vehicle, his/her fingerprint image is matched against the fingerprints in the database while users with no match in the database are prevented from using the vehicle. A microcontroller stores the data equivalent of fingerprint of the master user. Comparison between this enrolled fingerprint and the fingerprint of the person who is about to use the vehicle is done by the microcontroller. If both the fingerprints are identical control circuitry of the microcontroller sends appropriate signals to the motor relays operating the door of the vehicle The developed system recognizes has the provision to register and delete user finger print data in the storage unit of the smart sealing system. The data base of users with their fingerprint images and time of accessing of the smart sealing system are stored in storage unit which can be accessible at any point of time by the authorities

7. Current status:

The developed prototype performs user registration through finger print images. The prototype has the ability to register 256 users. User information can be accessed along with the time stamp. To enroll the fingerprint image after the system boots up, have Click the enroll button. Place the finger on the finger print sensor twice for the time till the system asks. After the enrolment completes the LCD display indicates that and an unique id is created for the enrolled fingerprint. To accessing the lock system, place the finger on the fingerprint sensor while the LCD shows waiting for finger. Here the system matches the fingerprint from the sensor with the preloaded data and the gives signal to the servo motor to open if it's matched. The fingerprint read from the sensor with its timestamp is stored in the memory whether it's matched with database or not. Data transmission about the user from the system to the external storage system through wireless mode has to be carried out . To delete the existing fingerprint images, every fingerprint stored in the database have a unique id to it. Click the delete button it will ask for the id to be deleted. Click the up or down button to scroll through the stored ids and select the required id to be deleted. After successful deletion the LCD display shows the deleted message. Thus with the help of this system, immediate actions can be taken to secure the luggage when tampering action is detected. It will ensure the security of valuable goods or luggage in running train in case anyone try to tamper the immediate alert will send to control room with location and time stamp

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Smart Monitoring and Control of Biofloc Fish Farming

1. Project Title : Smart Monitoring and Control of Biofloc Fish Farming

2. Mentor Name : Mr. Rengarajan V.

3. Student Team Names:

- I. Guruvignesh A
- II. Kamesh J
- III. Sree Aswin M
- IV. Sugunesan R
- V. Vaishnav B

4. Project Description:

The purpose of aquaculture is to meet growing need of world population for marine organisms, endangered aquatic organisms, for medicinal purpose, reduce overfishing and loss of habitat for aquatic organisms. Intelligent fish farming is an innovative and effective way of farming fish through use of latest technologies such as Internet of Things, Cloud and data analysis. Fish are sensitive to change in their conditions as they are cold blooded organisms. The invention of project involves monitoring and maintaining the pH, dissolved oxygen, Total dissolved solids, Temperature of the closed water ecosystem. These are the major factors which affects the growth of the species in that ecosystem particularly fish. In order to monitor these parameters are being sensed by the required sensors and to maintain the parameters certain process are being done. The parameters sensed from sensors are read and being stored in a cloud network which can be accessed by means of IOT. An image processing is done such a way that we can predict the growth day by day and if there is any lack of growth we can find and can detect by which means its growth has been affected and it is also stored in cloud for future reference

5. Project status at beginning of the Year:

The problem statement is that the monitoring the required parameters for the fish ecosystem which may be a pond or in an aquarium such as Temperature, Total Dissolved Salts, pH, and Dissolved oxygen content. A slight change in these parameters would affect the lives(fishes) in it. The analysis of the suitable living environment for the fishes has been taken from different aquariums where they breed fishes in a large amount and how do they maintain those parameters regularly. With these data the initial setup of the tank has been done. Further the integration of sensors including the above mentioned parameters with the microprocessor unit (Raspberry Pi) has been done and made into a single system. Then these collected data is stored and this has been programmed to automate the entire process through IOT. It has been implemented by creating third party web server so that to obtain the remote access of the entire process

6. Interventions made:

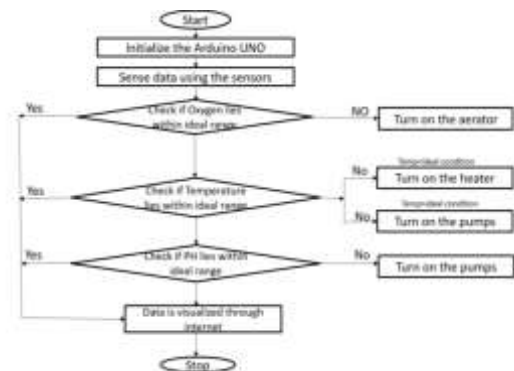
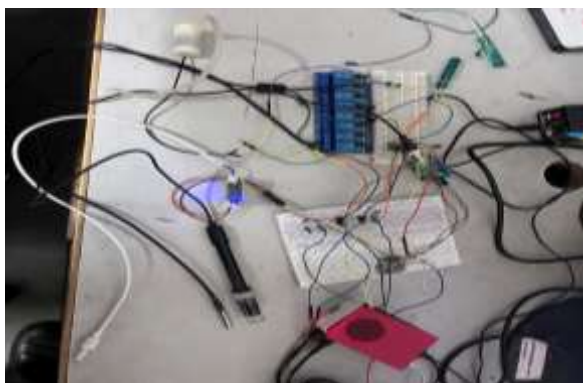
The intervention includes the image processing technology through which the growth of the fish can be monitored. This helps in finding whether there is any deficiency in the fish growth and in turn helps to monitor the maintain the required parameter. Two tanks are used out of which one contains the fish and the other one contains fresh water in it. The purpose of using two tanks is to regulate the water flow between both the tanks thereby maintaining the quality of water. The existing water is made to recycle by undergoing filtration and reused as a fresh water. This in turn reduces water wastage and an efficient way of utilizing it. The sensors are designed in such a way that it can calibrate itself automatically in order to increase the accuracy of the parameters to be measured. The temperature sensors are placed at the top , bottom, and around the tank through which the average temperature of inside the tank has been calculated in order to increase the accuracy. Integration of many sensors for measuring temperature is required because the temperature of the water will not be uniform throughout. Fishes as they are cold blooded species they are highly sensitive to the sudden change in its environment which makes its living even more difficult and may also lead to death. Without any human access these sensors sense the parameters and with these data it helps to actuate the motor relay at appropriate intervals which pumps fresh water and sucks out the water ensuring the quality of water and other required parameters. To maintain the oxygen content of the water Dissolved Oxygen sensors are used that senses at regular intervals and in order to improve it Aerators are being used which helps in maintain the optimum dissolved oxygen content of the water. For maintaining the temperature heaters are placed within the tank. These processes are continuously accessed by the web servers created by means of IOT which provides remote access of the system developed and also helps in ensuring nutrient rich environment for the fishes.

7. Current status:

- The entire process has been divided into two phases. In the first phase the electrical system part which comprises of the sensor implementation with the tank using the microprocessor unit and regular calibration of those sensors. In this phase it is checked that how long the entire system will be stable without any human intervention. In the second phase the tank setup and the IOT implementation has been carried out. IOT implementation includes creating third party web servers in order to develop a cloud network with the system through mobile devices. The tank setup has been carried by creating a strong base so as to withstand the tank and also in which the two motors for suction and pumping are mounted in the same base. The plumbing works with providing proper

pipelines to both the tanks and the actuation of motor relay circuits has been carried out by which the motors will start to pump automatically ensuring regular flow of water between the tanks thereby achieved the objective of the project

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Real Time Monitoring of parameters in the formulation of siddha medicine

1. Project Title : Real Time Monitoring of parameters in the formulation of siddha medicine

2. Mentor Name : Mr. Rengarajan V.

3. Student Team Names:

- I. Guru Vignesh A.
- II. Sree Aswin M.
- III. Sugunesan R.
- IV. Vaishnav B.

4. Project Description:

This project includes monitoring the required parameters in the formulation process of siddha medicine which includes Temperature & Pressure and storing the values at regular intervals. As the concept implementation has been done using the commercially available thermocouple the concept has been technically proved to be working. For the analysis of the thermodynamic parameters of the process involved a data logger has been integrated and placed at an optimal distance to prevent the ambient temperature affecting it. To prevent the components from reacting with the feedstock present within it will be thermally insulated so as to withstand high temperature. For detailed analysis, the parameters are measured and stored to cloud and has been accessed the recorded data from a cloud network. These data will be used for the mass production purpose so that we can set these fixed parameters for the medicine to be formulated and thereby leading to a well precise particle composition. This will be implemented in different other types of medicinal compositions for various applications and thereby recording those precise data of the parameters involved and storing it in the cloud which can be accessed later

5. Project status at beginning of the Year:

The process involved in this formulation of siddha medicine has been analyzed by visiting the authorities involved in this process and a detailed study about the container used and the parameters involved such as Temperature and Pressure. From the study, in order to develop a Proof of Concept an earthen container with a commercially available thermocouple has been setup and the temperature at various thermal conditions has been recorded. Thus, checking the stability of the thermocouple for a long duration. But these thermocouples are of low range which cannot withstand the ambient temperature used in the formulation process which is around 1500 deg C. So, the study about the different available sensors of industrial grade, stability and high working range has been carried out

6. Interventions made:

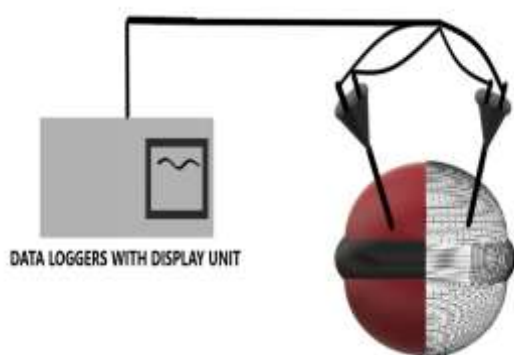
The formulation process was carried out in a predictive manner in which no technical equipment except heat gun has been used to measure the

temperature which is highly inefficient and leading to less accuracy of the required medicinal composition. As it is an earthen pot it barely conducts heat so the temperature measured will not be accurate. To measure the apt temperature and pressure within the container the thermocouples and pressure sensors have been integrated within the container which are designed to work at extreme heat conditions. Further, to reduce direct human access these data are being collected and logged using a data logger which stores the data at regular intervals. With these data the required parameter at which the specified chemical composition is achieved can be obtained. This formulation can be achieved by using the modern equipment but the challenge is that it should not affect the traditional formulating technique of the medicine. So these sensors will be directly integrated with the earthen container with proper insulation in order to withstand high temperature thereby not affecting the traditional formulating method

7. Current status:

As per the analysis the sensors of high working range had been bought and insulated to prevent any reaction between the sensors and the feedstock present inside the container. The required parameters involved in this project are continuously been recorded and displayed using a display unit. Further these data are being logged using a data logger for the regular study of the system. With the data available the threshold at which the required composition achieved can be obtained and this data is used for a highly effective mass production with an accurate medicinal composition. As this process involves long hours it is designed to be calibrated itself thereby reducing any technical error affecting the process. Thus, the project has been completed as per the objective mentioned.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: IoT Based Smart Bottle for Healthcare with Patient Prime Care

1. Project Title : IoT Based Smart Bottle for Healthcare with Patient Prime Care

2. Mentor Name : Dr. R. Geetha

3. Student Team Names:

- I. Karpagam M.
- II. Priya B.
- III. Parvathani A. K.
- IV. Soundarya P.
- V. Janani M.

4. Project Description:

The need of modern healthcare increases with the increase in population. Maintaining the patient's safety is the top priority of any hospital. The current healthcare system requires a personal medical assistant or a family member of the patient to take care of them. That is, the caretaker can attend only one patient at a time. This method is very time consuming and requires a lot of human labor and this problem can be solved developing an advanced patient monitoring and an alerting system. In the covid period it was analysed and found that Nurses who are monitoring the saline level of the multiple patients simultaneously are visiting every single patient minimum twice to stop and to maintain the saline before it causes issues to the patients. This situation made this concept and a smart bottle concept is introduced. The smart glucose bottle that will allow monitoring and controlling the drip infusion system through the Internet of Things. In addition to this, pulse rate and temperature of the patients can also be monitored. Multiple patients can be monitored by the doctor/nurse without frequently visiting the ward through their mobile phones itself irrespective of the place and distances. . The medical workers do not even have the need to be next to the patient to monitor the saline level if they have The Nurse App which displays the data in their mobile phone. Individual person or Covid 19 affected person cannot frequently visit hospital and it will help them send data to doctor for analyzing the patient health

5. Project status at beginning of the Year:

The above mentioned concept is analysed and detailed literature review is made. Consultation was carried out with medical officials about requirement of saline monitoring device to their hospital. They have suggested that automation of saline bottle volume and live data of the patient in mobile or in a Pc would be a welcoming solution. Considering this comments and the literature ,design of hardware is proposed and the open loop work is started. The automatic weight using load cell recognizing system to set the volume of the saline bottle without nurse option setting and data (Wifi or zigbee) network used to connect saline monitoring device with cloud and to provide

live data via the Nurse app is proposed. A survey was conducted during the covid situation to the families those who are affected by diseases other than covid 19. Shortage of nurses in many hospitals are the major drawback to take care the patients. This shortage can be overcome by IOT based saline monitoring device which collects the patients data to get stored in cloud and can be accessed any time by Nurse or caretaker. Research was made about cloud subscription pricing, Android and web development. By trial and error method many trials were conducted using Thingspeak and MIT app inventor. ThingSpeak enables sensors, instruments, and websites to send data to the cloud where it is stored in either a private or a public channel. Once data is in a ThingSpeak channel, it can be analyzed and visualized, calculate new data, or interact with social media, web services, and other devices. MIT App Inventor is an online platform designed to teach computational thinking concepts through development of mobile applications. It can be used by dragging and dropping components into a design view and using a visual blocks language to program application behavior. Based on this prototype work is started

6. Interventions made:

A device that calculates the saline level of multiple patients is developed in which the status of the saline could be monitored via The Nurse App, which is also developed. An IR is placed at the top to detect the saline level. Another IR sensor is also placed at the bottom of the IV drip tube to detect the critical level and to prevent the backflow of fluids. The data collected by these sensors are transmitted to the Node MCU where it is coded to count the number of drops. The total count of the entire bottle is initially counted so that critical level of the bottle can be calculated and programmed. When the bottle is about to empty, it is considered as critical stage. The number of drops obtained when three fourth of the bottle emptied is being subtracted from the total number of saline count of the entire bottle and the resulting count is taken as the critical level count. When the saline level reaches the critical level count, it is programmed in such a way that the medical assistant is alerted via The Nurse App

Critical level count = Total count – safe level count

The device will come along with a patient band which measures the patient's body temperature and pulse rate which can also be viewed via The Nurse App. The Nurse App is a patient monitoring app that will alert if any one of the parameters reaches critical situation. And also the medical records of the patients will be stored in the cloud which can be accessed irrespective of the place and time

7. Current status:

The smart saline bottle is a very efficient and low cost device that can be used for monitoring the level of fluid in the saline bottle. It is also designed to come with a patient band is useful to detect the temperature and pulse of the patient. As the entire proposed system is automated, it is a medical device

which can be used to get rid of human errors, to save time and human labor. This will reduce the stress of continuously monitoring the saline for the medical assistants. As it is reliable and low cost it can easily be installed in any hospital. It has been planned to control the saline flow once it reaches critical level via The Nurse App and automation of the process is going on. A device linear actuator is used to control the flow and also closed loop operation with the help of motor also is in process. Designing the same by Printed Circuit Board model in Kicad software are under process . Learn to design 3D design for designing Portable outcover and control pressure edging. Accelerometer and oximeter are also added to monitor the movement and oxygen level of the patient respectively also processed. In saline monitoring device, detect drop rate in every minute and calculate remain time to complete the saline bottle. Add rechargeable battery or 3.3v aa battery for the portable device. A portable design of our saline bottle and patient band need to be made. This project can further be developed in the future by adding some more features that satisfies the medical need. As the project is user friendly and cost efficient, it has a future scope in the market

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Demand side management of house hold electricity to E-Vehicles

1. Project Title : Demand side management of house hold electricity to E-Vehicles

2. Mentor Name : Dr. Sathya Priya J.

3. Student Team Names:

- I. Ms. Sneha Priyaa
- II. Mr. Mohammed Muthmayeen N.
- III. Mr. Sam Joshua S.

4. Project Description:

The rising number of distributed generation, aging of present grid infrastructure and appeal the transformation of networks has sparked the interest in smart grid. The need for energy storage system primarily the electrical energy storage systems is growing as the prospects for their usage is becoming more compelling. Electric Vehicles (EVs) are relatively standard due to their excellent electrical properties and flexibility but the possibility of damage to their batteries is there in case of overcharging or deep discharging and their mass penetration profoundly impacts the grid. To circumvent the possibility of damage, EVs' batteries need a precise state of charge estimation to increase their lifespan and to protect the equipment they power

5. Project status at beginning of the Year:

In India, transport electrification over the next decade is expected to be driven by light electric vehicles (LEVs), comprising two-wheelers and three-wheelers . Apart from these, cars and light commercial vehicles (LCVs) are the other key vehicle segments being electrified. Electric buses will also be present in significant numbers. EV charging requirements depend on the specifications of EV batteries, as power must be supplied to the battery at the right voltage and current levels to permit charging. E-2Ws and e-3Ws are powered by low-voltage batteries. The first generation of e-cars is also powered by low- voltage batteries. However, these are likely to be phased out in the future, even if they continue in specific use cases such as taxis. The second generation of e-cars, as seen in the upcoming e-car models, is powered by high-voltage batteries. Electric LCVs will comprise of both low-voltage and high-voltage vehicles, depending on their load-carrying capacity

6. Interventions made:

EV charging involves supply of direct current (DC) to the battery pack. As electricity distribution systems supply alternate current (AC) power, a converter is required to provide DC power to the battery. Conductive charging can be AC or DC. In the case of an AC EVSE, the AC power is delivered to the onboard charger of the EV, which converts it to DC. A DC EVSE converts the power externally and supplies DC power directly to the battery, bypassing the onboard charger. AC and DC charging are further

classified into four charging modes with Modes 1-3 pertaining to AC charging Mode 4 pertaining to DC charging. Modes 1 and 2 are applicable for connecting an EV to a standard socket outlet, utilizing a cable and plug. Mode 1, also known as dumb charging, permits no communication between the EV and EVSE and its use is not recommended. The portable cable used in Mode 2 has an inbuilt protection and control capability and is typically used for home charging. Modes 3 and 4, which provide a separate charger device to supply power to the EV, have improved control systems and are used for commercial or public charging

7. Current status:

A robotic arm is used in these types of swapping with the battery swapping process being fully automated. Robotic swapping is used for heavy loaded applications as battery packs are larger and heavier, and require mechanical assistance. These swapping are also less expensive and occupy smaller land requirement

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Self Powered Bike Mobile Charger using Waste Heat Recovery Machine

1. Project Title : Self Powered Bike Mobile Charger using Waste Heat Recovery Machine

2. Mentor Name : Dr. V. Chandran

3. Student Team Names:

I. Sathya Sairam E

II. Yogeshwaran S

4. Project Description:

Bikes are an important part of life in today's world. It is a basic need for every household. Moreover, mobile phones are also being used in all level of people and its usage drastically increased in current scenario. The charging of mobile is too difficult in travelling time especially in Bike / Two wheeler. Moreover, carrying the mobile phone in the raining period is too difficult. Hence, the objective of this project is to charge the mobile phones continuously by power bank, which is functioned through TEG module set up while, bike travelling. The main aim of this project is to carry the mobile in raining period safely and to utilize the waste heat of the engine

5. Project status at beginning of the Year:

We were at the R&D stage to make technical improvements in order to generate a more desirable product in both mobile charger unit and heat recovery machine

6. Interventions made:

Developed a solid 3D CAD Model using Solid-works, Fabricated the Mobile Charger Unit mould and Product. Waste Heat Recovery Machine Design Completed and its fabrication under progress

7. Current status:

Development of Bike Mobile Charger Unit Completed and Heat Recovery Machine Design Completed and its fabrication under progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Fig.1: Self powered Bike mobile charger at close



Fig.2 : Self powered Bike mobile charger at open

Project-11: Development of Car Accident Investigation Mechanism and its Analysis for Life Rescue

1. Project Title : Development of Car Accident Investigation Mechanism And its Analysis for Life Rescue

2. Mentor Name : Mr. Frank Gladson

3. Student Team Names:

- I. Yugandhar P
- II. Surya C
- III. Yogesh S
- IV. Samuel Ebenezer R

4. Project Description:

India is the fastest growing country in Automobile sector holds 5th largest auto market, with 3.49 million units of combined sold in the passenger and commercial vehicle. As per the report on Road accident related death in India in 2019 were 1,51,113 in number. Collecting the evidence physically and identifying primary cause of accident is difficult for investigators. Victims are also suffered without proper document for claim their Insurance, so this IMPACT provides valuable solution in both cases. The IMPACT plays a vital role in customer safety. This IMPACT concept created for both existing vehicles and upcoming modern vehicles in automobile industry, So it is a universal type module which is easy for installation in all segment car like sedan , suv ,compact suv, Hatchback ,etc.

Impact is a crash sensor which detects collision and severity of the accident, and col-lects the vehicle crash information. The collected information is stored in the drive and with the help of Global Positioning System (GPS) and Global System for Mobile Com-munications (GSM) the details are to shared to nearby police station, hospitals and family members. When the process is initiated the police and ambulance team receives a default SOS call. The recorded details includes vehicles registration number, location and condition of person are shared immediately. When these steps are followed many lives can be saved and in case any casualty accord the police and the family members can make use of recorded details for future purpose such as investigation or for insur-ance

5. Project status at beginning of the Year:

At the beginning we have identified what are major problem faced by the causalities involved in the accident. After analyzing the situation and with the police department collecting the evidence physically and identifying primary cause of accident has became difficult for them. Victims are also suffered without proper document for claim their Insurance, This leads increase in accident pending cases in all states of India, so this IMPACT provides valuable solution in both cases. The IMPACT plays a vital role in customer safety. Necessary action will be taken if any accident occurs instantly

Used Sensors and Materials

(i)Types of sensors used:

- Automotive force sensor :
These sensors measure force and pressure convert it into a voltage signals, the sensors are also used to detect impacts in airbag deployment systems.
Uses: To detect pedal pressure to amplify braking force, airbag deployment systems, electric doors.
- Automotive Proximity sensor :
Vehicle proximity sensors are among the sensors used in cars for safety, the proximity sensors we are referring to here emit electromagnetic waves. They warn the driver when the car is a wall, curb, or a bout to hit a object.
Uses: proximity sensors on the front bumper of a car as well as the rear.
- Automotive Radar sensor :
The ability to improve drivability and safety in today's cars. Automotive radar sensors are part of Advance Driver Assistance System, ADAs or Adaptive Cruise Control System, ACCs, of today's automobiles. In autonomous vehicles, these sensors detect objects to avoid collisions.
Uses: Mitigating collisions, as parking aids, and lane change assist, among other uses.
- Automotive speed sensor :
These include determining transmission shifts, the right air-fuel mixture ratios, and to time different operations in the engine. Speed sensors in automobiles can be found in drive shafts, where they detect the speed of rotation as well as position.
Uses: The computer uses these signals to operate the braking system that prevents skidding and sensors in this category include crankshaft and wheel speed sensing devices.
- Global positioning System(GPS) :
It is a US owned utility that provides user with positioning, Navigation, and Timing (PNT) service.GPS satellite provides service to civilians, military, and vehicle navigation.
Uses: Location- Determining a position, Navigation- Getting one place to another, tracking- monitoring objects or personal movement, etc.
- Global System for Mobile Communication(GSM):
GSM is the most widely accepted standard in telecommunications and it is implemented globally. GSM is a circuit-switched system that divides each 200 kHz channel into eight 25 kHz time-slots. GSM operates on the mobile communication bands 900 MHz and 1800 MHz in most parts of the world.GSM owns a market share of more than 70 percent of the world's digital cellular subscribers.GSM makes use of narrowband Time Division Multiple Access (TDMA) technique for transmitting signals.

(ii) Other materials:

- Car armrest
- Hard drive (HDD/SSD)
- Connecting cables
- Resistor
- Capacitor
- Compact battery
- PVC circuit board
- ESP32/ Arduino Mega micro controller
- Electronic Control Unit(ECU)

6. Interventions made:

The Sensors placed in five major areas of a car to analyse how deep the impact occurred during the incident which helps in further more investigation. Each sensors act as pressure sensing barrier in which the crash pressure data is recorded. The recorded details are represented in form of percentage. This percentage provides the accurate level of damage occurred, during the incident and SOS message is triggered accordingly. High level sensor placed in the passenger cabin, When this sensor gets hit the level of collision is high. In that case SOS message is triggered to the nearby Police station, Hospital and the close relative. This act helps in reducing the casualties and to rescue the people in need. Impact was build for both the safety and awareness for the people

7. Current status:

After the crash impact data is collected which will make the investigation much easier to analyze the situation. To find who's is responsible for the accident and for the police to file FIR about the incident. Pending accident cases will be reduced and claiming the insurance will easier for injured person. Deaths occurring due to delay of ambulance will reduced and can save lives. By above mentioned benefits of impact makes as successful production in mar-ket and increase the awareness of road safety in society

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Development of porous positive electrode material to reduce the charging time of LiFePO_4 battery

1. Project Title : Development of porous positive electrode material to Reduce the charging time of LiFePO_4 battery

2. Mentor Name : Dr. K. Varatharajan

3. Student Team Names:

- I. Manimaran V.
- II. Karthick Raj TV
- III. Anas Mohammed A.
- IV. Kavinpreethan V.

4. Project Description:

Lithium iron phosphate batteries are commonly used in the electric vehicles because of their excellent stability at higher temperature. One of the major drawbacks of lithium iron phosphate battery is poor ionic and electronic conductivities. High electronic conductivity is essential for grade climbing and acceleration and ionic conductivity is important for rapid charging. In order to improve the ionic conductivity porous structured positive electrode will be fabricated and an innovative carbon coating to be applied to increase the electronic conductivity. The novelty of this work is use of yeast *Saccharomyces cerevisiae* to fabricate the porous structure as well as a carbon source to improve both ionic and electronic conductivities

5. Project status at beginning of the Year:

Reviewed literature and methodology identified. The solution combustion synthesis method is adopted for making Lithium iron phosphate battery electrode. Among various organic fuels, cetyltrimethylammonium bromide (CTAB) is selected as a fuel source in order to avoid the violent combustion of source materials. The lithium nitrate, ferric nitrate and ammonium phosphate are identified as the source material and sucrose with yeast to be used as a carbon source. A high vacuum furnace with a molybdenum heater (1100°C) is identified to carry out the sintering operation. The suppliers for the chemicals and equipment are scrutinized based on the price, specification and quality. The laboratory to analyse structural, microstructural, and electrochemical properties of LiFePO_4 is identified.

6. Interventions made:

Porous electrode with improved ionic and electronic conductivities with high crystallinity is the expected product. Its target capacity rate is 160 mAh/g at 0.2C rate (theoretical value 166 mAh/g). Various samples with different carbon sources are prepared. The lithium-ion battery cell will be demonstrated with the best electrode material

7. Current status:

Consumables and equipment required for the preparation of electrode is procured and the various samples of the positive electrode of LiFePO_4 battery is prepared. Samples were given for the testing. The patent documentation work is under progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Designing of Pd and rGO based PEM fuel cell

1. Project Title : Designing of Pd and rGO based PEM fuel cell

2. Mentor Name : Dr. S. Shahil Kirupavathy & Dr. T.A. Revathy

3. Student Team Names:

I. Mr. Ananth Sai V.

II. Mr. Sathiyar A. R.

4. Project Description:

Over the last two decades, energy needs have increased dramatically, especially because of the transportation and industry sectors. This led to the crucial need for developing alternative green energy source or energy conversion including water splitting, fuel cells, metal-air batteries and so on. To meet this demand researchers have involved in developing and commercializing the fuel cell technology. The huge challenge in the commercialization of proton exchange membrane fuel cells (PEMFC) technology is the cost and availability of catalyst used over the MEA. Though there are many metallic and bimetallic nanoparticles dispersed on graphene for catalytic purpose, alloys stay as better dispersant on graphene. This is significant to the property's modifications in size, structure and composition observed in alloys when compared with their precursor metals. Pd based alloy obtained by employing low current through galvanostatic pulsed electrodeposition technique exhibit dendritic structure. This unique structure will enhance the catalytic activity at the electrodes and thereby enhance the hydrogen evolution. Choice of rGO will resist oxidation & degradation owing to its hydrophobicity and also as the alloys were supported on to the rGO dealloying can be reduced in a great extent. Hence this work focuses on incorporating the significant behavior of both Pd based alloy and rGO into a single catalytic material. Pulsed electrodeposited method using a galvanostatic power supply will be followed for the deposition of Pd-Ni nanoparticles and incorporated the rGO by using the sonication method. The formed Pd-Ni/rGO composite will be coated onto the polymer electrolyte membrane. This PdNi/rGO composite PEM will be fused into a fuel cell.

5. Project status at beginning of the Year:

Methodology identified

6. Interventions made:

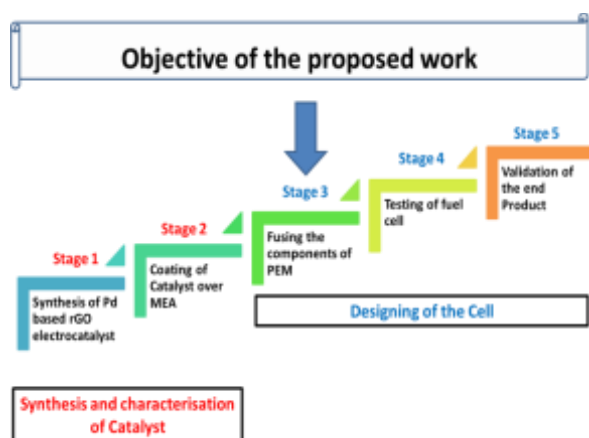
Pd based alloy obtained by employing low current through galvanostatic pulsed electrodeposition technique exhibit dendritic structure. This unique structure will enhance the catalytic activity at the electrodes and thereby enhance the hydrogen evolution. Choice of rGO will resist oxidation & degradation owing to its hydrophobicity and also as the alloys were supported on to the rGO dealloying can be reduced in a great extent. Hence this work focuses on incorporating the significant behavior of both Pd based alloy and rGO into a single catalytic material. Pulsed electrodeposited method using a galvanostatic power supply will be followed for the deposition of Pd-Ni

nanoparticles and incorporated the rGO by using the sonication method. Hence **Pt free PEM for fuel cell with Pd and rGO based electrocatalyst** was fabricated

7. Current status:

MEA membrane using Pd and rGO based electrocatalyst

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Sustainable package container and methods of Improving shelf-time of food items thereof (AGRIVERY)

1. Project Title : Sustainable package container and methods of Improving shelf-time of food items thereof (AGRIVERY)

2. Mentor Name : Dr. Ganapathy Sundaram E & Dr. Suresh S.

3. Student Team Names:

- I. Ananth Sai Shankar V.
- II. Sathiyar AR.
- III. Dhanalakshmi P.
- IV. Deepak Krishna P.

4. Project Description:

The present invention herein relates to a packaging container material, particularly the packaging container made using agricultural waste products significantly, the package container material incorporated a plurality of layers, comprising longevity layer, anti-microbial layer, rodent repellent layer, rugged layer, super-hydrophobic layer to protect the freshness and to improve shelf time of a plurality of food items. The layers can be combined in a number of ways in order to meet the needs of the customer and reduce the cost.

Longevity Layer: The primary composition of the longevity layer involves chitosan and rice starch. The rich starch-chitosan film is prepared by adding 100 ml of 2% rice starch solution with 100 ml of 2% chitosan solution. After that, 40% of glycerol as a plasticizer is mixed into the final solution. The blend film is stirred at 800 rpm for 5 minutes, then the lumps are filtered through a polyester screen. Then the solution is added into the ultrasonic bath by utilizing a constant 35 kHz frequency for 15 minutes. The solution was dried at 55 °C for 10 hour which results in a chitosan film.

Antimicrobial Layer: Aqueous leaf extracts were prepared by collecting fresh leaves of Impatiens balsamina and washed until no impurities remained. Then, 10g of fresh leaves were put into a beaker with 100 ml of distilled water. The mixture was heated and stirred for 20 minutes at 60°C and allowed to cool at room temperature. The mixture was filtered using the Whatman 42 filter paper and then centrifuged at 81 G-force for 20 minutes. The extract was stored in the refrigerator for further use to synthesize Ag nanoparticles from the AgNO₃ precursor solution. AgNO₃ powder was dissolved in distilled water to prepare a 10 mM AgNO₃ stock solution. The AgNO₃ solutions were mixed with the aqueous extract of Impatiens balsamina fresh leaves at a ratio of 1:1 (v/v) to a volume of 50 mL in a flask. The flask was wrapped with an aluminium foil and was then heated in a water bath at 60°C for 5 hours. Furthermore, the mixture was stored in the refrigerator for the antibacterial activity test and further analyzed by using a UV-Vis spectrophotometer and TEM

Rodent Repellant Layer: To afford protection to our agricultural produce from rodents, we have come up with an ingenious layer with the extracts of Hibiscus sabdariffa, Trifolium alexandrinum which acts as guards against rodents and pests. To incorporate these extracts into layers we have used tapioca starch as our base material. The tapioca that is going to waste is collected from the local markets, peeled and diced, and sundried for 1 week, then it is finely powdered with the help of machinery to obtain tapioca starch. A perfect measurement of 25 gms of tapioca starch is taken and combined with 150 ml of tap water to dissolve the starch completely. Then 1 tablespoon of synthetic vinegar and 1 Tablespoon of polyol compound-C₃H₈O₃ is added (Glycerol is used). The air-dried calyx of 140 g was macerated in hot water of 1.5L for 24h. The macerate was filtered, concentrated and freeze-dried. The yield of the extract was 12.5 g. Four Kg of clover plants were cleaned from weeds and dirt. Two Kg were juiced and filtered as fresh clover juice and the other amount was fermented in plastic black sacks for ten days in the absence of oxygen until completely dissolved, squeezed and filtered. Both the plant extracts are mixed with the base mixture. Then the resultant slimy layer is spread according to the shape required and sun-dried completely.

Super-Hydrophobic Layer: Fresh taro leaves were collected, measured, and washed with deionized water to eliminate impurity. The leaves must be rinsed carefully to avoid destroying the wax coating and are left to dry under convenient temperatures and conditions. The taro wax extraction is done by soaking the dried leaves in 500 mL at 50°C for about 30 seconds, this step is repeated with the same leaf samples using fresh chloroform. The wax is collected from the first step. The chloroform present in the raw wax is evaporated with help of a rotary evaporator and ambient evaporating process and further, it is refined using filter paper. Following this, the wax is mixed with hot acetone and cooled at room temperature to get the crystallized form.

5. Project status at beginning of the Year:

Each of the five layers has been designed to solve the problems farmers face during the transportation and storage process. The five layers are prepared individually and combined to a single box through hot press of those layers.

R&D Stage – Materials and Fabrication methodologies identified, Literature Review was done for finding the correct binding agent and process. Biodegradable hydrophobic layers were studied. The materials compatibility with the base layer was studied. Different weaving patterns were studied for warp and pick spacing and how they affect water penetration. For our initial research, we went to the following places to understand the execution and industrial requirements for our product

The visit to Printing & Packaging Technology Department gave insights on treatment of banana and kenaf fibers to break down the outer harder pectin and carbohydrate layer on them. It also gave many options of coating which were tried but were not fruitful. The visit to textile department gave us a new dimension where we used their lab for coating the PLA on banana fiber and

kenaf fiber by hot pressing with the help of temperature and pressure controlled compression moulding machine. The detailed elaboration of this methodology is explained in the interventions made.

During the visit to the Chemistry department-AU, we met with a professor who is working with water soluble PLA got insights about the properties of various types of PLA. We also had a brief discussion on the surface energy of natural fibers in combination with bio polymers.

Go green is a supplier of raw materials of the natural fibers both in raw and stitched form. They had supplies for kenaf fiber, cellulose fiber, banana fiber, jute fiber. We approached Tulir Engineering for spin coating of PLA on the fibers as the working area of the spin coating machine was so small we could not really use it to our potential and this was dropped.

Packaging standard of the bag is prescribed in the IS protocols; this standardization and testing is done in CIPET (Central institute of petrol chemical engineering and technology), Micro Lab and Omega Lab.

The PLA, PBAT and other bio-polymers were sourced from NaturTec. They are the only supplier who sources the PLA directly from China. Anakaputhur Weaving community has the huge working place with machines and labour potential to make the best possible fabric from fabrics

6. Interventions made:

Initial prototypes were made and tested based on the following methodology

Preparation of PLA film : Constant stirring of 4gm of PLA pellets + 250ml Chloroform + 1ml Cardanol oil + 1g MAH. It is then poured into a 30*30cm container and dried for 8hrs

Four types of Samples have been prepared as per the given condition.

Sample 1: PLA film + PLA film + BANANA FIBER + PLA film + PLA film

Time duration: 5min

Sample 2: PLA film + PLA film + KENAF FIBER + PLA film + PLA film

Time duration: 7min

Sample 3: PLA film + PLA film + PLA film + BANANA FIBER + PLA film + PLA film + PLA film

Time duration: 7min

Sample 4: PLA pellets (4gm) + BANANA FIBER

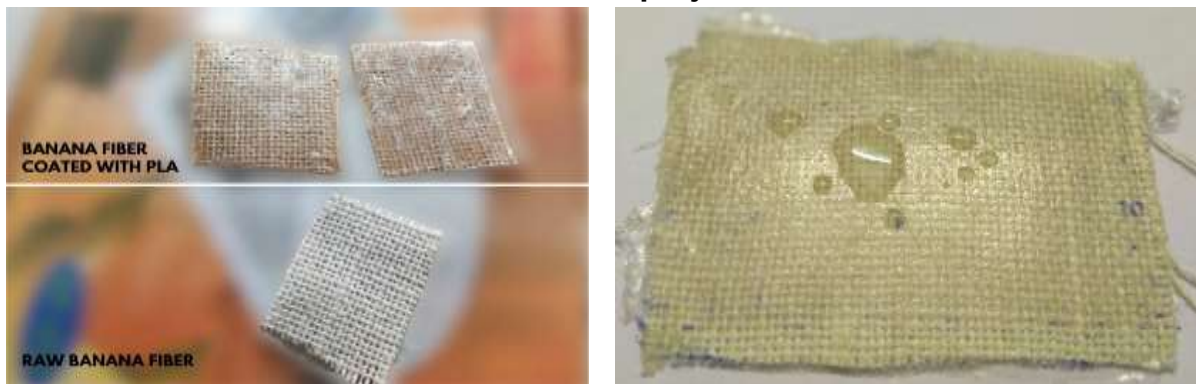
Time duration: 20min

The samples were kept inside the hot press unit at 135 °C and the temperature was steadily increased to 150 °C, the pressure was kept constant at 50 kg/cm²

7. Current status:

The prototypes are given for testing at CIPET. Furthermore to improve the quality and reduce the capital cost we are trying to do the same procedure with much more affordable and cheap alternatives

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Limitless Filament Extruder

1. Project Title : Limitless Filament Extruder

2. Mentor Name : Prof. Srikanth P.

3. Student Team Names:

- I. Praveen Kumar S.
- II. Murali Krishnan M.
- III. Elton Shalin
- IV. Nandagopal PG

4. Project Description:

Filament is the raw input material required for the 3D printers to produce print models. During the process almost every model, first a base layer is laid onto the printing bed of the 3D printer so that the rest of the actual part sticks to the bed and gets printed correctly. If there are complex geometries involved in the model to be printed such as a large overhang, extra supports are added into the model so that the complete part can be printed. The base that was printed as well as the extra supports are cut away from the model and discarded. Due to various reasons, the 3D model may not get printed correctly and the whole model may have to be discarded. The printing of every 3D model produces plastic waste in the form of cut-offs, stray filament deposits and in some cases, misprinted parts. These plastic wastes are thrown away with garbage and end up in landfills where they do not biodegrade and cause environmental pollution. In order to solve this, The typical filament extruder will smash failed prints into smaller pieces, melt them down, and force the liquid plastic through an opening. The hot plastic is then cooled down and coiled onto a reel

The process involves collection of waste plastic and shredding them into fine pieces using the shredder unit and filtering out the impurities. Then the shredded particles are pushed and compressed using a lead screw then passed through a melting zone and must be extruded out of the nozzle which will be cooled using a water cooling method , checked thrice for the precision and rolled into a spool at the right speed to maintain the standard diameter of 1.75mm. Plastic filament extruder produces plastic filaments of specified diameter by using corresponding dies. Ceramic band heater is used to melt the input material. Barrel screw is used to feed the input raw materials longitudinally along the screw. Screw consist of three zones namely feed, melt, and transition zone. Input raw material is melted by using ceramic band heater for. Two barrel heaters and one die heater is used to acquire maximum efficiency. Analog temperature controller is used to control the temperature of the three heater. Mechanical and thermal properties can be increased by adding fillers to the input raw material

This would lower printing costs and eliminate the waste plastic by recycling it. Research showed that the 3D printed residues aren't used or reused for any purpose since the 3D printing unit is owned by hobbyist and research labs.

The LIMITLESS FILAMENT EXTRUDER ensures maximum utilization of wasted 3D printed material. Which reduces the expenses in a eco-friendly manner. The 3D printing is usually done with PLA, ABS, PET,etc

5. Project status at beginning of the Year:

At the beginning of the year we identified what are the major problems faced by the 3D printing community .we made a survey which exposed the hidden problems faced in the 3D printers and the extrusion process

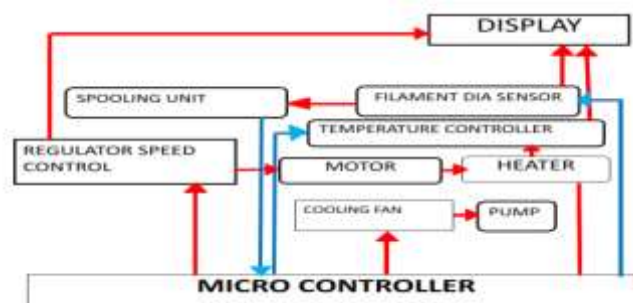
The problems identified are

- Quality of the filaments is reduced during the recycling process.
- The consumers require customizable 3D printing filaments for a specialized works.
- Wasted 3D prints when exposed to air the property of the material change which makes it hard for recycling.
- The second major division of expenses is spent for packaging because the imperfect packing of spools result in tangling of filaments leading to printing issues

To address the following problems we came up with new methodologies and decided to make changes in the shredding and the cleaning process of the wasted 3D prints. The work flow of our extruder will be in a way that the wasted 3D prints are cleaned and shredded and the extrusion process follows

6. Interventions made:

- The quality of the filaments is increased by analyzing the filament at various stages through filament dia sensor using data modeling.
- The water based cooling unit is added to avoid the deformation of the filament.
- The expensive packing methods are avoided by manufacturing environmental resisting filaments



7. Current status:

The design is ready to implement and the parts and materials which are needed are listed and some of the utilities are bought.

The components purchased and built are:

- Cooling Unit
- PID controllers

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: AQUABOT- A Remotely Operated Underwater Vehicle for the Inspection of Aquarium

1. Project Title : AQUABOT- A Remotely Operated Underwater Vehicle For the Inspection of Aquarium

2. Mentor Name : Dr.C. Murukesh

3. Student Team Names:

- I. Yokesh J.
- II. Ananth Sai Shankar V.
- III. Dhanalakshmi P.
- IV. Faheem Jinna S.
- V. Harini G. N.

4. Project Description:

Aquatic life management in aquariums has deteriorated significantly in recent years, with the majority of fish populations declining. While coping with the public aquarium's environment, aquarists and aquarium fish species face a myriad of obstacles. Using robotics makes dull and dangerous jobs a lot faster, safer, and cleaner. Thus, created the concept of Aquabot, a Remotely Operated Underwater Vehicle with various unique capabilities to monitor aquariums, aid aquarists, and safeguard aquatic life. A set of wires connects the ROV to the operator, sending messages back and forth. The Aquabot has a video camera, a propulsion system, lights, and other components added in accordance with the specifications and design parameters. The ROV captures the images of the aquarium's environment and streams them to the computer for recognition, analysis, and further processing. The main goal of Aquabot is to be as hydrodynamic as possible by maintaining the stability of the model and enhancing the features. ROVs' real and prospective range of applications has grown exponentially in recent years. They are anticipated to become a common instrument in the future of technology. The laborious work in large-size aquariums may be automated with the aid of Aquabot. It also helps in performing deep surveys that do not involve human risks. This platform is less expensive than manual inspections of aquariums. As a result, AQUABOT assists in performing routine inspections, resulting in a stable and balanced aquarium

5. Project status at beginning of the Year:

We sought to go deep into the real-time concerns surrounding aquariums and aquarists after analysing the fundamental problems of aquarium management, which marked the beginning of the Aquabot. For this, we performed a detailed study by approaching several aquariums, among which was Dubai Aquarium, from whom we received several views on the approach of ROV in aquariums for assisting aquatic life and aquarists, as well as its positive benefits and drawbacks. We created the primary model using the core idea and information. And, in order to make progress in establishing the

appropriate functioning model, we approached the NIOT (National Institute of Ocean Technology). The intakes from them made a significant contribution to the model's architecture optimization. Following that, numerous professionals working on the technology helped us by expressing their ideas about the project and model. After considering all of the suggestions and ideas, we have got a clear idea of creating the ideal CAD model for the project

6. Interventions made:

With the help of proper research, we designed and simulated the ideal 3D CAD model for the project. To move further along in developing the model, we followed the RISΦ-A-18 drone design to develop a hydrodynamically efficient model. The usage of 1000KV BLDC waterproof motors set a drawback, as the water penetrated the motors, resulting in corrosion of the coils. To overcome the obstacle, we used 500 GPH bilge pumps with a supply of 20V, which gave a promising waterproof. However, it lacked sufficient thrust

7. Current status:

Electronic Architecture:

- i. **The Motor Control Module:** T200 thrusters of blue robotics are used, which are assisted with an ESP32 module, and each motor is provided with a 30-amp electronic speed controller.
- ii. **The Primary Control System:** We have planned to develop the interface of the Raspberry Pi 4 module with the T200 thrusters and the camera. With the help of servo motors, the camera can view in all directions. We are researching on fish detection algorithms and related concepts.
- iii. **Hull Design:** The end caps of the fabricated hull include a transparent hemispherical dome of 10.8 cm in diameter for the placement of the camera and an aluminium flange of 11.4 cm in diameter, which is incorporated with orings of 9.8 cm in diameter. To achieve the waterproofing of the wiring from the hull, an aluminium disk is pierced with four holes of 1 cm in diameter. We are currently working on fabricating the body of the hull made up of acrylic cubes. We are also working on completing the patent-related report

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Human Health Monitoring System using IOT

1. Project Title : Human Health Monitoring System using IOT

2. Mentor Name : Dr. Jeeva Kathiravan

3. Student Team Names:

- I. Ms. Lethika R.
- II. Ms. Madhumitha A.
- III. Ms. Muthudhivakar M.

4. Project Description:

The system used for health monitoring is the fixed monitoring system, which can be detected only when the patient is in hospital or in bed. Recently accessible systems are huge in size and available only in the hospitals in Intensive Care Unit[5]. Nowadays, zig bee can be used to transmit the patient information to their loved ones or to their concerned doctors.

In existing system, patient needs to get hospitalised for regular monitoring of the patient. It is not possible once he/she is discharged from the hospital. This system cannot be used at home. The existing systems are measuring the health parameters of the patient and send it through zig bee, Bluetooth protocol etc., These are used for only short range communication to transfer the data. Not all the time the doctor can fetch these details.

5. Project status at beginning of the Year:

The proposed system mainly focuses on the situation where the doctors and patients are at distant location and it is very important to give the entire details about the heart beat and temperature of the patient to the doctor. In "HUMAN HEALTH MONITORING" system, the parameters of the patient's health details such as heart beat , heart rate, muscular diseases and so on are measured using pulse sensor , ecg sensor, emg sensor and so on. The data collected by these sensors are sent to the arduino.

6. Interventions made:

The arduino then transmits the data to the user in the form of SMS using GSM modem. The recordings of patient health parameters are sent as an SMS to a doctor or a family member which have been given as the recipient. Not only we send the information through GSM module as an SMS also stores data in the cloud. Arduino UNO board continuously read input from these two sensors then it sends the data to the cloud by sending this data to a particular URL. Then this action of sending data to IP is repeated after a particular interval of time

7. Current status:

- We have established two way communication for the nodes using ESP-NOW. Setting up esp now as the central node, the data from the secondary nodes are transmitted. Both secondary nodes and central node can send and receive the data. This mechanism is done completely wireless with the help of WiFi.

- By this process, lifetime of sensors are can be increased as the selected sensor only activated, and other sensors are in rest state.
- It also increases the performance of the sensor and makes the process more easi-er.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: FABRIGATOR - Innovative conversion of Scrap textile into building blocks of new textile material

1. Project Title : FABRIGATOR - Innovative conversion of Scrap textile into building blocks of new textile materia

2. Mentor Name : Dr. M. Deepak Kumar

3. Student Team Names:

- I. Mr. Ananth Sai Shankar V.
- II. Mr. Gowtham Shankar K.
- III. Mr. Ajith S

4. Project Description:

Landfills receive more than 10 million tons of textile waste each year because there isn't enough demand for the endless supply of donated clothing. To put it simply, we have a textile waste problem and fashion will never be a sustainable industry if we don't fix it. Textile recycling is the solution we're searching for. We are creating a revolution by developing a potential machine for recycling old textiles into new textiles and garments. The necessary steps in the textile recycling process involve the donation, collection, sorting, shredding, blending, bale making, and then subsequent transportation to end users as brand-new garments. The foundation of our technology is the rejuvenation of waste textile materials back to quality fiber, enabling it to be used in a variety of products and industries. The uniqueness and distinctive feature of our product is we are providing recycled cotton through our state-of-the-art technology, unlike the existing recycling machinery ours is a retrofitting one without any compromise in the productivity when compared with the conventional machinery

5. Project status at beginning of the Year:

Methodologies identified: Design of the prototype and the various working mechanisms completed

6. Interventions made:

Fabrication work started. Had a meeting with various textile industry entrepreneurs and academic experts in Anna University, Chennai. Identified a company for technology transfer. Slight alteration in the mechanism carried out after taking inputs from industry leaders to suit their needs

7. Current status:

- Filed the provisional patent for the design and the methods to convert the scrap textile material into building blocks of new material
- Designed the prototype of the Fabrigator and have started the fabrication work

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Karthavya: Data Acquisition and Processing Techniques

1. Project Title : Karthavya: Data Acquisition and Processing Techniques

2. Mentor Name : Mr. M. Yuvaraj

3. Student Team Names:

- I. Praveen Kumar S.
- II. Murali Krishnan M.
- III. Abdul Mohamed M.
- IV. Thinesh Babu KS.
- V. Ayushi Kumari

4. Project Description:

The project is based on a cluster of entry management and access control systems which is run by single software with integrated AI to have access to all the entry and exit control. This project is further improvised through AR navigation to assist navigation to the appointment destination

Device 1: Karthavya Pro V2: Facial Recognition Based Attendance System using **Camera and Few other** Sensors to Complete the Entire Process of **Punching in and out a Employee**

- The Device has IR based Temperature Sensor which detects anomalies in Employees Body Temperature thereby Reporting it Real-time on to the Covid-19 Dashboard that we have Built.
- This devise can detect mask and face simultaneously for entry.
- It uses Cloud Solutions which enables us to monitor, track and optimize human resources effectively through a Simple HRM Dashboard as well.
- Inbuilt Data and Image Processing Engine detects a Person in less than 3 Secs

Augmented Reality based Virtual Assistant which Guides through the days Task and Works

Device 2: Karthavya RFID V3: RFID Based Attendance System using RFID Reader and Electromagnetic Leaf to Complete the Entire Process of **Access Control**.

- This device is run on a real time software which can restrict or grant access to a person on site from the admin across anywhere from the globe.
- We can monitor all the data like when the person has entered and left the places and the duration of stay etc

There are a total of 2 versions in the **RFID PRO** and **RFID Micro**

Device 3: Karthavya Finger V4: RFID Based Attendance System using Finger print Reader to Complete the Entire Process of Punching in and out a Employee

- This device is a cheaper alternative to the Karthavya pro v2 and has fewer capabilities than the pro version without the camera

5. Project status at beginning of the Year:

Literature review was studied and the methodologies were identified. Version 1 of the project was made for the demo purpose and the several prototypes and versions were planned to make

6. Interventions made:

An AI is being developed to learn the Invaders and an AR based path navigation system is developed with an integrated HRM Dashboard, Image processing datasets is trained to detect face and mask at the same time as well as face tracking and a ecosystem is developed for the cluster of devices. The cluster maintains the database and can be notified to the users. The version of the karthaya were explained in the project description and the each version photos were added in the last of the report

7. Current status:

Working model is in development stage with all the added features in the above versions as shown in figures. Prototypes were tested in the Madurai medical college. Complete specification Patent document is being prepared

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Scooter for People with Special needs

1. Project Title : Scooter for People with Special needs

2. Mentor Name : Yuvaraj M.

3. Student Team Names:

- I. Sathiyar A. R.
- II. Vishnuprasad S.
- III. Rahul Kumar Singh M.
- IV. Vignesh prasath K.

4. Project Description:

- a. General Purpose:** Differently abled people (arm amputated) , find it difficult to ride vehicle as they could not balance the whole weight of the vehicle which eventually makes them to depend on others for help. With the steering mechanism that we have proposed, people with special needs will be able to control the vehicle for turning and other purpose with the use of his/her legs. The vehicle also has the traditional steering system with which normal people can also use it. Being an electric vehicle it needs very little or zero maintenance.
- b. Technical Purpose:** We have installed a voice assist feature, so the disabled people can easily access the accessories of the vehicle through voice control. We also provide a cruise control feature, so it will maintain the speed of the vehicle automatically at a specific speed when set. We have provided two steering mechanisms, one with foot steering control and another steering is a common type hand steering control, so with these two steering mechanisms both disabled person and normal person can drive the vehicle smoothly. The 3kwh lithium ion battery will provide a range of 100kms. Since our vehicle has 3 wheels (2 in the rear and 1 in front). It will give maximum stability in highways as well on uneven roads. The ergonomically designed seat with lumbar support will help them to ride for long distances comfortably
- c. Advantages and improvements over the existing methods, devices or materials:** In the existing method additional 2 wheels are added to the ICE scooters. They are poorly designed and topple on uneven roads. This leads to increase in weight and poor turning radius of the bike. This also leads to poor fuel economy and handling of the vehicle. There is no commercial vehicle in the market that has a steering system. Which can be controlled with legs. Our design has a unique steering system which helps people without hands to ride the vehicle using their legs. Our ergonomically designed seat will help them the ride for longer distances
- d. Economic potential or commercial applications for the technology:** There are 3 million people with hand related disabilities. There is no specific vehicle in the market for these people, so our product will achieve great success. Since the manufacturing cost of our scooter is the best in price in the market. The ergonomically designed seat helps them to ride

the vehicle for a long time without fatigue and discomfort. Our in house designed steering system is our main selling point.

Government is providing subsidies for buying electric vehicles. There are various schemes to disabled people which help them to buy the vehicle at nominal cost.

- e. **The problem for which solution was researched:** Our solution was designed to solve the transportation problem of the specially abled people. Existing vehicles for them are not user friendly. Existing public transportation systems are not user friendly to these people. They have to rely on the help of others to get in and out of these vehicles. Which makes it extremely uncomfortable for them to use these transportation systems.
- f. **The invention namely the solution to the problem:** We have developed a scooter for specially abled people that provides a solution to the following problems by means of a steering system which can be controlled using legs.

It has an ergonomically designed seat with lumbar support to give a pleasant riding experience.

5. Project status at beginning of the Year:

The complete literature review of the project was done. The vehicle design was drawn using solid works software and the analysis completed using Ansys software. Differential readily available will not be useful for our vehicle so we plan to manufacture ne real in the two wheeler

6. Interventions made:

We have developed a scooter for specially abled people that provides a solution to the following problems by means of a steering system which can be controlled using legs. It has an ergonomically designed seat with lumbar support to give a pleasant riding experience

7. Current status:

The vehicle frame design is analyzed and the fabrications were completed. The new design real axial were modified and fabrication were completed as shown in the figure. The size of the differential were reduced as per the design requirements of our vehicle. The frames were welded and grinded as shown in the figure. Battery motors and electrical equipment were purchased and ready to assemble in the frame

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Sphoorthy Engineering College

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Sphoorthy Engineering College		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr. J. B. V. Subrahmanyam		
Name of NewGen IEDC Coordinator	Sharath Vedala		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> Mobile Number e-Mail ID 	8121642833 vsharath@sphoorthyengg.ac.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST- NewGen IEDC/17-18/12	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A]To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Workshop on Design Thinking

- Creating awareness about problems and Problem-Solving Methodology in Students

2. Entrepreneurship Awareness Camp

- Objectives of an Entrepreneur
- Students learn about Taxation, Annual Filings, Startup subsidies, Startup grants.
- Entrepreneurs Journey and Startup Registration Process – Legal entity

3. Workshop on Team Building Essentials

- A Practical demonstration of Team Building through an activity made students understand about the importance of Team Building and its process.

4. Workshop on Leadership & Management

- 2 days (8 hours) session on the qualities of Leader in their Entrepreneurial Journey.

5. IDEATHON- Innovative Idea competition

- Idea presentation competition, 8 Ideas have been selected for NewGen IEDC Innovative Projects

6. Students participation in Chinna Shodana Yatra in Association with Palle Srujana

- This program was made mandatory for students to travel with Palle Srujana team to know about the problems faced by the local people and gain some knowledge from villagers on Local and Traditional practices.

7. Awareness program by NEN Mentors to the Students.

- This program is designed to the students aspiring for start-ups. To connect to different people for Mentorship, Marketing and funding.

8. Project Expo By Sphoorthy Engineering College Students

- Created Awareness among students to think about innovative Ideas and also about the components or devices used which help them to know about technology

9. Training programs on Advanced technologies (IOT, DRONES, ROBOTICS, ANDROID ,3D PRINTING

- This is a regular practice every year, Almost 60 students trained on Robotics, 30 students on Drones and 3D Printing, 50 Students on Android Application Development

10. Innovation Expo organized by Sphoorthy NewGen IEDC in association with Palle Srujana

- This event is organized as a part of UBA every year, It Created an Awareness among students about the local Farmers problems and also about simple tool designs solutions.

11. student's participation in "Entrepreneurship Development Program for Student Entrepreneurs" by NAARM

- Entrepreneurship and Innovation minors will be able to mobilize people and resources. Students identify and secure customers, stakeholders, and team members through networks, primary customer research, and competitive and industry analyses in order to prioritize and pursue an initial target market in real-world projects.
- Entrepreneurship and Innovation minors will be able to create value. Students are able to create presentations and business plans that articulate and apply financial, operational, organizational, market, and sales knowledge to identify paths to value creation through 1) company formation (for-profit); 2) social innovation (nonprofit); or 3) intellectual property licensing

12. JNTU-JHUB Innovation Activities

- From these three Program, 12 Student Ideas have been selected for IEDC Grant

13. MHRD Innovation Cell Activities

- From these three Program, 12 Student Ideas have been selected for IEDC Grant

14. Smart India Hackathon Participation

- From these three Program, 12 Student Ideas have been selected for IEDC Grant

15. Workshop on IP

- After this session, 15 student Idea patents have been submitted

[B] To identify, develop & commercialize students' innovative ideas

1. Students Participation in Excite JNTUH Product Engineering Workshop
 - 5 student team attend the program and developed their Prototypes
2. Students for DISHA program in IIIT Hyderabad
 - Students working on projects similar to Women Safety have participated in the program. 2 Students ideas have been selected for Real-Time development
3. Students Participation in TEP–ISB (Indian school of Business Hyderabad)
4. Industrial successful startup representatives to Project Expos for Mentor Talk
5. Sending for Internships to work in Startups & facilitating students for DST /DSIR/Innovation challenges innovations prototype funding.
 - 2 student teams have been sent to Startup companies(Gakuen Technologies Private Limited) to work on their Project ideas use facilities
6. National Level Hackathons
 -
7. Workshop on Market Research & Marketing Strategies
 - Students Trained on Social media Marketing and Research Statistics of Market

[C] To enhance Industry-Academia interaction

1. T-Hub LaunchPad Program
 - Proportional mentorship and industry for students. (Idea verification, feasibility compatibility)
2. JCELL Activates organized by JHUB JNTU Hyderabad
 - Business model Awareness, Market strategies
3. Support of ORACLE Academy, CISCO Academy
 - Cisco Oracle Training for students for commercializing software products
4. Support of TASK- Telangana Academy of Skill and Knowledge
 - Goes on every year
5. Incubation Center – OTBI session on commercialization of Product
 - Top 10 Ideas selected in Hackathon wer sent to OTBI (Osmania Telangana business Incubator) for inducing Startup culture in students

1. Project Expo



2. Ideation Boot Camp



3. Design Thinking



4. Hackathon Program



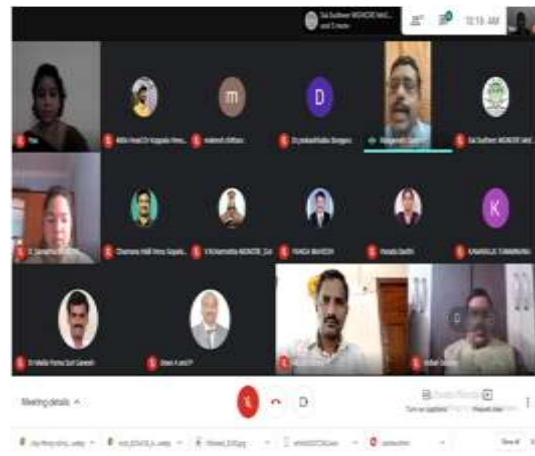
5. SIH Hackathon Program



6. National Science Day



7. T-Hub LaunchPad Program



8. JHUB Hackathon Program



9. Workshop on Mobile Operated Robotics



10. Visit Incubation Centre at Osmania University



11. Other Programs







2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

NA

3. Other important highlights (new initiatives), if any:

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Protective & Alerting Face shield for Municipal Workers

I. Project Title : Protective & Alerting Face shield for Municipal Workers

II. Mentors Name : Mr. Sharath Vedala

III. Student team details

i. Sushant Tiwari

IV. Brief description of the student start-up

- This is a face shield designed and developed for Municipality Workers and people Working in Mines. This shield detects harmful gases like CO, CH₃, NH₃, NO₃, H₂S, CO₂ and SMOKE. Once it detects any Harmful gas it cuts of the outside air and supplies Oxygen immediately.
- This problem statement is considered after interaction with Local Municipal Authority. After postulating all the research Work the following data statistics reveal the need and value of Innovation in this project.
- Our solution was to create a complete Protective and alerting face shield which detects the presence of Harmful Gases and turn on the Oxygen Supply to the Worker for a duration until the worker escapes its exposure and the system detects the absence of Toxic gases in the Atmosphere. This project consists of a Face shield along with a Jacket which carries the electronic system and pocket Oxygen Cylinders connected to the Shield.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

- NewGen IEDC supported students with High level Designer Mentor support and inhouse Industrial grid 3D printer Facility to completely print the Face shield in 3D. It also supported students with expert team in Component procurement, meet the Incubation centers and coordinate with Local Municipality to meet the project requirements to be used on field. Trainings on IPR and Entrepreneurship helped them to file and publish a Patent

VII. Future plan

- Developing the circuit boards compatible for different sensor detection and working on Face shield manufacturing Material. Die preparation and Mass Production.

VIII. Important highlights

- Project selected for MSME Innovation scheme and a grant of rs: 15 Lakhs is sanctioned for the further developments of the Projects.

Best Project-2: Door to Door Waste Collection Tracking and Monitoring System

I. Project Title : Door to Door Waste Collection Tracking & Monitoring System

II. Mentors Name : Mr. Sharath Vedala

III. Student team details

i. Geetika Agarwal

IV. Brief description about the student Project

- This project idea is to develop a system for tracking of Day-to-Day Waste Collection from Homes which enables us to know about the Waste collection of the vehicle drivers and also about the waste given by the house holds. A complete Data picture of Location , Time and Collection of Data is available
- This problem statement is considered after interaction with Local Municipal Authority. This Problem Statement is collected from the “Swachh Bharath Mission’. The Tracking and Monitoring of Waste Collection is very important to maintain the Sanity levels of streets and Communities. Collection of wastes from Every house is mandatory and co -operating to the waste collection is the duty of every Individual Waste collected from no.of houses and amount waste generated from a region/ community/ street data has to digitally recorded and maintained. Amount of recyclable waste, waste for manure statistics is very important.
- We have devised a Low-cost Tracking and Monitoring system using QR code and Mobile phone QR scanner Android Application which updates the Time stamp, Location of QR scanned also its attendance in the Database .A web application and GUI based Web app is used for the easy Monitoring of the daily tracked data.

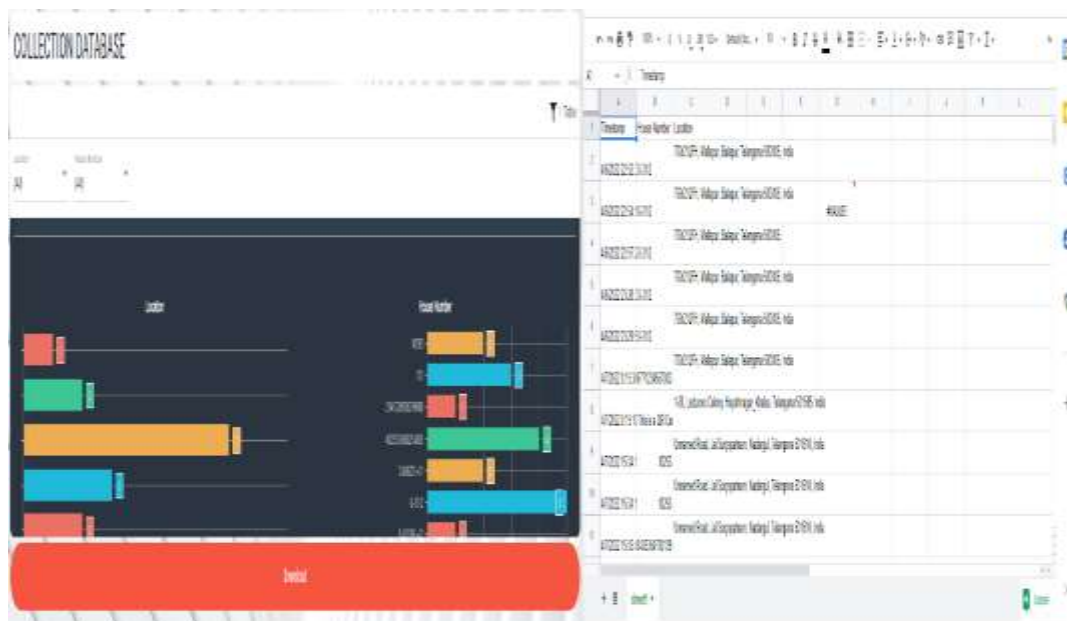
V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

OUR SOLUTION:

- We would like to add a QR code to every house , whenever a driver collects the waste from a house, The QR Code must be scanned, which makes an entry of waste collected in the cloud data base along with Date, Time and Location of the Collection.
- This makes us track the collection point and monitor the collection every time waste is collected, and payments must be made accordingly.
- This increases the responsibility of collecting wastes at the collecting agent side whether he is Private / Public.



-

[illegible]

VI. Contribution of NewGen IEDC in the same

- Supported this project by providing software developer mentors, Realtime web servers, API's Integration Support. Apart from this interaction with High officials of Municipal Corporation for understanding the problem and Improving the Solution.

VII. Future plan

- Pilot run of this product has been already started in association with Badangpet Municipality. After pilot, The feedback will be collected and Software gets improvised and Product will be into Commercialization.

Annexure-A

Details of Student Projects

Project-01: Electric Mini Vehicle

1. **Project Title** : Electric Mini Vehicle

2. **Mentor Name** : Dr. B. M. Kannan

3. **Student Team Names:**

I. Poloju Lohithaksha

II. Gaddi Pavan Kalyan

4. **Project Description:**

The main Idea behind the thought process of the vehicle is to provide a Low cost affordable Mini Electric car for Local Commute which substitutes a 2 Wheeler with more comfort and safety minimising the cost of transportation. A compact electric vehicle that could be a replaceable option for 2-wheelers and a multipurpose convertible commercial vehicle for small businesses specially for Tea, led light, Clothing's, soda hubs, etc

5. **Project status at beginning of the Year:**

- Vehicle concept and frame design

6. **Interventions made:**

- Convertible Vehicle components

7. **Current status:**

- Basis chasis concept done and complete body and profile designing work under progress.

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-02: Grocery Lift

1. Project Title: Grocery Lift

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

- I. Y. Jeswanth Kumar Reddy
- II. S. Abhinav

4. Project Description:

The problem statement is taken from people living in multistorey Buildings and Apartments. This is a mini-Lifting system for carrying Items/ Goods between floors of a multistorey buildings/ Apartments which is attached at the balconies of any floor and can wirelessly control the lift to move to each floor carrying a load of up to 25 kgs.

5. Project status at beginning of the year:

- Idea and Design

6. Interventions made:

- IoT based Lift Control system with floor suggestion.

7. Current status:

- Prototype ready and testing Working Model.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Automatic Portable Wire Cutter

1. Project Title: Automatic Portable Wire Cutter

2. Mentor's Name: Dr. D. Venkatarathnam

3. Student Team Names:

- I. S. Pranathi
- II. D.Manogna
- III. K. Vaishnavi
- IV. G. Sathwika

4. Project Description:

This project idea was taken from local electricians and Cable Manufacturers, This is a Mini Portable Automatic Wire Cutter which takes the inputs such as Length and quantity of the wire and cuts them as per the input given. This is mostly used for USB cable Manufacturers,Power adapter cable Manufactures and also for Wire Measuring industries.

5. Project status at beginning of the year:

- Design and Idea

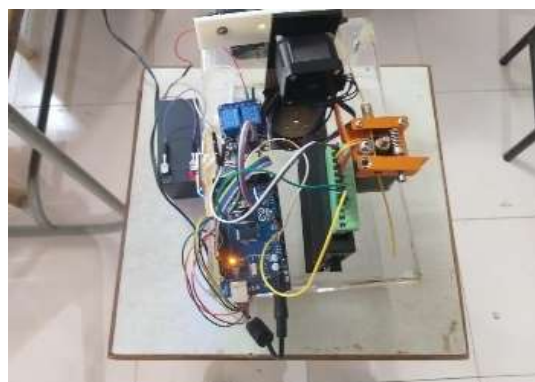
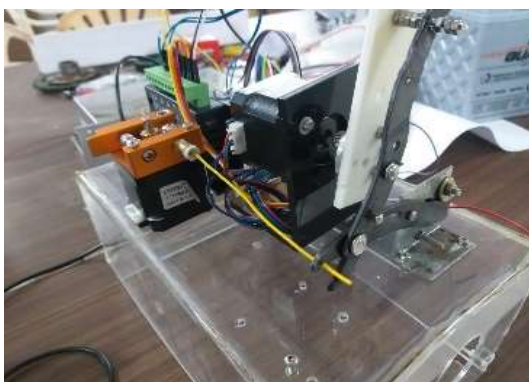
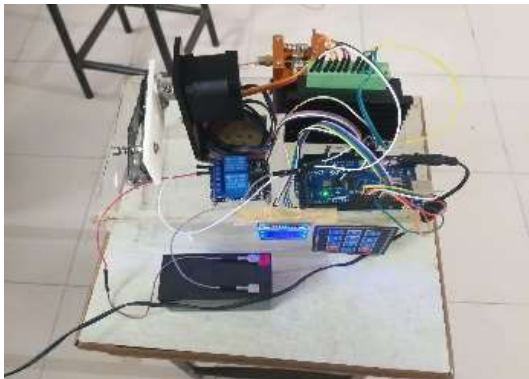
6. Interventions made:

- Portable cutting Machine

7. Current status:

- Prototype finished.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Wire Less Stethoscope

1. Project Title: Wire Less Stethoscope

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

- I. V. Sai Harshith
- II. G. Pravalika

4. Project Description:

Using an electronic stethoscope, the doctor can check the patient without interaction. The electronic stethoscope redefines the sound of the stethoscope and gives us accurate beats, with amplified sound.

5. Project status at beginning of the year:

- Wireless audio verification

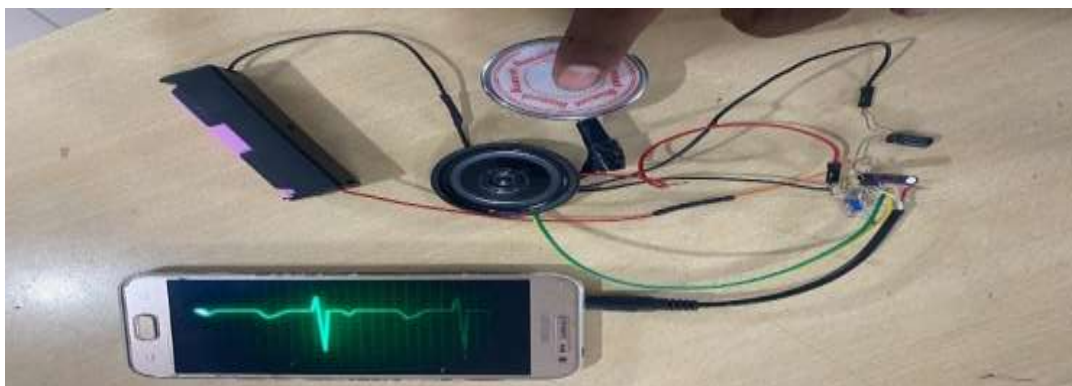
6. Interventions made:

- Manual Stethoscope audio amplification and wireless transfer

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Drone as Service

1. Project Title: Drone as Service

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

- I. V. Harideep
- II. K. Srujan Kumar

4. Project Description:

This Project Aims at using Drone as a surveillance and Real time Monitoring Platform for measuring Gases in the atmosphere and thermal signature analysis for measuring realtime gas leakages or structural damages to the High rise structures/Factories Etc. We opt to develop a sensor fusion board which measure real time gas profile and can be used in industries such as power plants,Cement Factories, Pharma Industries which are major air pollutants. We provide realtime data analytics to the user and user can mitigate the environmental impact caused with the data provided.

5. Project status at beginning of the year:

- Idea

6. Interventions made:

- Gas Detection fusion Board.

7. Current status:

- Working Model ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Deaf and Dumb Machine

1. Project Title: Deaf and Dumb Machine

2. Mentor's Name: Dr. D. Venkatarathnam

3. Student Team Names:

I. U. Sathwik

4. Project Description:

There are many differently disabled people who communicate using Morse code which is already thought to them in their learning sessions. To ease their communication

5. Project status at beginning of the year:

- Analysing communication patterns in differently disabled people

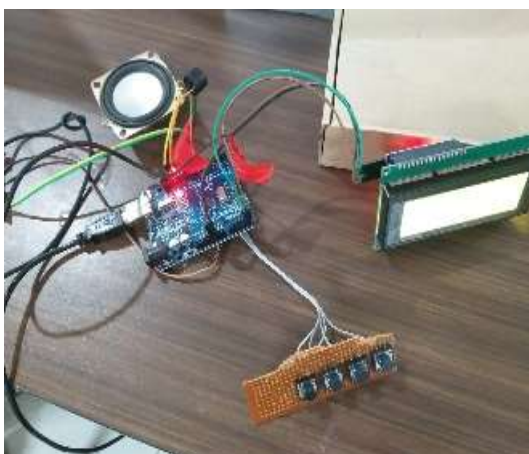
6. Interventions made:

- Converting Morse to voice and Text

7. Current status:

- Prototype Model ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Safety face shield for Municipality Works

1. Project Title: Safety face shield for Municipality Works

2. Mentor's Name: Sharath Vedala

3. Student Team Names:

I. Sushant Tiwari

4. Project Description:

This is a face shield designed and developed for Municipality Workers and people Working in Mines. This shield detects harmful gases like CO, CH₃, NH₃, NO₃, H₂S, CO₂ and SMOKE. Once it detects any Harmful gas it cuts of the outside air and supplies Oxygen immediately.

5. Project status at beginning of the year:

- Gas detection system

6. Interventions made:

- Design of the mask and Automatic gas detection alert and oxygen supply system

7. Current status:

- Completed, prototype shortlisted for MSME grant

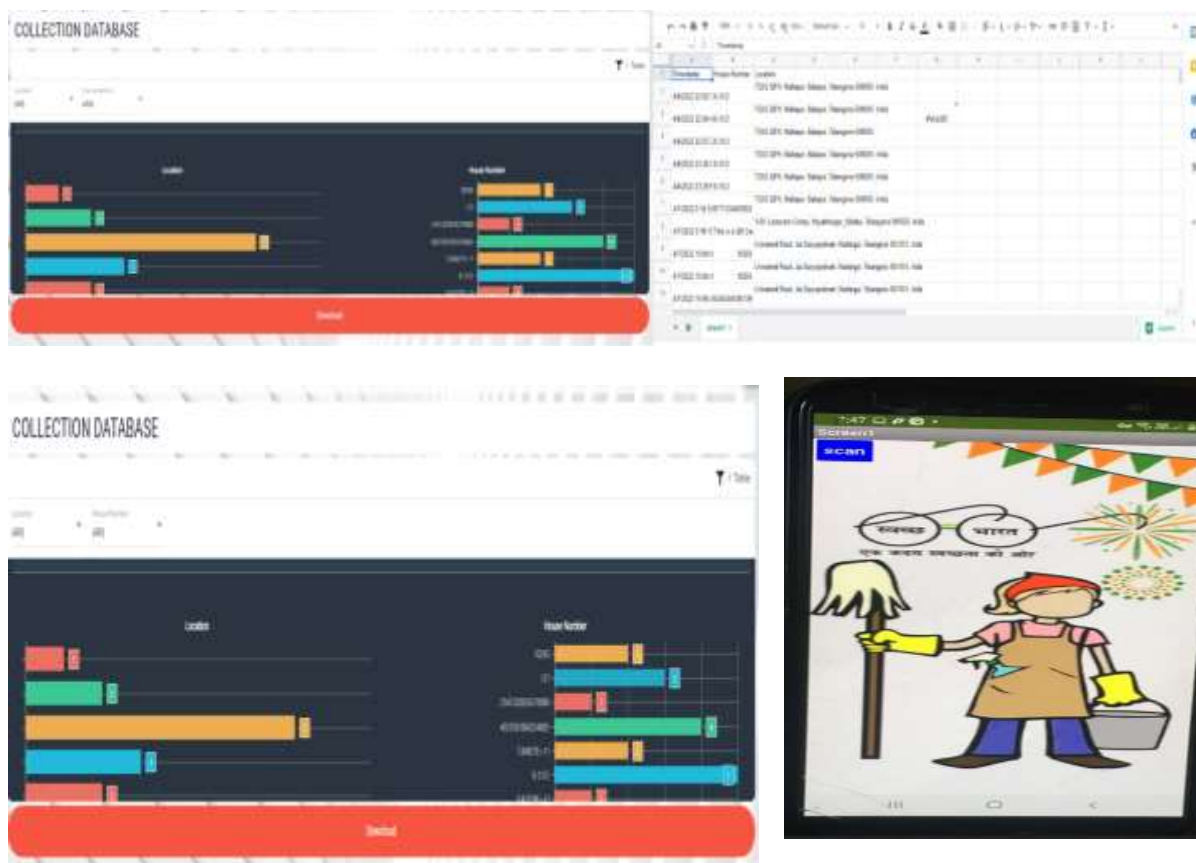
8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-8: QR based tracking and Monitoring of Door-to-Door waste collection system

- 1. Project Title:** QR based tracking and Monitoring of Door-to-Door waste collection system.
- 2. Mentor's Name:** Sharath Vedala
- 3. Student Team Names:**
 - I. Geetika Agarwal
- 4. Project Description:**

This project idea is to develop a system for tracking of Day-to-Day Waste Collection from Homes which enables us to know about the Waste collection of the vehicle drivers and also about the waste given by the house holds. A complete Data picture of Location , Time and Collection of Data is available.
- 5. Project status at beginning of the year:**
 - Flow Chart and Algorithm Development in association with Local Municipal Body
- 6. Interventions made:**
 - A software system with Pictorial and Graphical representation of Data
- 7. Current status:**
 - Completed, sanctioned Pilot project for GHMC
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-09: Feedback destroyer using digital notch filters

1. Project Title: Feedback destroyer using digital notch filters

2. Mentor's Name: Dr. G. Srujan

3. Student Team Names:

I. Nissi Vijay

4. Project Description:

This project aims to develop a low cost feedback destroyer to reduce the acoustic feedback caused by various resonant frequencies in the audio systems.

Due to huge market demand in audio systems in india and high prices of feedback destroyers in market from only manufacturer ie behringer.

5. Project status at beginning of the year:

- Audio System Analysis

6. Interventions made:

- Circuitry to reduce noise acoustics

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Food Serving Robot

1. Project Title: Food Serving Robot

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

- I. T. P. Tejaswini
- II. J. Archana
- III. C. Tejavarsha
- IV. A. Jayasimha

4. Project Description:

In classical cafe, restaurants and hotels, the customers face a lot of problems due to congestion at peak hours, unavailability of waiters and due to manual order processing. These shortcomings can be handled by using a restaurant automation system where "Waiter Robots" are used. The objective is to develop a thematic robot serving restaurant where every robot has a character but build to entertain and serve food. On the same notes we are trying out on different Linear mechanism and characters on a single robot.

5. Project status at beginning of the year:

- Design ready

6. Interventions made:

- Semi automated Robot with controlled Linear motion to serve food directly on to the center of the Table.

7. Current status:

- Prototype Ready and tested working on Outer body designs

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: 360 Storage House Material Handler

1. Project Title: 360 Storage House Material Handler

2. Mentor's Name: Dr. B. M. Kannan

3. Student Team Names:

- I. N. Venkata Ravi Kumar
- II. P. Ruchitha
- III. K. Sri Vaishnavi
- IV. M. Paul Raj

4. Project Description:

To be used in a storage house where material handling is a challenge in the small area and space where things need to be positioned in close proximity like cold storage. It is fundamentally a forklift. All three-axis movement is enabled with simple electric handheld switching. All the axis balance and center of gravity shifting is simulated through Ansys and balanced. It can be used up to the payload of 300 Kg. Easily can be modified for different applications

5. Project status at beginning of the year:

- Design and Research

6. Interventions made:

- The lifted payload can be moved in all three directions smoothly with simple and cheaper arrangement

7. Current status:

- Prototype finished

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Electric Bicycle

1. Project Title: Electric Bicycle

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

- I. Mishika Agarwal
- II. Hansika reddy
- III. K. Srikanth

4. Project Description:

This is a project made for construction workers and villagers travelling long distance cycling. Electric Bicycle with disk braking system, Head light , Speed Control and Pedal Assistance. Charging time 3 hours , Range 25 Km , speed 35 KMPH.

5. Project status at beginning of the year:

- Cycle with BLDC motor

6. Interventions made:

- Pedal assistance and regenerative charging

7. Current status:

- Already in Commercialization

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Multipurpose handy Polisher

1. Project Title: Multipurpose handy Polisher

2. Mentor's Name: Dr. B. M. Kannan

3. Student Team Names:

- I. V. Srikanth
- II. V. Akanksha
- III. P. Arthi
- IV. P. Ashritha

4. Project Description:

Marble, Granite, Tiles, and other surfaces which require cleaning and polishing have been maintained by different machines. Since it is not maintained regularly by the service providers but by individual property owners. For this application a typical solution that meets all the above requirements. This machine will solve all requirements by easily changing the abrader which ranges from metal to brush. This is a simple portable machine which can be moved easily and protrude access to reach crevices

Abrader mechanism can be easily modified or changed tuned to the needs. This machine rigidly applies the pressure in such a way that abrasive polishing is possible

5. Project status at beginning of the year:

- Design and Polish Material Research

6. Interventions made:

- Portable attachment to apply different abrasive needs in a cheaper way

7. Current status:

- Prototype finished.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Accurate shank drill Setter

1. Project Title: Accurate shank drill Setter

2. Mentor's Name: Dr. B. M. Kannan

3. Student Team Names:

- I. A. Chandana
- II. Md. Asiya
- III. T. Gowtham Reddy
- IV. B. Harinath

4. Project Description:

It is required to drill the components exactly to the shank depth if the lubrication is channeled through those holes in any machine component. When it is required to be done in regular intervals in different sizes measuring and ensuring the quality is not practical. Using this machine different shank length drills can be made accurately.

It is a spring retractive drilling machine holder provided which enables the intermittent drilling which will conform to the colling and depth drilling operations. A lever is fixed with the retractor travel in such a way that when the full drill is done, the lever slips, and the drill also gets retracted. This functionality can be extended to boring, grinding, and lapping also.

5. Project status at beginning of the year:

- Design

6. Interventions made:

- Accurate drilling for different shank depths is possible with ease in this arrangement.

7. Current status:

- Prototype ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Railway Track Cleaning Robot

1. Project Title: Railway Track Cleaning Robot

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

- I. Priyanshu sethi
- II. Toranmal Akhilesh

4. Project Description:

This project is aimed to automatically collect the thrash and waste present in between the tracks and clean the tracks. The dimensions of the robot are maintained in a way that it exactly fits the tracks and collects the Thrash.

5. Project status at beginning of the year:

- Data collection from railway tracks related to track dimensions, height and width.

6. Interventions made:

- Trash collection Mechanism

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Hydraulic Profile Forming Machine

1. Project Title: Hydraulic Profile Forming Machine

2. Mentor's Name: Dr. B. M. Kannan

3. Student Team Names:

- I. K. Shreeya
- II. B. Meghana
- III. Swapnil Shinde
- IV. Aqib Nazer

4. Project Description:

It is required to create a lot of local profile forming in the sheet metal due to various applications in industry and household. The required profile shape is not always a standardized one. Under the circumstances, it is required to automate the forming and bending process to meet the varying demands. This machine is handy and flexible and can be used for the sheet metal thickness of 3 mm iron sheet.

The upper portion of the machine is fitted with the required profile die, which can be attached easily and firmly. When the profiler is pressed against the job sheet attached with the fixture, the required profile is formed on the sheet. The pressure application made this machine possible to form upto 3mm sheet.

5. Project status at beginning of the year:

- Design and Simulation

6. Interventions made:

- Profile forming in sheet metal is done in the simplest way in the cold run

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Sand Filtration Machine

1. Project Title: Sand Filtration Machine

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

- I. P. Thulasi
- II. S. Manikanth Reddy
- III. B. Venugopal
- IV. D. Meghana

4. Project Description:

This project is mainly aimed to filter the sand Particles and collect the fine sand particles which are used as a specific construction Material.It also separates the large sand particles and small sand Particles. Can be used in Sea area and can also be used in every Construction Site.

5. Project status at beginning of the year:

- Design

6. Interventions made:

- Rotary, filtration and separation sections

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Slider Crank Perpetual Pendulum Pump

1. Project Title: Slider Crank Perpetual Pendulum Pump

2. Mentor's Name: Dr. B. M. Kannan

3. Student Team Names:

- I. Md. Firasat Ali
- II. Md. Younus Khan
- III. S. Praneeth

4. Project Description:

This is a simple pump designed based on the simple pendulum mechanism which required no energy or almost negligible energy to operate. A simple pendulum is connected with a reciprocating and rotary combination mechanism in such a way that pendulum movement is related to operating the pump. Even though pendulum movement is minimum there will be delivery in the pump with a reasonable head.

The simple pendulum arrangement is made in such a way that it moves freely and smoothly. In the rotary plate eccentric lobe is connected with the retriever mechanism, so that it calibrated to up and down movement. This is up and down movement is sued for the pump operation. In effect, even for simple pendulum movement pump is working.

5. Project status at beginning of the year:

- Design and Simulation

6. Interventions made:

- A simple pendulum mechanism is used to operate a moderate pump without much effort.

7. Current status:

- Prototype ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Ultrasonic Beamforming for medical and structure analysis

1. Project Title: Ultrasonic Beamforming for medical and structure analysis

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

I. K. Prathyush

4. Project Description:

Medical ultrasound beamformer designs can be more challenging than those in other fields. In many beamformer applications, like radar, targets are often displayed as single dots on a screen conveying primarily range and velocity information. On the other hand, in modern medical ultrasound systems, beamforming is the first digital signal processing function in a chain that ultimately must generate highly accurate 2D or 3D images of complex internal human organs, tissue, and blood flow. To deliver the best image quality through improved detail resolution over large depth ranges, it is essential that the beamformer in these systems supports the combination of dynamic focusing and dynamic apodization.

5. Project status at beginning of the year:

- Research on beams and antennas.

6. Interventions made:

- High gain Beam Formation and steering

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Long range portable wireless audio device

1. Project Title: Long range portable wireless audio device

2. Mentor's Name: Mr. Sharath Vedala

3. Student Team Names:

I. K.Pranav Sharma

4. Project Description:

Converting any audio device into wireless audio Most professional wired microphones using the industry standard 3-pin male XLR-type output connector can be made wireless by adding the appropriate wireless transmitter with corresponding wireless receiver to it. Transmitters are available in a few different forms, including body-pack types, those built into a desktop type of stand, and plug-on transmitters. Depending on the microphone's form factor and any power requirements, a particular style of transmitter and possibly an adapter cable to make the appropriate connections will be needed. If you have a condenser microphone, make certain that the transmitter provides the appropriate power for the microphone. If you have a dynamic microphone, the microphone itself will not require any power, but if it is used in conjunction with a switch or status indicator light, the switch and/or light will require power in order to function. When using a condenser microphone in conjunction with a separate switch and/or light, take into consideration the power requirements of each.

Features of this product

- Long range 2.4GHz frequency can reach up to 150 feet (46m) indoors and 300 feet (92m) outdoors. In comparison, those using the 5GHz frequency usually reach around one-third of these distances.
- 2600 mah built in battery pack with xl6009 boost converter.
- Compactable with various Audio devices like microphones instruments and mixers and amplifier systems
- AGC automatic gain control for best audio quality transmission with low noise and delay
- 2.4 GHz microphones operate in 83 MHz of spectrum between 2.400 GHz and 2.483 GHz. By comparison, most wireless microphones today operate at lower "UHF" frequencies between 470 MHz and 698 MHz.

5. Project status at beginning of the year:

- Identifying form factor, transmitter, and receiver band width

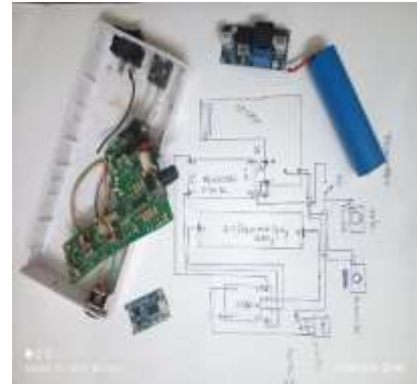
6. Interventions made:

- Long range communication audio communication portability and feasible to all modern day devices.

7. Current status:

- Prototype Ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-21: Solar enabled steam power Generator

1. Project Title: Solar enabled steam power Generator

2. Mentor's Name: Dr. B. M. Kannan

3. Student Team Names:

- I. Shaik Asif
- II. Amgoth Naresh

4. Project Description:

This is a generic Generator that could be used under different or extreme conditions. Basically, steam is generated to pass it through a nozzle on the rotor vane arrangement. This will turn and cut the magnetic flux provided in the combination which leads to power generation.

- This is a simple power generation using steam generated out of plug and heat electric heater or solar-powered heater mechanism
- The pressure built inside the cylinder is measured and controlled in such a way that a constant flow of steam maintained on the rotor
- Speed of the rotor is controlled to generate the intended power density

5. Project status at beginning of the year:

- Design and Research

6. Interventions made:

- A handy power generator under challenging conditions with a simple primitive source of power in any form

7. Current status:

- Prototype ready

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: GLA University

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	GLA University, Mathura		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Prof. D. S. Chauhan		
Name of NewGen IEDC Coordinator	Prof. Manoj Kumar		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> Mobile Number e-Mail ID 	8171624769 manoj.kumar@gla.ac.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/17-18/13 Dated: 15/06/2017	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000
	4		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A]To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Orientation & Awareness sessions on GLAU Ecosystem for Nurturing Innovation & Entrepreneurship (GENIE)



2. Workshop on Idea Hunting: How to find the right Start-up Idea?



3. Workshop on Idea Design & Test Lab



4. “Sharing My Journey from E-Cell to Startup” My Story-Motivational session by Successful Startup Founder



5. IP Awareness Programme

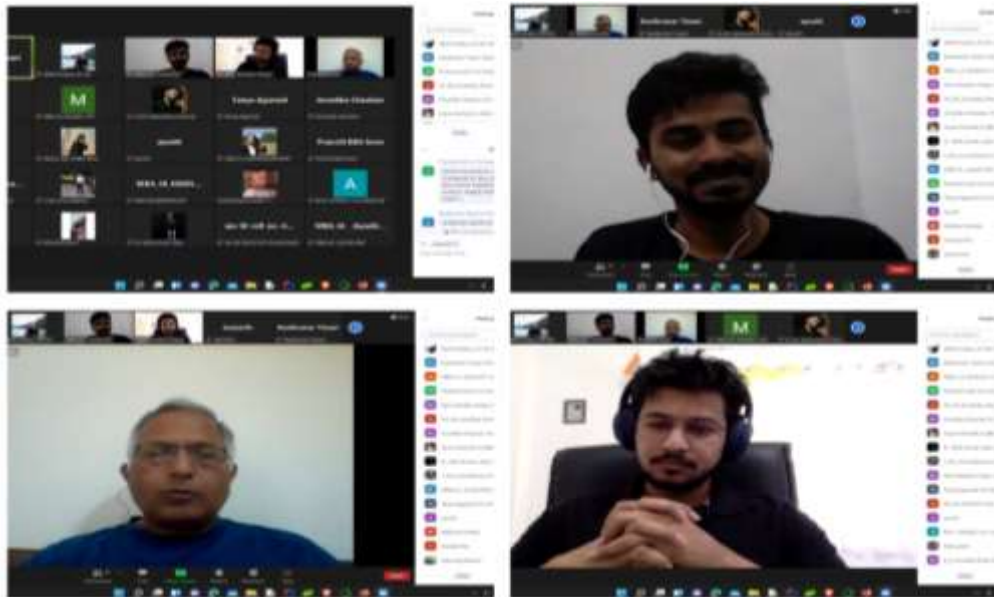
The screenshot displays a Zoom meeting interface with a presentation slide titled "Property?". The slide content is as follows:

- Property**
 - Tangible (Measure)**
 - Movable** Eg.: Car
 - Immovable** Eg.: Building
 - Intangible (not measure)**
 - Intellectual Property**
 - Industrial Property**
 - Patents, Designs, SCILD, Trademarks, GIs,
 - Copyrights**

Below the "Tangible" section, there is a diagram of a funnel labeled "INTELLECTUAL PROPERTY" containing three circles: "Science", "Brain", and "Labour".

The Zoom interface includes a video feed of Dr. D. Usha Rao on the right, a "Participants (64)" list at the bottom right, and a "Layout" button in the top right corner. The bottom of the screen shows standard Zoom controls: Unmute, Start video, Share, and a red "X" button.

6. National Startup Day Celebration



7. My Story-Motivational Session by Successful Innovator: Talk by Mr. Anand Pandey, Founder, AKP Technovision Pvt Ltd

4. Innovation in Design.

INNOVATION

“ संवेदना से सृजनशीलता ”

- To solve Problem.
- For new opportunities.
- To maintain position.

संवेदना से सृजनशीलता 🇮🇳

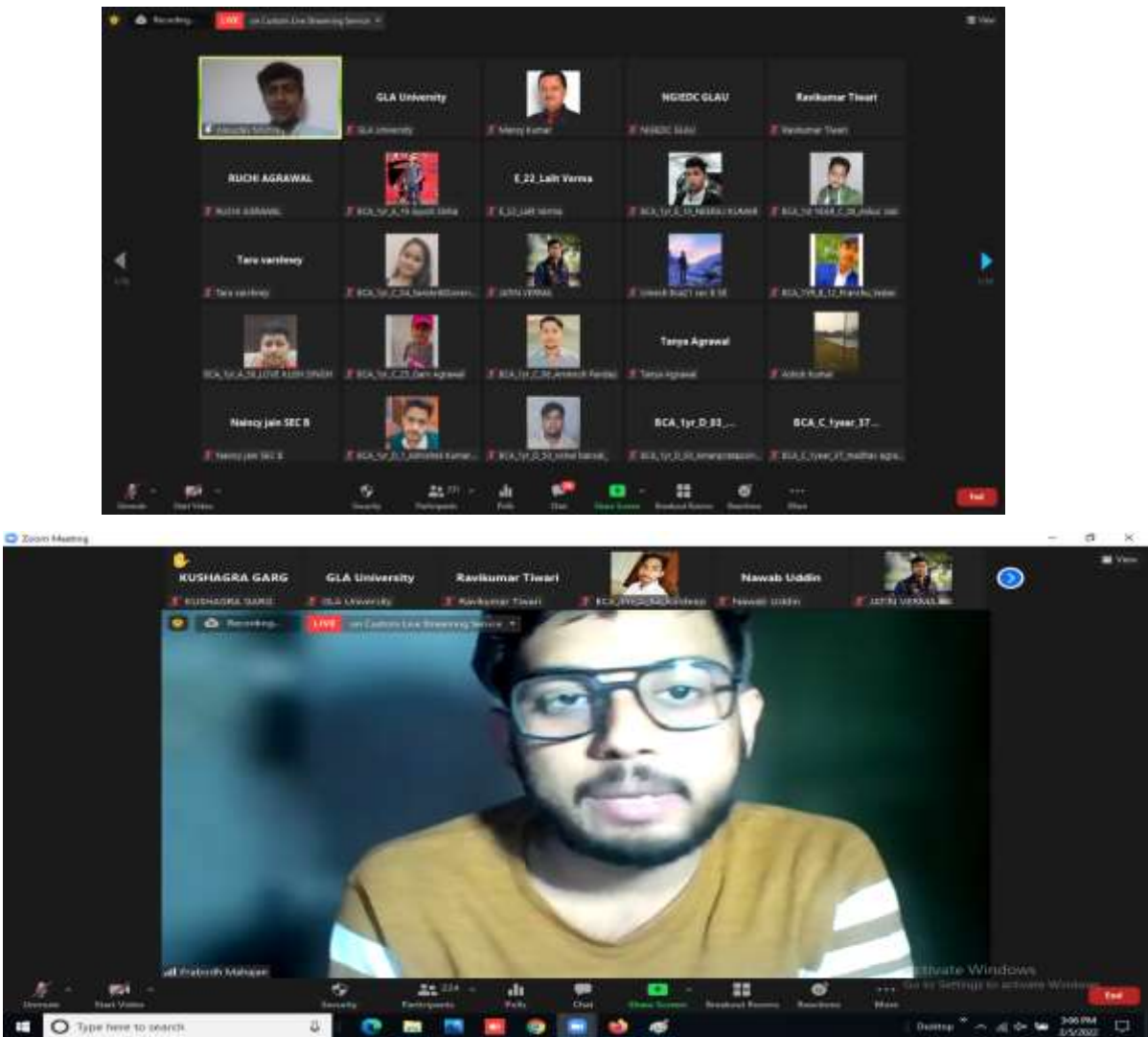
संवेदना = सम+वेदना

सम = बराबर

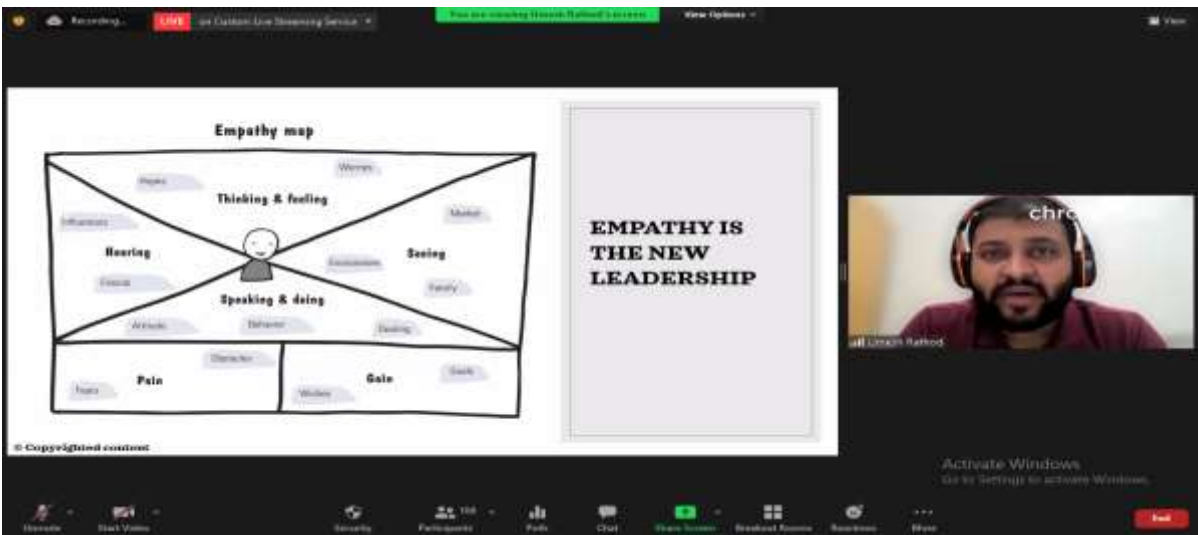
वेदना = दर्द

9:15 pm ✓

8. Workshop on Entrepreneurship Skill, Attitude & Behavior Development

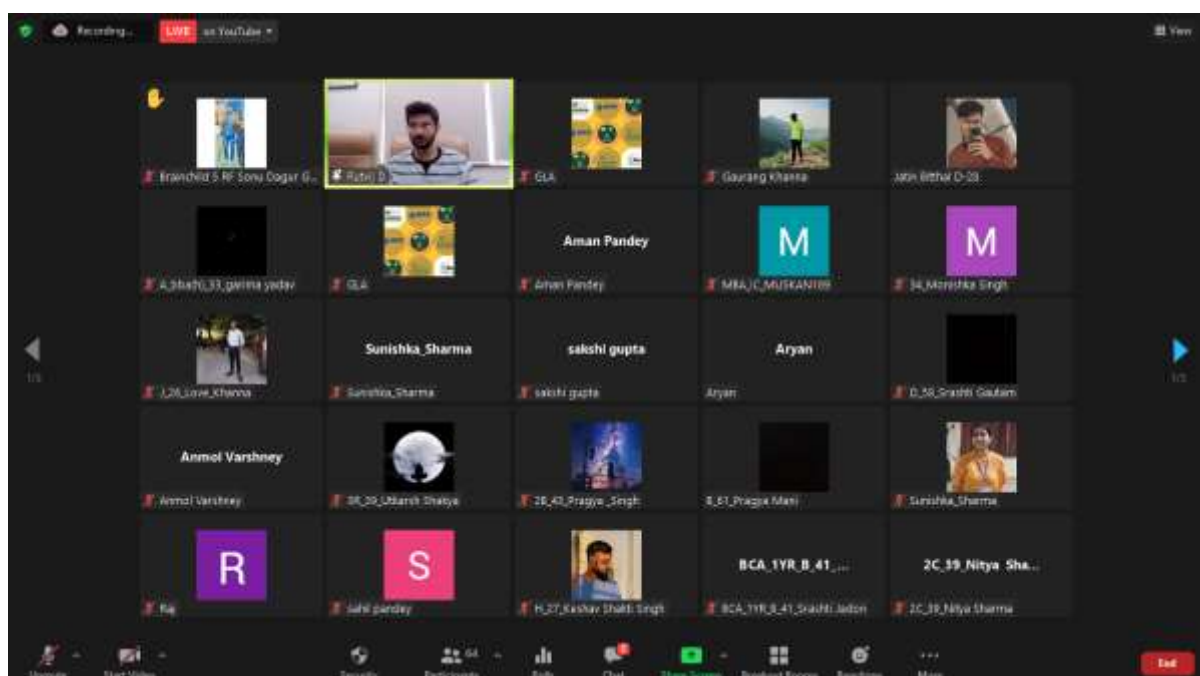


9. Workshop on Design Thinking & Critical Thinking





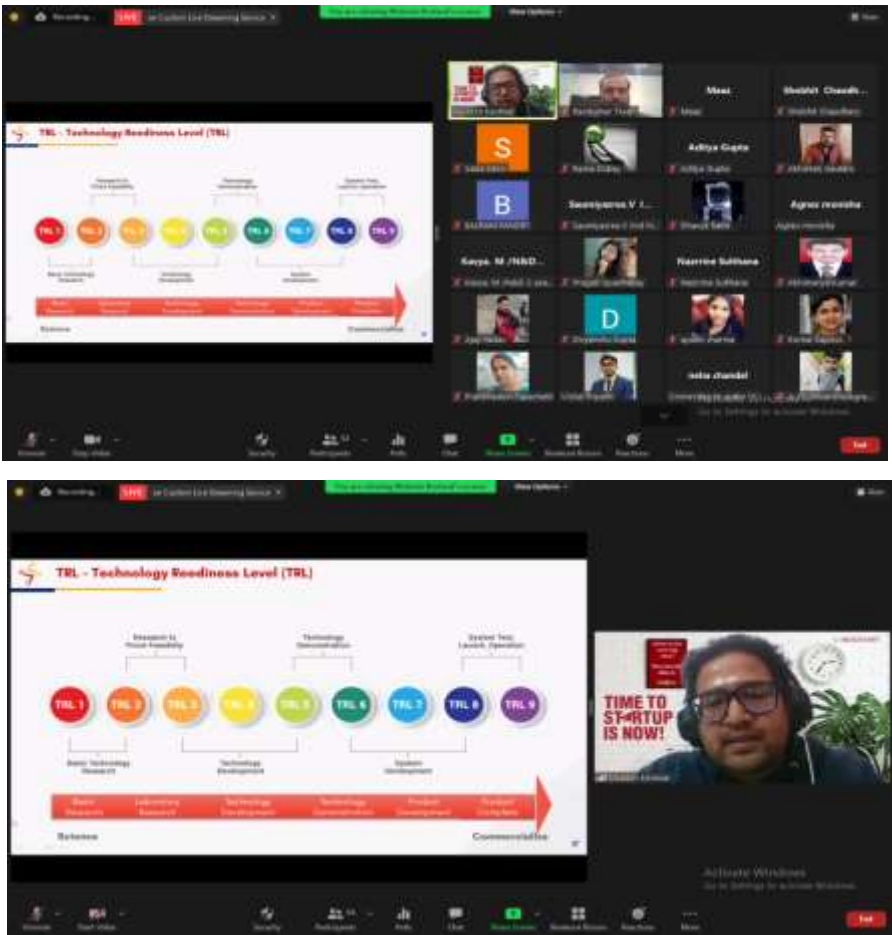
10. The Rising Entrepreneur-Talk by Rutviz, Founder, BOOZ Scooter (Startup featured on Shark Tank India)



11. Entrepreneurship Orientation & Induction Program



12. Expert talk on Technology Readiness Level (TRL) & Technology Commercialization



13. Smart India Hackathon-2022 (Internal Hackathon)



[B] To identify, develop & commercialize students' innovative ideas

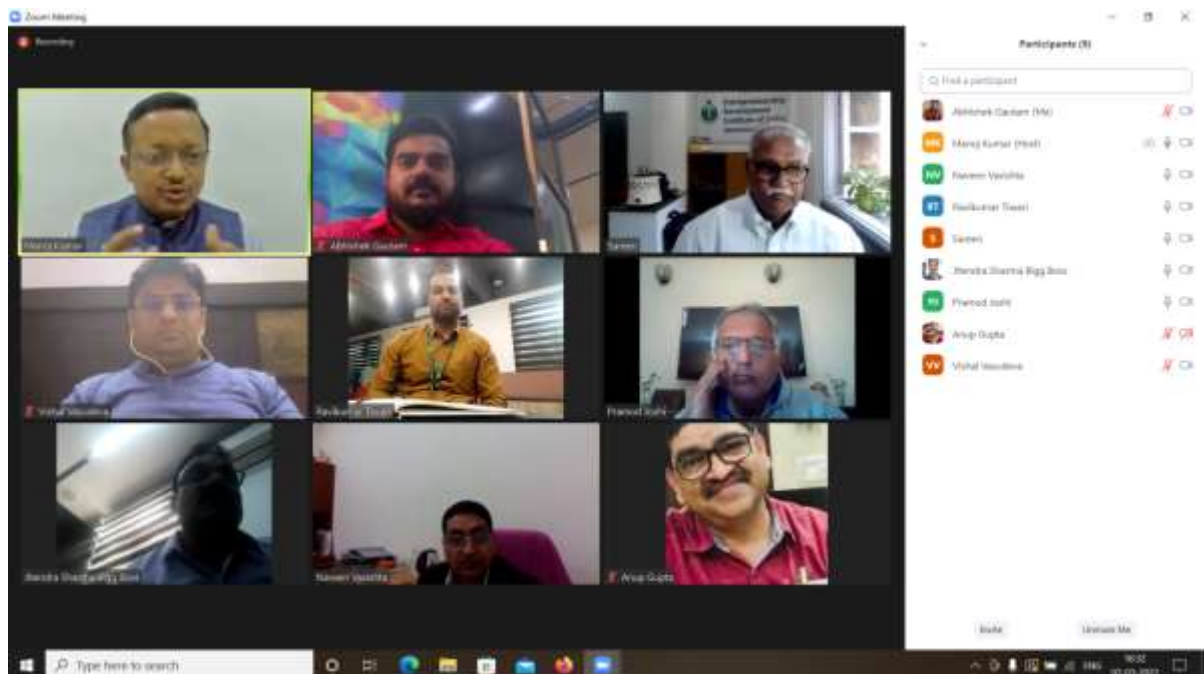
1. Presentation for Selection of Prototype for the Session 2021-22



2. Review Idea Progress Meeting of Session 2020-21



3. Sixth Advisory Board Meeting



4. Workshop on Business Plan Development for selected prototype



5. Pitch Perfect (Business Plan Competition)



[C] To enhance Industry-Academia interaction

1. Startup- Meet



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Few projects has not yet not completed due to interruption in academic activities because of COVID-19 but now after February-2022, university campus has been open and started in offline mode. Expected to complete the project by June, 2022

3. Other important highlights (new initiatives), if any:

- “Startup Launchpad” in campus itself and where we have incubated 42 startups successfully.
- Successfully conducted various workshops & guest lectures on innovations & entrepreneurship.

- Conducted 24 hour non-stop Smart India Hackathon-2022 (Internal).
- Successfully filed “40– Patents” in the name of NewGen IEDC in Indian Patent Office.
- Successfully granted “08” Patents in in the name of NewGen IEDC in Indian Patent Office
- Separate entity as Section-8 company incorporated for Technology Business Incubator as SPARKL GLA Technology Business Incubator Foundation

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Smart OCT (Smart Oxygen Cylinder Trolley)

I. Project Title : Smart OCT (Smart Oxygen Cylinder Trolley)

II. Mentors Name : Dr. Vijay Kumar Dwivedi

III. Student team details

i. Ashish Soni

IV. Brief description of the student start-up

- Smart-OCT is stands for a Smart Oxygen Cylinder Trolley.
- It is a trolley for oxygen cylinder made up of iron and contains a plate with few sensors like load cell, GSM module, esp8266 extra.
- Whenever oxygen level gets low, so a pop-up notification and an email notification will be sent on mobile of staff members and the family members.
- The upper surface contains the load sensors which measure the weight of cylinder and microcontroller attached to lower to the plate which control and manipulate the weight and send notification to the staff members.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

Fund for Prototype and Mentoring

VII. Future plan

Marketing of product

VIII. Important highlights

There are so many sensors and devices there in the market which tells about the level of oxygen. Such devices have limitation in operation when it comes to notify to concerned staff members. We not getting any notification on our smart phone for replacement of oxygen cylinder.

Best Project-2: Extended-Release Anti Mosquito Breeding Tablets

I. Project Title: Extended-Release Anti Mosquito Breeding Tablets

II. Mentors Name : Dr. Anuj Garg

III. Student team details

i. Shivanshu Agrawal

ii. Vikas Varshney

IV. Brief description of the student start-up

Extended-Release Anti Mosquito Breeding Tablets product majorly targets mosquito breeding that occurs in stagnant water as stagnant water sources such as air cooler and becomes common sites for mosquito-borne diseases such as malaria, dengue, chikungunya, etc. This tablet provides natural remedy for the prevention of breeding of mosquito via encapsulating essential oil in the tablet form and providing extended release that not only stop breeding of mosquito but provide the essential oil effect up to 2-3 days. since, our product is targeting mass public because eliminating a common and serious health issue so our product majorly focuses air cooler users i.e., the major source of mosquito breeding. This product is natural essential oil encapsulated in solid form and extended the release and provide longer duration of activity and also improves the shelf life of product.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

Fund for Prototype and Mentoring

VII. Future plan

Marketing of product

VIII. Important highlights

Natural, complex form, longer action, economical, easy to use, available in solid form

ANNEXURE-A

Details of Student Projects

Project-01: Vermi-compost Production

- 1. Project Title** : Vermi-compost Production
- 2. Mentor Name** : Dr. Mohammad Yaseen
- 3. Student Team Names:**
 - I. Manas Jain
 - II. Karan Tyagi
- 4. Project Description:**

Creating a Go to Market Strategy with good brand name. Networking with Organic farming organization & Agriculture departments in outside institutes.
- 5. Project status at beginning of the Year:**
 - Final completion stage
- 6. Interventions made:**
 - Low cost production of Vermi-Compost from organic waste
- 7. Current status:**
 - Project Survey has been done. Site for test bed has been identified.
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**

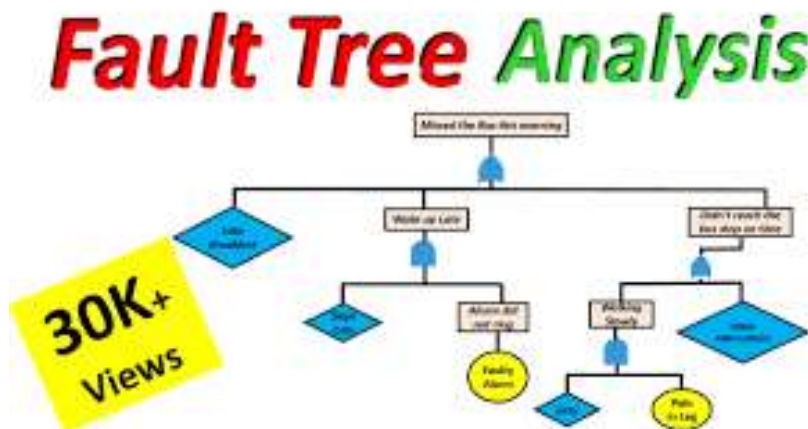


Project-02: Fault Tree Analysis (FTA) for Human Safety

1. **Project Title** : Fault Tree Analysis (FTA) for Human Safety
2. **Mentor Name** : Dr. Gaurav Kumar Sharma
3. **Student Team Names:**
 - I. Madhav Maheshwari
 - II. Rajat Kumar Singh
4. **Project Description:**

Eco friendly, Cheaper fuel, Lesser weight, Cheaper in maintenance.
5. **Project status at beginning of the Year:**
 - In final stage of completion (Software-Hardware Module)
6. **Interventions made:**

Human Safety
7. **Current status:**
 - 3-D Modeling and Literature Study has been done.
8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-03: Agrarian

1. Project Title : Agrarian

2. Mentor Name : Mr. Aditya Saxena

3. Student Team Names:

I. Ashutosh Kumar

4. Project Description:

Identified IoT Kit & Module to be purchased. Testing the IOT Module in real time in farms.

5. Project status at beginning of the Year:

- Final Test Stage

6. Interventions made:

- Agriculture Data in real time using IoT

7. Current status:

- Various sensors required for different parameter sensing has been identified. IoT Circuit & Kit has been identified.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Planto

1. Project Title : Planto

2. Mentor Name : Mr. Kailas Dnyandeo Gavare

3. Student Team Names:

- I. Shivam Chaudhary
- II. Rahul Baghel
- III. Ubhay Pratap Singh

4. Project Description:

Fabrication of Tools and getting feedback from farmers to improve design before final product

5. Project status at beginning of the Year:

- Ye to be completed

6. Interventions made:

- New type of agri tools

7. Current status:

- Design for various required tools after survey has been made.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Jal Sangraha

- 1. Project Title** : Jal Sangraha
- 2. Mentor Name** : Mr. Bharat Singh

3. Student Team Names:

- I. Shruti Jaitley
- II. Pushpendra Sharma
- III. Raghav Rohatgi

4. Project Description:

Save Water

5. Project status at beginning of the Year:

- Project Work yet to be completed

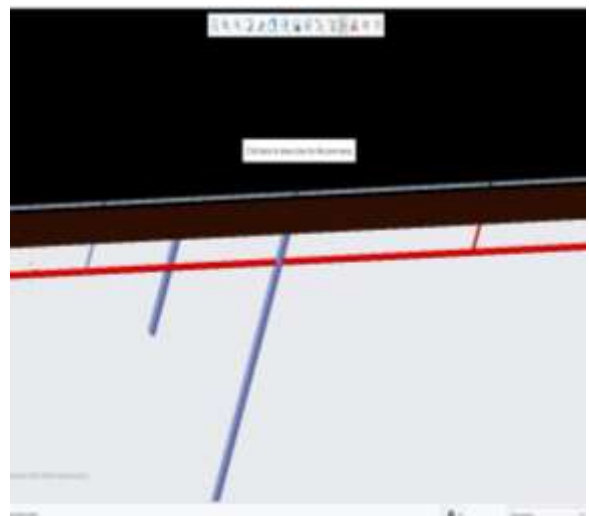
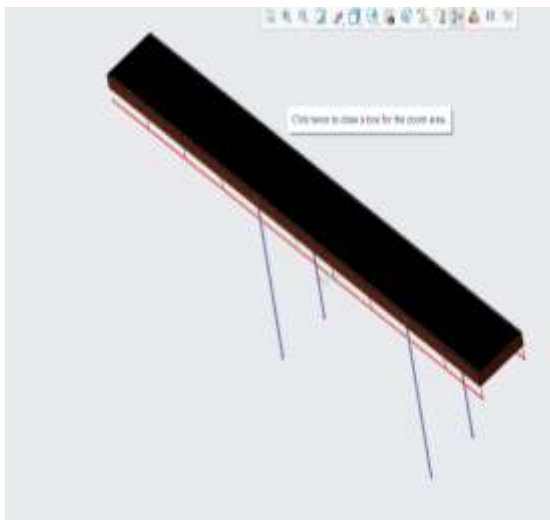
6. Interventions made:

- Project to save water during farming

7. Current status:

- Literature Study has been done. Basic Design has been successfully made in simulating software, Fabrication for First Prototype version has been started

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Extended-Release Anti Mosquito Breeding Tablets

1. Project Title : Extended-Release Anti Mosquito Breeding Tablets

2. Mentor Name : Dr. Anuj Garg

3. Student Team Names:

I. Shivanshu Agrawal

II. Vikas Varshney

4. Project Description:

Vendor to supply all raw materials as hypothesized formulation has been identified. After purchasing the first formulation to be tested.

5. Project status at beginning of the Year:

- Final Test Stage

6. Interventions made:

- Sanitation

7. Current status:

- Literature survey is done. Basic formulation for tablet has been hypothesized. List of raw chemicals & material made.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Automatic Drip Volume Regulator

1. Project Title : Automatic Drip Volume Regulator

2. Mentor Name : Prof. Kamal Sharma

3. Student Team Names:

I. Aditi Saxena

4. Project Description:

Work for first version of prototype is started and to be tested in real time in university with agriculture department

5. Project status at beginning of the Year:

- Fabrication yet to be completed

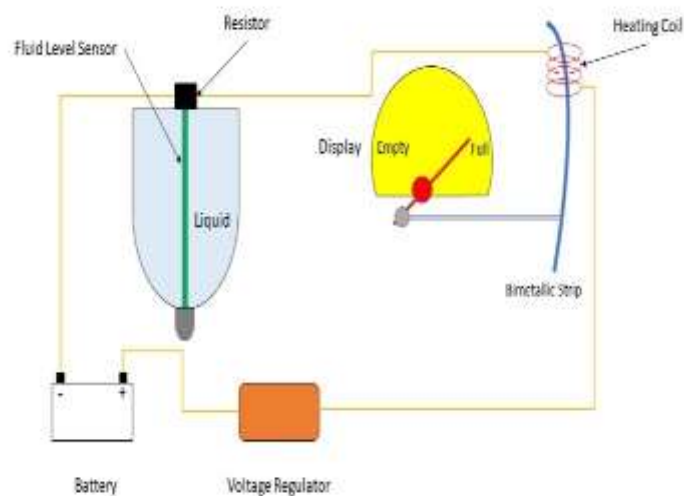
6. Interventions made:

- Agriculture water harvesting

7. Current status:

- Problem Statement has been validated with farmer survey. Circuit design for prototype is ready.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Portable Plastic Recycling Machine

1. **Project Title** : Portable Plastic Recycling Machine

2. **Mentor Name** : Mr. Deepak Sharma

3. **Student Team Names:**

- I. Rishabh Saini
- II. Mayank Karotiya

4. **Project Description:**

3D-CAD Model is ready. Will be purchasing all equipment's requirement for fabrication immediately after release of fund.

5. **Project status at beginning of the Year:**

- Prototype Under development

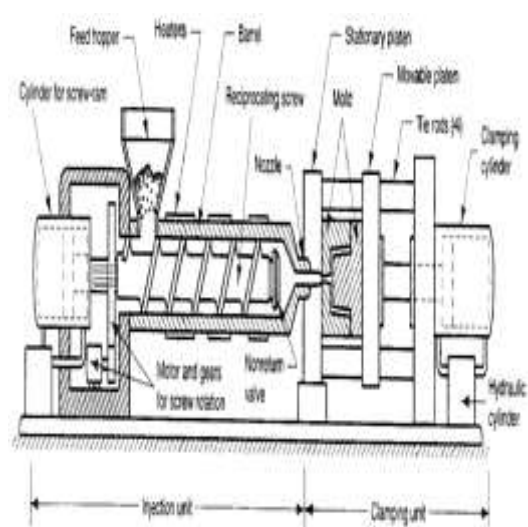
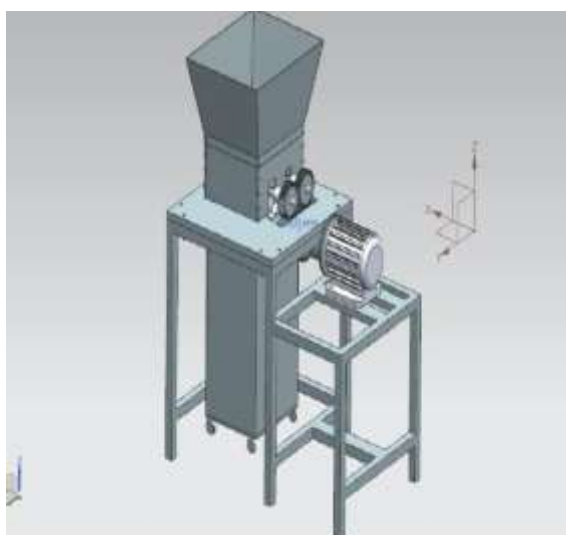
6. **Interventions made:**

- Solid Waste Recycling

7. **Current status:**

- Literature survey is done. Basic formulation for tablet has been hypothesized. List of raw chemicals & material made.

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-09: Smart -OCT

1. Project Title : Smart –OCT

2. Mentor Name : Dr Vijay Kr. Dwivedi

3. Student Team Names:

I. Ashish Soni

4. Project Description:

List of all required component has been made and also vendor to purchase has been identified. Work on fabrication to be started immediately after ordering component

5. Project status at beginning of the Year:

- Prototype under Development (Final Stage)

6. Interventions made:

- Hospital Management

7. Current status:

- Problem statement validated with survey & feedback from mentors. CAD Design is ready.

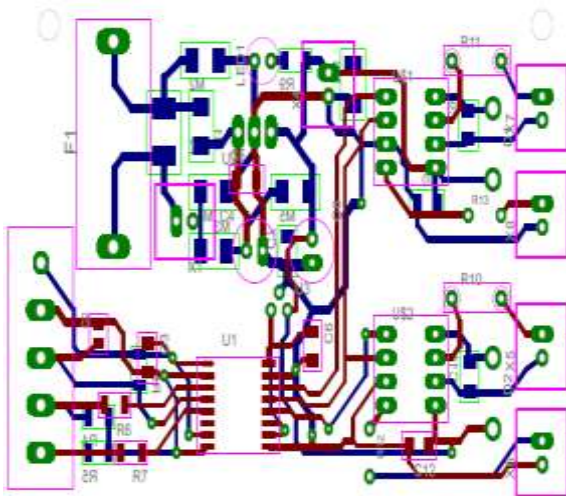
8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Design of Multilevel Inverter with Sensor

1. **Project Title** : Design of Multilevel Inverter with Sensor
2. **Mentor Name** : Dr. Anurag Priyadarshi & Mr. Mukesh Pushkarna
3. **Student Team Names:**
 - I. Ashish Jaiswal
4. **Project Description:**

Fabrication of PCB & Circuit board & testing. Will be starting immediately after release of fund. Assembly box to be 3-d printed.
5. **Project status at beginning of the Year:**
 - Prototype Under Development
6. **Interventions made:**
 - New Design of Inverter
7. **Current status:**
 - Circuit design & PCB Design is ready. 3D printing design for assembly is ready
8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-11: Solar dryer Cum Grinder

1. Project Title : Solar dryer Cum Grinder

2. Mentor Name : Ms. Sonia Singh

3. Student Team Names:

- I. Pratik Maheshwari
- II. Tejendra Pratap
- III. Shresth Agarwal

4. Project Description:

List of components required for fabrication has been made and will be ordered after release of funds

5. Project status at beginning of the Year:

- Prototype Under Development

6. Interventions made:

- New Machine for Solar Dryer & Grinder

7. Current status:

- Design has been compared with existing solar grinder and necessary development has been done.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Smart_Chess_Board

1. **Project Title** : Smart_Chess_Board

2. **Mentor Name** : Mr. Anupam

3. **Student Team Names:**

- I. Salil Dixit
- II. Rohit Tiwari

4. **Project Description:**

Purchasing all the necessary equipment's & building first version of prototype to be tested with Chess Club of GLA University.

5. **Project status at beginning of the Year:**

- Prototype Under Development

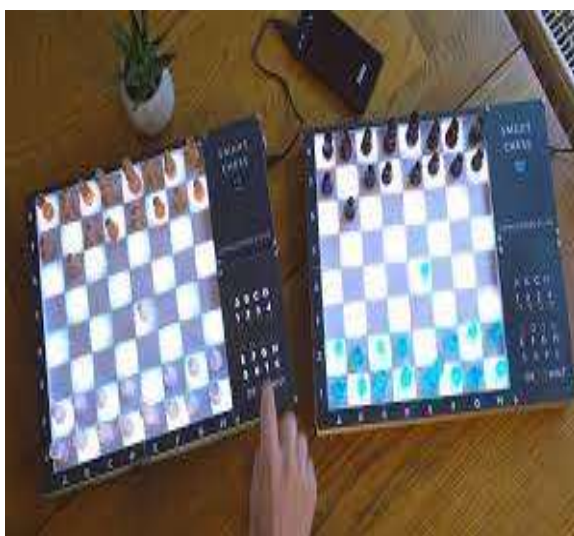
6. **Interventions made:**

- Smart Gaming (Physical Virtual Blend)

7. **Current status:**

- Market survey & Competitive analysis is done. CAD & Circuit design is ready

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-13: Smart Camcorder

1. Project Title : Smart Camcorder

2. Mentor Name : Mr. Ram Manohar Nisarg

3. Student Team Names:

- I. Aditya Kumar
- II. Abhishek Singh
- III. Sakshat Lakhiani

4. Project Description:

List of all required component has been made & will be purchasing immediately after release of funds

5. Project status at beginning of the Year:

- Prototype Under Development

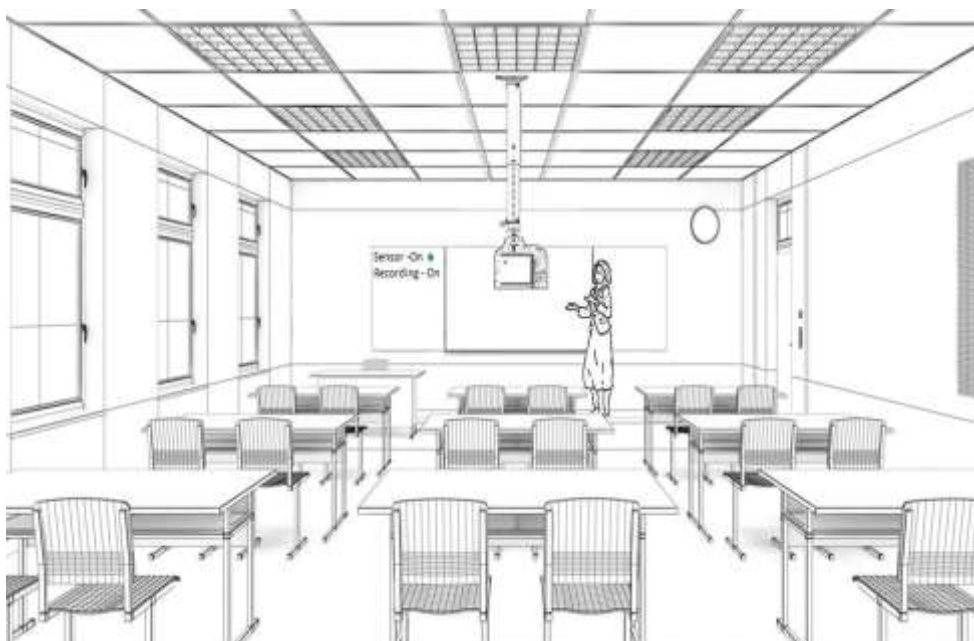
6. Interventions made:

- Food Technology

7. Current status:

- 3-D Modeling and Literature Study has been done.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Combo-Cookware

1. **Project Title** : Combo-Cookware

2. **Mentor Name** : Dr. Bhupesh C. Semwal

3. **Student Team Names:**

- I. Sudhanshu Dubey
- II. Rahul Deshwal
- III. Vishal Srivastava

4. **Project Description:**

List of all required component has been made & will be purchasing immediately after release of funds

5. **Project status at beginning of the Year:**

- Prototype Under Development

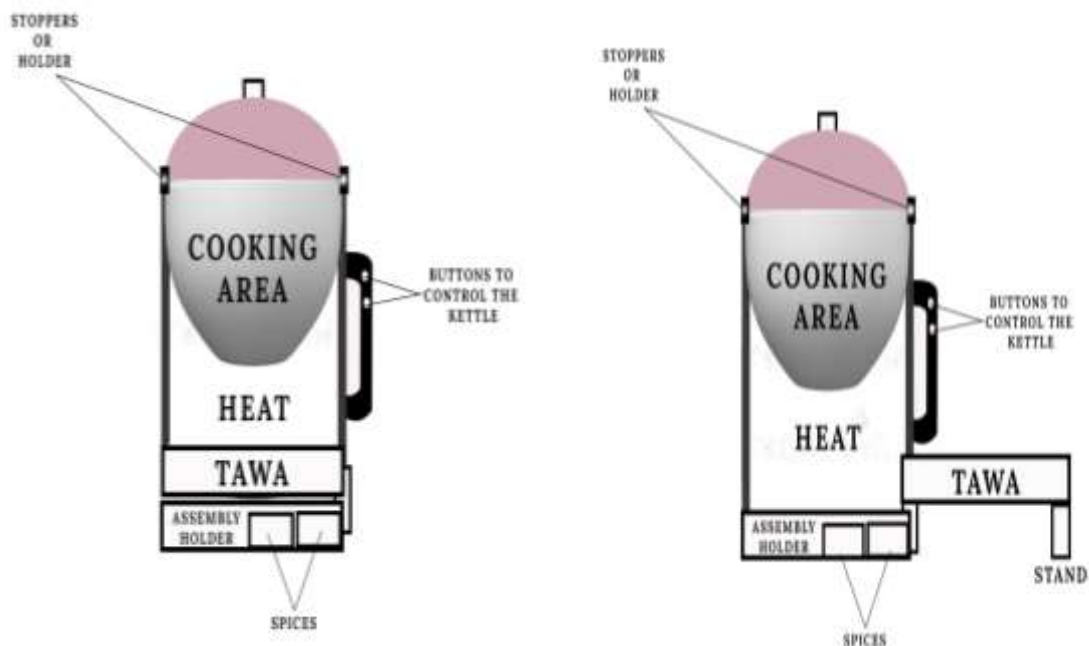
6. **Interventions made:**

- Food Technology

7. **Current status:**

- 3-D Modeling and Literature Study has been done.

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-15: PP 3-D Metal Printer

- 1. Project Title** : PP 3-D Metal Printer

- 2. Mentor Name** : Dr Piyush Singhal

3. Student Team Names:

- I. Hariom Bhardwaj
- II. Hritik Raheja

4. Project Description:

An ordinary 3-d printer has been already designed and now the fabrication of metal 3d printing will be starting after release of funds

5. Project status at beginning of the Year:

- Under Development

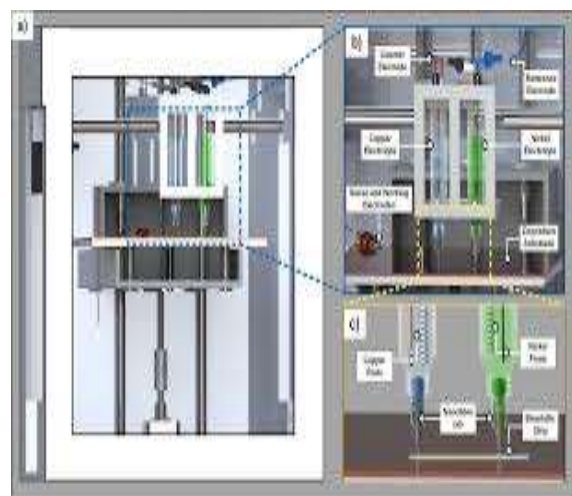
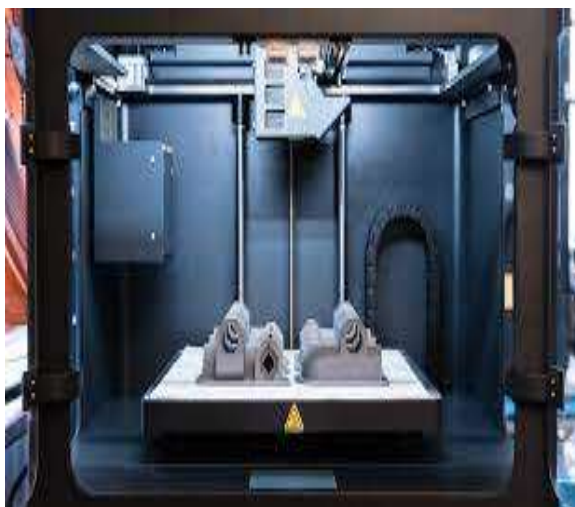
6. Interventions made:

- Rapid Prototyping

7. Current status:

- 3D CAD Model is ready. First prototype with different design has been made.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Barberry Bottle

1. **Project Title** : Barberry Bottle

2. **Mentor Name** : Dr. Kamal Shah & J.K. Gupta

3. **Student Team Names:**

- I. Lavesk Katara
- II. Abhishek Chauhan
- III. Sangam Varshney
- IV. Shobhit Chaudhary

4. **Project Description:**

List of components required for fabrication has been made and will be ordered after release of funds

5. **Project status at beginning of the Year:**

- Prototype Under Development

6. **Interventions made:**

- Organic Material Use in making new product

7. **Current status:**

- Completed market survey, CAD design is ready.

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-17: Anti-Dandruff Hair Wax & Serum

1. Project Title : Anti-Dandruff Hair Wax & Serum

2. Mentor Name : Dr. Rohitas Deshmukh

3. Student Team Names:

- I. Aman Kumar Jha
- II. Aman Kr. Jain
- III. Ayush Tiwari
- IV. Sandeep Sharma
- V. Adarsh Tripathi

4. Project Description:

Purchasing of all raw materials and making first version of serum based on hypothesized formulation.

5. Project status at beginning of the Year:

- Prototype Under Development

6. Interventions made:

- New formulation for Dandruff problem in men & women

7. Current status:

- Basic Formulation with required raw materials & chemicals has been hypothesized.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: GLAMS Glass cleaner solution

1. Project Title : GLAMS Glass cleaner solution

2. Mentor Name : Dr. Saurabh Gupta

3. Student Team Names:

I. Manthena Nava Bhartha

II. Ayushi Sharma

4. Project Description:

Purchasing of all raw materials and making first version of solution based on hypothesized formulation.

5. Project status at beginning of the Year:

- Prototype Under Development

6. Interventions made:

- New Formulation for effective & reduced cost for cleaning solution

7. Current status:

- Basic Formulation with required raw materials & chemicals has been hypothesized.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Bathroom Dryer

1. Project Title : Bathroom Dryer

2. Mentor Name : Dr. Sandeep Rathor

3. Student Team Names:

- I. Deepanshi Garg
- II. Diya Bansal

4. Project Description:

Quick Bathroom dryer for reducing fatal accident in bathroom due to slipping.

5. Project status at beginning of the Year:

- Prototype Under Development

6. Interventions made:

- IoT Based Cleaning Solution

7. Current status:

- Literature Survey is done, Working on Arduino Prototype.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: IoT based Smart Kit for visually Impaired

- 1. Project Title** : IoT based Smart Kit for visually Impaired
- 2. Mentor Name** : Mr. Ajitesh kumar
- 3. Student Team Names:**
 - I. Aniket Garg
 - II. Krishna Tripathi
 - III. Deepanshu Bhalla
 - IV. Rajat Patel
- 4. Project Description:**

To help device visually Impaired person
- 5. Project status at beginning of the Year:**
 - Prototype Under Development
- 6. Interventions made:**
 - Assistive Technology for Blind & disable
- 7. Current status:**
 - Circuit design is ready and will be tested after assembly. First design of prototype is now improvised after suggestions from mentors
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-21: Nutraceutical Candy

1. Project Title : Nutraceutical Candy

2. Mentor Name : Dr. Pradeep Kumar Choudhary

3. Student Team Names:

- I. Priyanshu Mishra
- II. Yashi Agrawal
- III. Nandini Gupta
- IV. Lucky Gupta

4. Project Description:

Purchasing of all raw materials and making first version of candy based on hypothesized formulation. Approval for mice testing is required.

5. Project status at beginning of the Year:

- Prototype Under Development

6. Interventions made:

- New Product proposed for health-conscious parents for their kids.

7. Current status:

- Basic Formulation with required raw materials & chemicals has been hypothesized.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-22: Combo Sandwich Toaster Maker

- 1. Project Title** : Combo Sandwich Toaster Maker
- 2. Mentor Name** : Dr. Reena Gupta
- 3. Student Team Names:**
 - I. Somil Gupta
- 4. Project Description:**

Smart Sandwich & Toaster maker.
- 5. Project status at beginning of the Year:**
 - Prototype Under Development
- 6. Interventions made:**
 - Food technology in Cooking
- 7. Current status:**
 - First design of prototype is now improvised after suggestions from mentors, Circuit design is ready and will be tested in new design.
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-23: Intelligent Honking System

1. Project Title : Intelligent Honking System

2. Mentor Name : Dr. Vishal Goyal & Mr. Divesh Kumar

3. Student Team Names:

- I. Harsh Maurya
- II. Pranav Kulshreshtha
- III. Khushboo Verma
- IV. Raaghav Chaturvedi
- V. Utkarsh Dutta Bansal

4. Project Description:

Smart Honking System to reduce noise pollution at heavy traffic route in cities.

5. Project status at beginning of the Year:

- Prototype Under Development

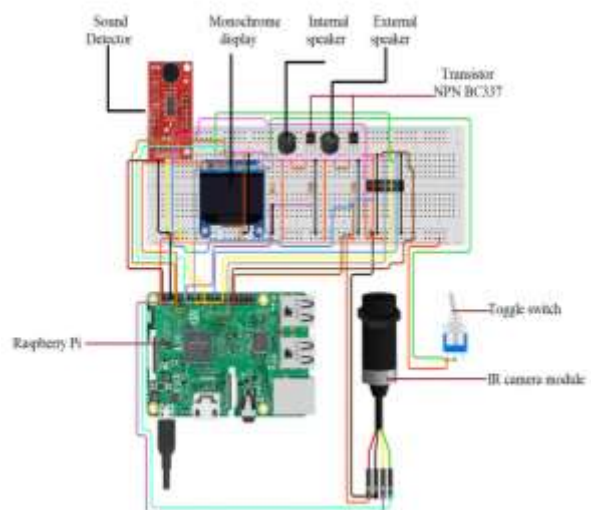
6. Interventions made:

- Reducing noise pollution of vehicles in high traffic area

7. Current status:

- Under Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-24: Plant derived 'Saponins' as Vaccine Adjuvant

1. **Project Title** : Plant derived 'Saponins' as Vaccine Adjuvant

2. **Mentor Name** : Mr. Ravikumar Tiwari & Dr. Saurabh Gupta

3. **Student Team Names:**

I. Rasanpreet Kaur

II. Vidhi Mishra

4. **Project Description:**

Development of Saponins as Vaccine Adjuvant for plant

5. **Project status at beginning of the Year:**

- Prototype Under Development

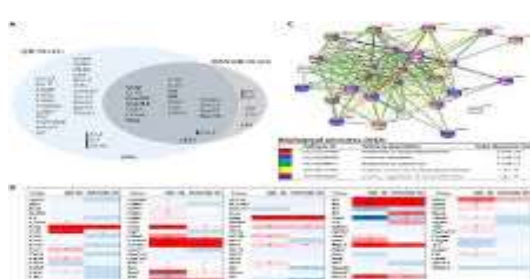
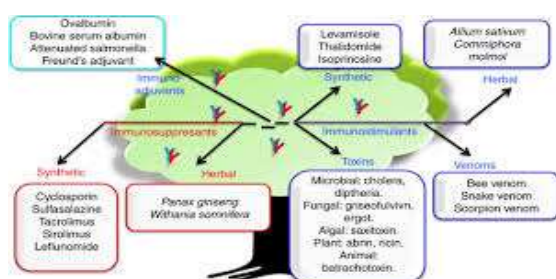
6. **Interventions made:**

- Biotechnology

7. **Current status:**

- Under Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-25: Cargo vehicle from bike engine with safety feature

1. **Project Title** : Cargo vehicle from bike engine with safety feature
2. **Mentor Name** : Mr. Ritesh
3. **Student Team Names:**
 - I. Nandi Kumar
4. **Project Description:**

New vehicle design for cargo vehicle made from old bike with safety feature
5. **Project status at beginning of the Year:**
 - Prototype Under Development
6. **Interventions made:**
 - Using old bike to convert them in cargo vehicle
7. **Current status:**
 - Under Development
8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-26: Medicine Vending Machine (MVM)

- 1. Project Title** : Medicine Vending Machine (MVM)
- 2. Mentor Name** : Prof. Manoj Kumar & Jitendra Kumar
- 3. Student Team Names:**
 - I. Dushyant Kumar
 - II. Rajul Varshney
- 4. Project Description:**

Vending Machine for medicine dispensary
- 5. Project status at beginning of the Year:**
 - Prototype Under Development
- 6. Interventions made:**
 - AI/ML Based vending machine replacing human error at pharmacy shop.
- 7. Current status:**
 - Under Development
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-27: IMMUNIA

1. **Project Title** : IMMUNIA

2. **Mentor Name** : Dr. Alok Bharadwaj & Dr. Anjana Goel

3. **Student Team Names:**

- I. Aashi Sandhu
- II. Shambhavi Shukla
- III. Riya Sharma
- IV. Sunanda Kulshrestha

4. **Project Description:**

Herbal solution made by plants preventing Anaemia and highly rich in Vitamin C

5. **Project status at beginning of the Year:**

- Prototype Under Development

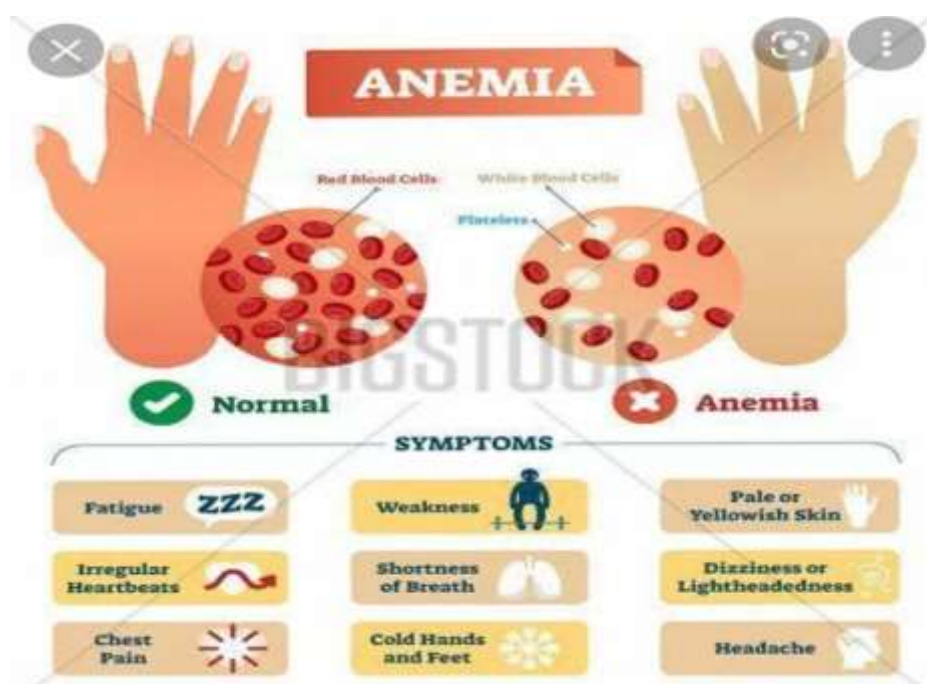
6. **Interventions made:**

- Herbal Solution to address immunity

7. **Current status:**

- Under Development

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



NewGen IEDC: Indian Institute of Technology, Guwahati

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

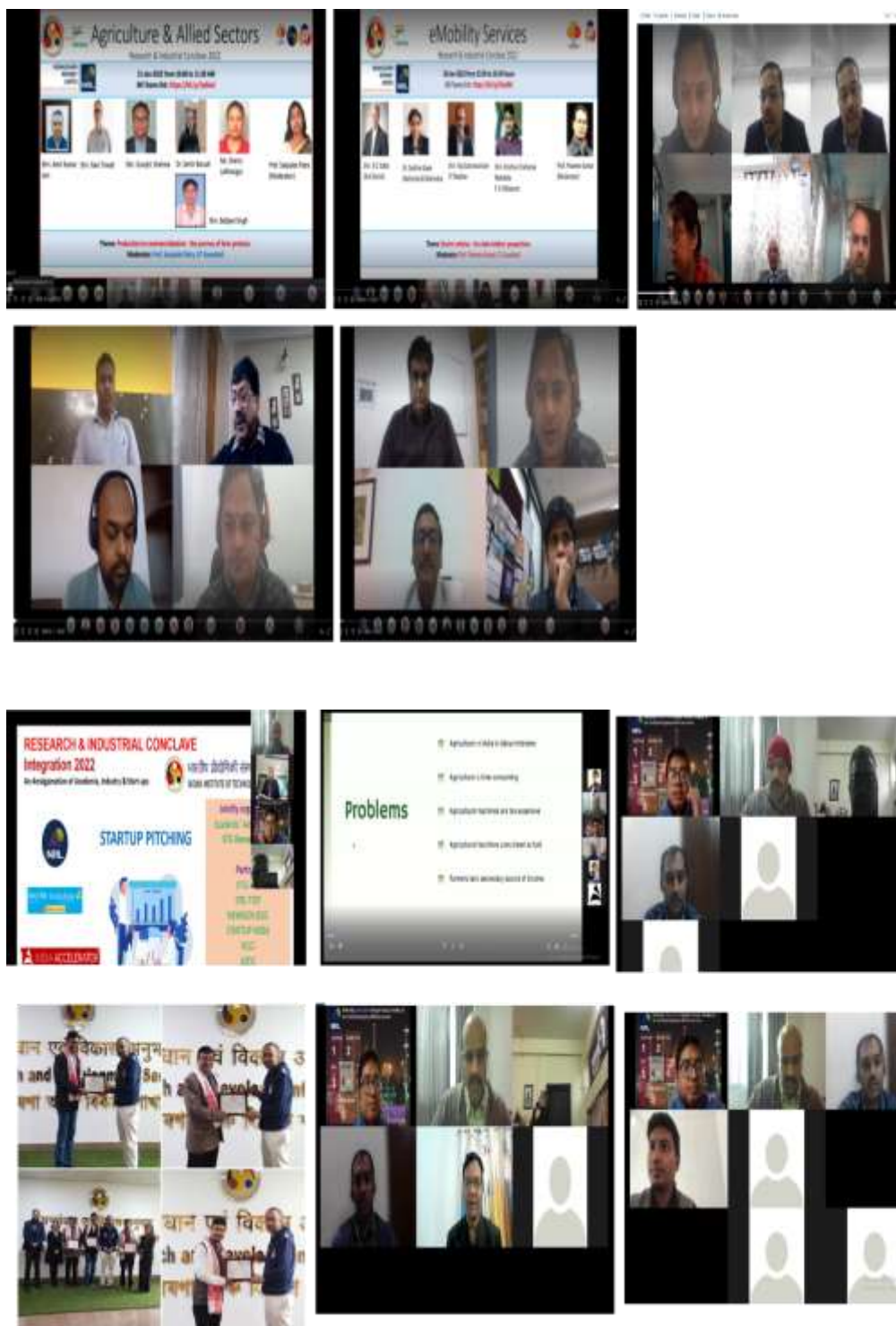
Name of the College/Institution hosting NewGen IEDC	Indian Institute of Technology, Guwahati		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Prof. G. Krishnaoorthy, Dean (II&SI)		
Name of NewGen IEDC Coordinator	Prof. R. Ganesh Narayanan, Prof. S.K. Dwivedy		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	Prof. R. Ganesh Narayanan Email: ganu@iitg.ac.in Mobile: 99546 04304 Prof. S.K. Dwivedy Email: dwivedy@iitg.ac.in Mobile: 94353 02598		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/18-19/01 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Research and Industry conclave (RIC) 2022

Several prototypes, patent contents, technology transfers are presented and products showcased. Startup pitching was organized in collaboration with India Accelerator. Panel discussions were organized.



2. Industry and Entrepreneurship conclave 2022 in April 2022

Several prototypes, patent contents, technology transfers are presented and products showcased.



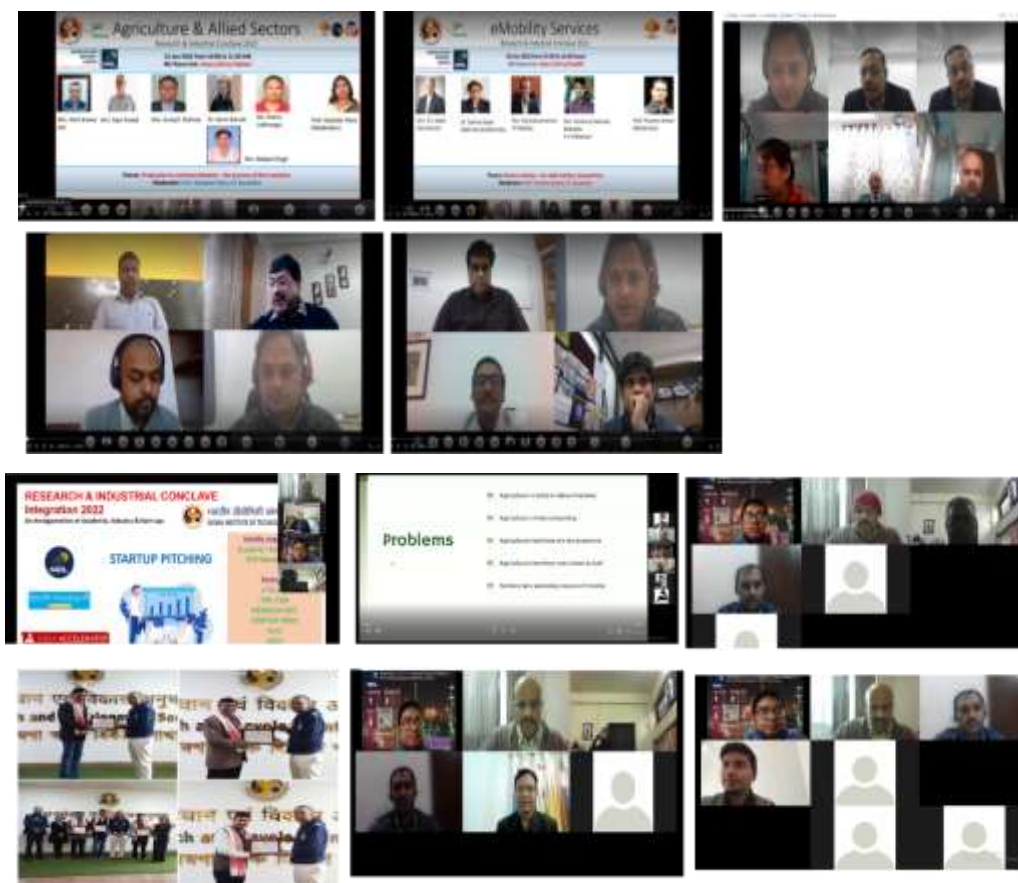
[B] To identify, develop & commercialize students' innovative ideas

1. Workshop on Computer Aided Manufacturing through SolidCAM in May 25-27, 2022

Collaboration with Elmax and SolidCAM companies for software skill development



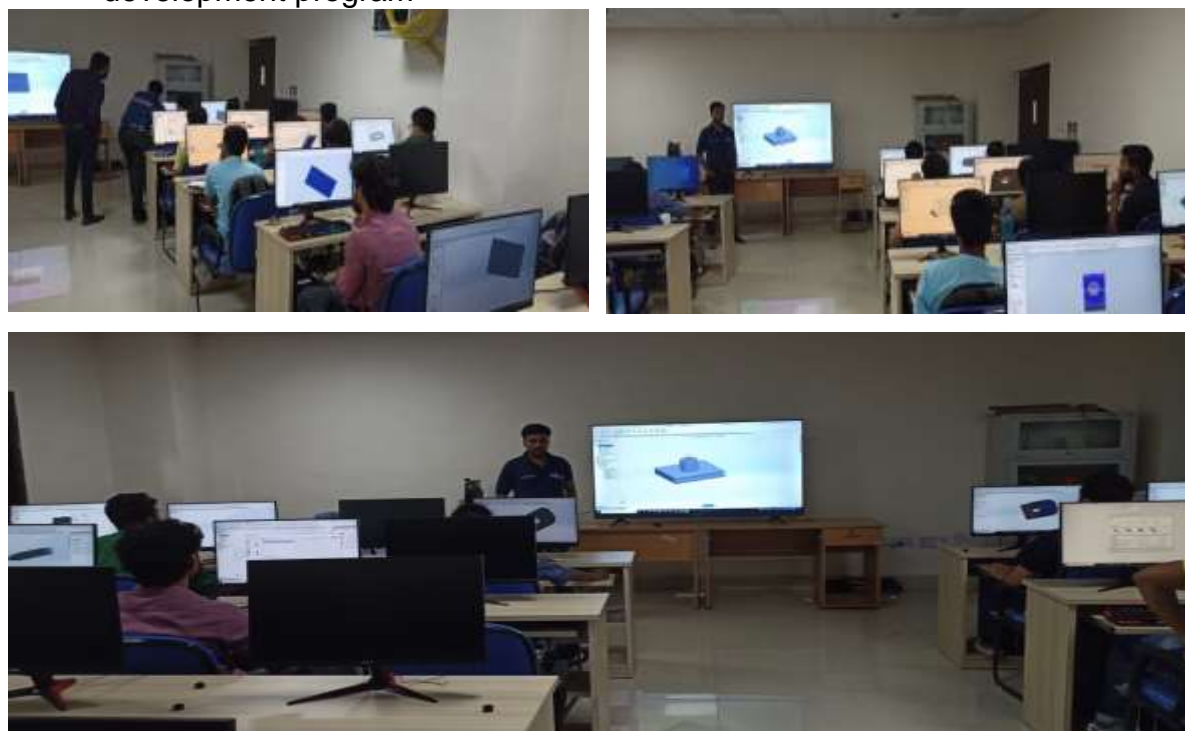
2. Research and Industry conclave (RIC) 2022



[C] To enhance Industry-Academia interaction

1. Workshop on Computer Aided Manufacturing through SolidCAM in May 25-27, 2022

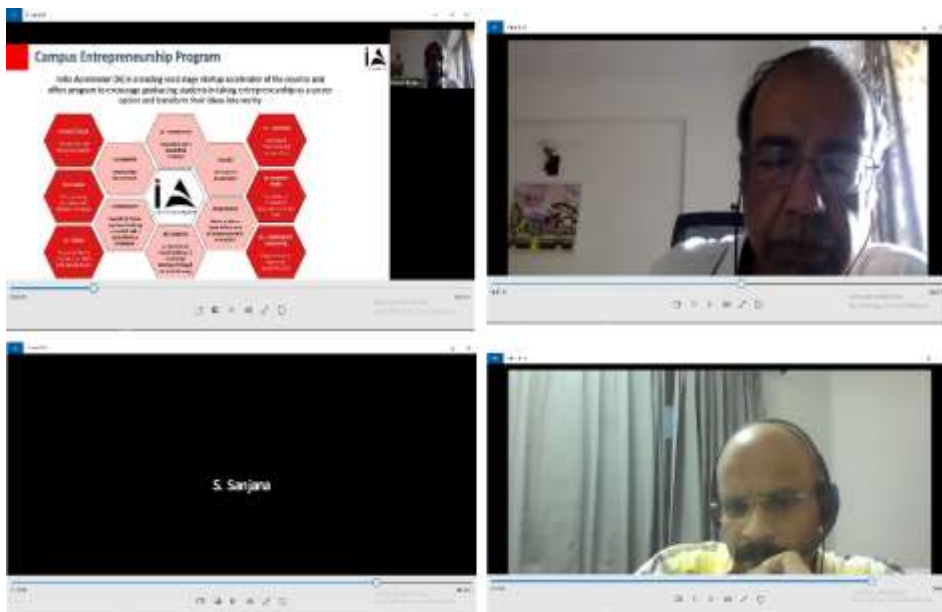
Interaction with Elmax and SolidCAM companies for software skill development program



2. Industry and Entrepreneurship conclave 2022 in April 2022
Interaction with OIL, NRL, NEHU Incubation centre, consultants.



3. Interaction with India Accelerator
NEWGEN IEDC projects were presented briefly for potential funding



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Yet to conduct some of the proposed workshops. These will be conducted in June to December 2022. Some workshops are as follows.

- Entrepreneurship development program in collaboration with IIMCIP Kolkata
- Thematic drives: Student pitching ideas for startups
- Medical device innovation Hackathon
- Workshop on innovation and incubation with NE IPR cell, Guwahati

3. Other important highlights (new initiatives), if any:

NEWGEN IEDC will involve in Industry conclave that is planned in December 2021 to January 2022 at IIT Guwahati

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Mental health monitoring using human speech

I. **Project Title** : Mental health monitoring using human speech

II. **Mentor Name** : Dr. Poonam Kumari

III. Student team details

- Sandeep Kumar Pandey
- Brij Nandan Tripathi

IV. Brief description of the student start-up

A company on similar technology has been started. The company name is Amaletix Infotech Private Limited.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

The final output will be an android / web -based application which will take speech input from the person – either in real-time or in recording form and assess the mental health by identifying the various emotional state present in the utterance and giving an overall score denoting positive or negative state of the mind of the person concerned. Society will be benefitted from the application as various organizations can also monitor the mental state of their employees/members and take preventive/corrective action to ensure smooth functioning of the organization without compromising the “Happiness” of its members. Figure 1 represents the product development scheme.

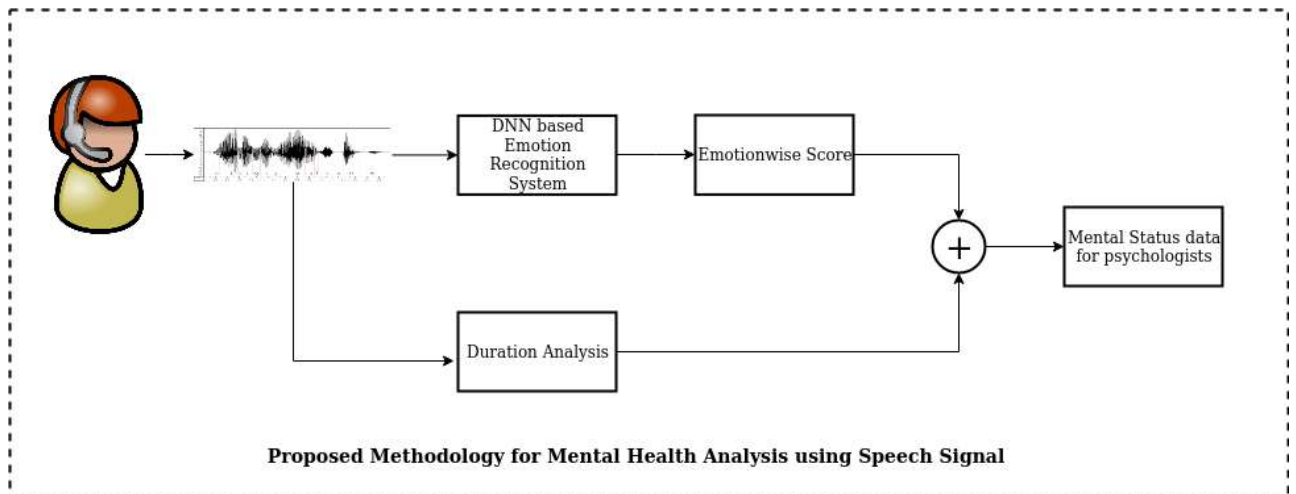


Figure 1

VI. Contribution of NewGen IEDC in the same

Contribution is funding the project and network sharing in entrepreneurship circle.

VII. Future plan

Prototype scaling at industry level and patenting.

VIII. Important highlights

- NA

Best Project-2: Development of Lab-on-a-Disc microfluidic device for plant root analysis

I. Project Title : Development of Lab-on-a-Disc microfluidic device for plant root analysis

II. Mentor Name : Dr. Poonam Kumari

III. Student team details

- i. Giridhar R
- ii. Dhananjay Kumar
- iii. Shivam Mishra
- iv. Sanjeev Roy

IV. Brief description about the student Project

The aim of the prototype development is to develop the Lab-on-a-Discs (LODs) based microfluidic device to study the plant root growth dynamics under controlled conditions. It is a new as well as novel approach to study several critical parameters that affect plant root growth in particular, and plant science in general by using on-chip microfluidic platform.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Presently the student is developing a prototype as shown in Figure 2.

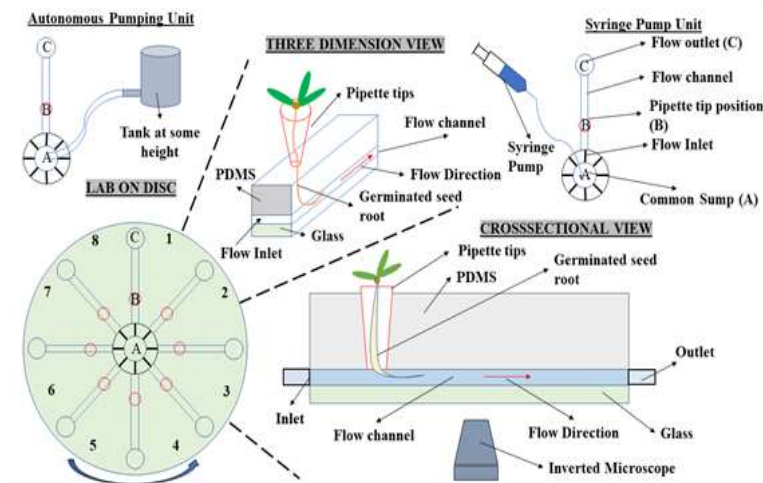


Figure 2

VI. Contribution of NewGen IEDC in the same

Contribution is funding the project and network sharing in entrepreneurship circle.

VII. Future plan

Development of final prototype and commercialization and patenting

ANNEXURE-A

Details of Student Projects

Project-01: Design and development of flexible surface acoustic wave (SAW) strain sensor

1. Project Title : Design and development of flexible surface acoustic wave (SAW) strain sensor

2. Mentor Name : Dr. Poonam Kumari

3. Student Team Names:

- I. Nikhil Dilip Kulkarni
- II. Kurakula Soumya
- III. Chetti Hari Chandra

4. Project Description:

- At first, a flexible thin composite PVDF film will be fabricated using Ultrasonication and Magnetic Stirring followed by Solution Casting technique by mixing BTO nanoparticles with varying concentrations. Electrical poling will be then performed to impart piezoelectric behaviour (β -phase) to the obtained film.
- Interdigital transducer electrodes (IDTs) are then patterned in a specific form (comb-like shape) on the piezoelectric substrate with the help of e-beam lithography or 3D printing. The specific shape of the IDT will help in generating acoustic wave on the surface of the piezo substrate.

5. Project status at beginning of the Year:

Idea Level:

- Piezoelectric substrate fabrication and IDT electrode patterning are essential for SAW generation.

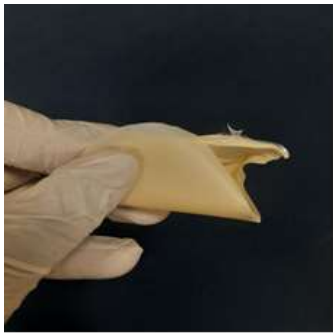
6. Interventions made:

- We have experimented with a variety of methods for coating aluminium electrodes on fabricated piezo substrates, such as sputtering and thermal evaporation.

7. Current status:

- The piezoelectric substrate was successfully fabricated with electrode coating on both sides without IDT patterning.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Flexible piezoelectric substrate



electrode patterning on the substrate using thermal evaporation.



flexible piezo sensor

Project-02: Development of Lab-on-a-Disc microfluidic device for plant root analysis

1. Project Title : Development of Lab-on-a-Disc microfluidic device for plant root analysis

2. Mentor Name : Dr. Pranab Kumar Mondal
Dr. Ronita Nag Chaudhuri

3. Student Team Names:

- I. Giridhar R
- II. Dhananjay Kumar
- III. Shivam Mishra
- IV. Sanjeev Roy

4. Project Description:

The aim of the project is to develop the Lab-on-a-Discs (LODs) based microfluidic device to study the plant root growth dynamics under controlled conditions. It is a new as well as a novel approach to studying several critical parameters that affect plant root growth in particular and plant science in general by using an on-chip microfluidic platform.

- 1. Developing a Lab-on-a-Disc microfluidic device for studying root growth of an array of plants simultaneously and determining the effect of hormones and abiotic stress factors on root growth.
- 2. To explore the effect of hydrodynamic stress, an aspect that has not been addressed to date, on the root growth behavior.

5. Project status at beginning of the Year:

As we proposed a Lab-on-a-Disc arrangement for observing the plant root, which consists series of microchannels arranged over the compact disk-like arrangement. In the purview of standardizing the parameters for plant root growth in the channel as proposed, we initiated our investigation by considering the staggered arrangement of the individual microchannel, where the growth media is supplied through the syringe pump at a desired flow rate. To the extent of this, we fabricated the channels with the wire drawing technique and it is shown in section 8.

Idea Level: New

LOD devices consist series of microchannels and one common sump in the center of the disc to act as a reservoir filled with growth media, which is connected to the channel. The core novelty of the entire proposal is developing a prototype for investigating the plant root evolution once after the germination.

6. Interventions made:

During the initial stages of standardizing, we have encountered many difficulties and addressed the issues in several ways to figure out the solution which is mentioned as follows:

Seed Germination: As the germination of *Arabidopsis thaliana* is so sensitive to atmospheric conditions and germination in the pipette tip creates additional stress to the seed, because of the narrow confinement, fails to germinate. Later we optimized the pipette tip size, in such a way the seed does not feel any confinement effect, through observation from repeated trials. Finally, we achieved germination of *Arabidopsis thaliana* seeds in the pipette tip.

Channel fabrication and Pipette tip position: As we follow the wire drawing method to fabricate the growth observation channel, the positioning of the Pipette tip becomes challenging. Later we figured out the way through a 3D printed casing, with slots to hold the two wires in the form of a T-Junction. Even though this method to find to be successful in creating the slot for the pipette tip, we are fine-tuning it further.

Root growth direction: Root growth in opposite to flow direction, was frequently observed. We have addressed this issue through observation from repeated trials.

Flow rate: As the pipette tip was small enough to hold the *Arabidopsis thaliana*, but at a larger flow rate pipette tip comes out from the corresponding slot, so we have figured out the optimized range.

Contamination issue: Arrested the contamination issue, by regulating the sucrose content of the growth media.

7. Current status:

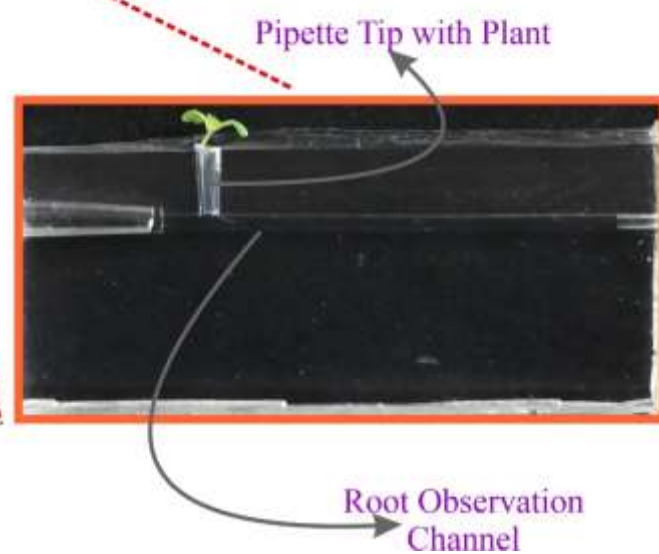
Experiments carried out to date, give us major inference in setting up the control parameter. We were in the final stage of optimizing the control parameters. Finally, the root growth of the plant was observed in the channel as proposed which help us to measure and characterize the different zones of the root, through a microscope. This confirms the stability in achieving the proposed objective in a given period of time. Further, we will arrange the series of the microchannel in Lab-on-a-Disc and will subject to carry out the investigation by supplying the growth media through a sump connected to syringe pump later this standardization, we will aid the flow of growth media by rotating the LOD.

8. High-resolution pictures showing the Prototype/product along with the students and their mentor for each project:

Team Plant Root Microfluidics



Dr. Pranab Kumar Mondal



Project-03: One step ready to use versatile nucleus isolation buffer for plant DNA quantification

1. Project Title : One step ready to use versatile nucleus isolation buffer for plant DNA quantification

2. Mentor Name : Prof. Latha Rangan

3. Student Team Names:

- I. Alok Senapati
- II. Rashmi Singh
- III. Manish Kumar Gupta

4. Project Description:

Development of cost effective and versatile plant nuclei isolation kit for rapid quantification of DNA content (genome size)

5. Project status at beginning of the Year:

Preparation of universal plant nuclei isolation buffer

Idea Level:

- Buffer components selection
- Dye selection
- Optimization of concentration of components and dye
- Testing the buffer in various plants using flowcytometry
- Kit efficacy assessment

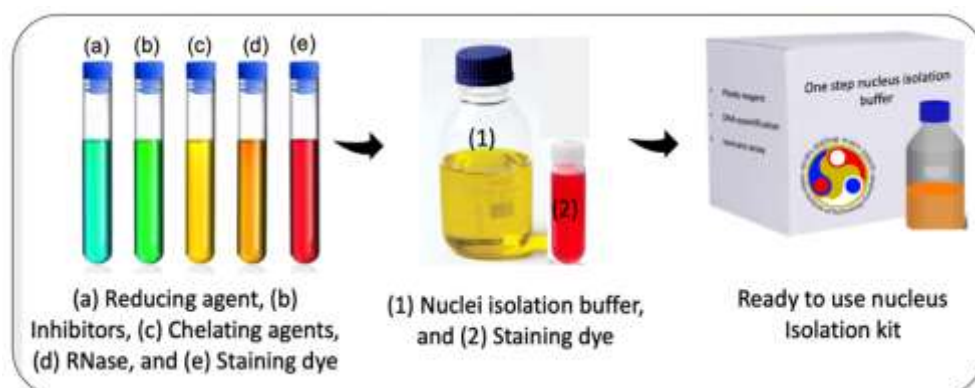
6. Interventions made:

- The nuclei isolation buffer composition determined for variety of plants
- The dye selected for best results
- Optimization of concentration of buffer components

7. Current status:

- Testing the universal buffer in variety of plants
- Kit efficacy assessment

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: 3D Printed Silk-based Affordable Patient-specific Platelet Rich Plasma Functionalized Knee Meniscus Implants for Treatment of Knee Injuries

1. Project Title : 3D Printed Silk-based Affordable Patient-specific Platelet Rich Plasma Functionalized Knee Meniscus Implants for Treatment of Knee Injuries

2. Mentor Name : Prof. Biman B. Mandal

3. Student Team Names:

- I. Ashutosh Bandyopadhyay
- II. Souradeep Dey
- III. Sayanti Shome

4. Project Description:

Meniscus injuries require corrective surgery in both general and physically active individuals. More than a 1 million cases of meniscal tears have been reported to occur in India every year by Apollo Hospitals. Multiple studies have suggested that the long-term effects of meniscal injuries are substantial, and almost 50% of all patients develop osteoarthritis within 10-20 years. Current surgical remedies include partial or total removal of the meniscus, called Meniscectomy. The limited healing of meniscus tissue owing to its avascular nature results in pain and impaired mobility of the knee joint in patients. Therefore, there is an urgent need for corrective tissue engineering-based strategies that can provide amenable life to the patients and affordable solution for the masses. Platelet Rich Plasma (PRP) is the fraction used as a patient-specific source of autologous factors that can be easily incorporated to hydrogels and printed into 3D constructs. It contains a cocktail of growth factors enhancing angiogenesis, stem cell recruitment, and tissue regeneration. Objective of this proposal is to provide PRP functionalized and affordable patient specific knee meniscus implants for individuals with meniscal damage caused by sports and road accidents as well as due to old age and congenital deformities.

5. Project status at beginning of the Year:

Idea Level: The project aims to deliver silk-based patient derived PRP functionalized biomimetic and patient specific meniscal implants and an injectable defect treatment hydrogel modality that possess the necessary

physico-chemical and mechanical properties for replacement and treatment of partially or completely resected menisci. The following objectives were formulated to achieve our goal for a multi-faceted strategy for meniscus repair:

- Formulation of functionalized injectable hydrogel for small Meniscal defect repair:
 - Isolation and characterization of platelet rich plasma (PRP) lysate from human plasma concentrates.
 - Modification and optimization of photo-crosslinking one step fabrication bioink consisting of mulberry (*B. mori*) silk fibroin methacrylate, gelatin methacrylate and polyethylene glycol dimethacrylate suitable for biofabrication, fortified with platelet rich plasma lysate derived from the patient.
- 3D Printing Functionalized Meniscal Implants for larger meniscal defect repair
 - 3D CAD model reconstruction from the MRI scan of the patient's healthy knee joint. Slicing the obtained model into the tri-layered architecture of the meniscus.
 - 3D Fabrication of patient specific meniscus implants using a silk-based bioink incorporated with growth factor laden-microspheres through 3D printing modality.
- Physicochemical and Biological Assessment of injectable hydrogel and 3D printed Meniscal Implants:
 - Evaluation of growth factor release from PRP laden hydrogel and 3D constructs
 - Unconfined Compressive mechanical strength and cyclic compression strength stability of hydrogel and 3D constructs
 - Cell viability, differentiation and maturation using mesenchymal stromal cells over the growth factor laden hydrogel and 3D constructs through gene expression, biochemical and histological evaluation
 - Fine tuning the mechanical and biological properties for small animal experimentation.

6. Interventions made:

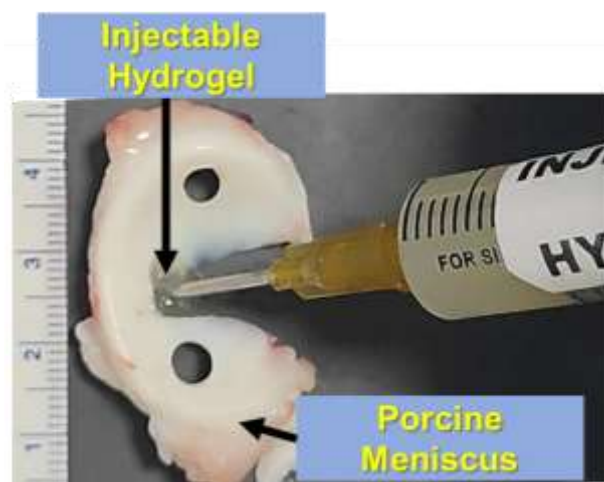
- We have completed our first objective and formulated a composite photopolymerizing hydrogel bioink which comprises of silk fibroin methacrylate, gelatin methacrylate, polyethylene glycol dimethacrylate and human patient derived platelet rich plasma (PRP). This could potentially be applied into critical size meniscal defects for their treatment and similarly could also be 3D printed for fabrication of meniscal implants that would be suitable for the treatment of partial or complete meniscectomy.
- We have conducted the physicochemical, mechanical and preliminary biological evaluation of the composite hydrogel for its suitability in meniscus tissue engineering applications.

7. Current status:

- We are currently undertaking biological evaluation in the laboratory scale for the evaluation of the compatibility of the hydrogel composition in its hydrogel form for determining its suitability for application in vivo.
- We are additionally 3D printing using the hydrogel bioink and evaluating the printed constructs physico-chemically and mechanically for their suitability in meniscal implantation.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

Prototype:



Project-05: Clinically relevant silk-based 3D printed small diameter “biotube” vascular grafts as sustainable and affordable healthcare product.

1. Project Title : Clinically relevant silk-based 3D printed small diameter “Biotube” vascular grafts as sustainable and affordable Healthcare product.

2. Mentor Name : Prof. Biman B. Mandal

3. Student Team Names:

- I. Souradeep Dey
- II. Bibrita Bhar
- III. Ashutosh Bandyopadhyay
- IV. Chitra Jaiswal

4. Project Description:

Cardiovascular disease (CVD) remains a severe burden on global healthcare, accounting for 17.7 million deaths, almost a third of all global deaths, in 2015. As this figure is predicted to increase to over 23 million deaths by 2030, CVD has become a pandemic that will continue to be a key health issue for the foreseeable future. In addition, the monetary cost of CVD has been estimated to be around \$530 billion in direct and indirect costs. Of all the deaths caused by CVD, over 50 percent have been attributed to vascular damage induced by accumulation of vascular plaque, which leads to coronary occlusion, stroke, aortic aneurysm, and gangrene of the extremities.

For these reasons, much effort has been put forth to develop small diameter (< 6 mm internal diameter) artificial vascular grafts. However, already commercially available synthetic grafts cause severe post-surgical complications. Currently, the gold standard treatment for such conditions are the use of saphenous vein or mammary artery from the patient him/herself (autografts). But, the mammary artery seldom develops atherosclerosis, it may not always be the proper size or length, and saphenous vein may have varicose degenerative alterations that can lead to aneurysm formation when transplanted to a high-pressure arterial site. Similarly, venous and arterial allografts and even bovine xenografts have been clinically abandoned because of high incidence of rejection and severe complications. Hence, there is substantial clinical requirement of effective vascular graft alternative

to the patients own blood vessels for use in bypass surgery of occluded small diameter vessels.

For addressing these problem definitions and motivations from the '*Make in India*', and '*Atmanirbhar Bharat*' missions (as conceived by the Government of India), our team at IIT Guwahati are aiming towards developing "clinically relevant patient specific *in vivo* tissue-engineered "biotube" vascular grafts as sustainable and affordable healthcare product for combating vascular abnormalities".

5. Project status at beginning of the Year:

Idea Level:

Towards green and smart technology, our objectives focus on development of a silk-based smart bioink formulations and a clinically relevant patient specific *in vivo* tissue-engineered "biotube" vascular grafts as sustainable and affordable healthcare product for replacement of abnormal/diseased vascular condition (caused mainly due to atherosclerosis and aneurysm). In the context of the rationale explained previously, using 3D printing, silk-based smart biomaterial inks and in-body tissue architecture (iBTA) technology, we have identified the following objectives:

- Green synthesis and characterization of silk-based smart bio-instructive bioink formulations with bioactive additives. (*Filing IPR for the developed novel biomaterial ink formulation*).
- Silk-based biomaterial ink applicability for 3D printing of bio-resorbable vascular molds.
- Biological assessment of the molds and its implantation in animal model for "biotube" formation.
- After retrieval of the biotube, physico-chemical, mechanical and biological assessment of the biotube.
- Functional assessment of the *in vivo* tissue-engineered "biotube" vascular grafts in small and large animal models.
- Pre-clinical evaluation under GLP conditions to generate data for DCGI approval for controlled clinical trials.
- After further clinical validation, the approved product will be commercialized for direct off the shelf clinical application, after securing IPRs.

6. Interventions made:

A photocurable silk-based biomaterial ink was formulated for the fabrication of 3D printed tubular scaffolds using a digital light processing (DLP) 3D printer. Two varieties of inks were formulated using silk fibroin as the main component. The biomaterial inks were thoroughly investigated for its rheological and biological characteristics and evaluated for its printability. The biomaterial inks were found to be suitable for developing high resolution, stable and biocompatible 3D constructs using a DLP 3D printer.

Further for developing biotube vascular grafts, implantable tubular molds were DLP 3D printed using the formulated photocurable biomaterial inks. To mimic the architecture of small diameter blood vessels, a 3D tubular CAD model was developed using AutoCAD (Autodesk). The printed constructs were lyophilized and further physico-chemically and biologically characterized to evaluate its efficacy for biotube formation. The 3D printed molds were found to be stable, supported cellular viability, proliferation and migration. For the preparation of biotubes, tubular 3D printed molds with an inner diameter of 3 mm, outer diameter of 4 mm and length of 20 mm were used as embedding materials. Following 21 days of implantation (ongoing) the biotubes were collected for further processing.

7. Current status:

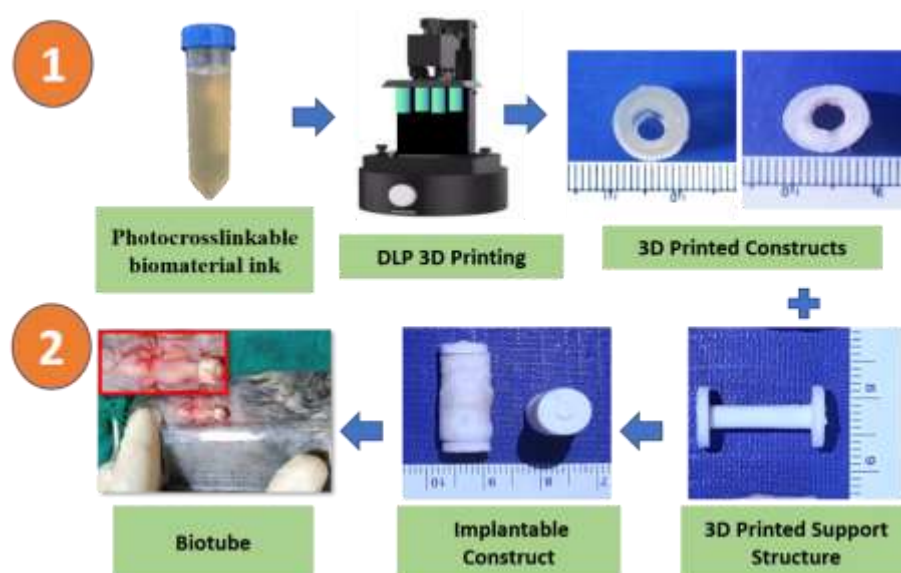
Further, biological characterizations of the 3D printed molds are being performed. For the preparation of biotubes, animal studies are ongoing. Tubular 3D printed molds with an inner diameter of 3 mm, outer diameter of 4 mm and length of 20 mm are being used as embedding materials. Following 21 days of implantation (ongoing) the biotubes would be collected and further processed and investigated for functional *in vivo* analysis. After the optimization of the constructs in animal models, we will approach for technology collaboration with the medical professionals or companies for clinical testing. The efficacy of the developed constructs would be evaluated with the help of clinicians, and medical professionals. We also plan for the establishment of a start-up company in collaboration with IITG, based on the developed technology. Further, demonstration of the results to companies, venture capitalist or other Govt. agencies to raise investment. In addition, market planning and commercialization of the developed product with the

help of Govt. agencies or private investors would be done. Further, introduction of an advanced version of the product in the market would be done based on customer requirements.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

Prototypes:

1. A photocurable silk-based biomaterial ink for varied tissue engineering and diagnostic interventions.
2. Patient specific 3D printed bio-resorbable vascular molds and Biotube (preliminary stage).



Project-06: Design and development of manual pineapple picker for small farmers in northeast India

1. Project Title : Design and development of manual pineapple picker for Small farmers in northeast India

2. Mentor Name : Dr. Sougata Karmakar

3. Student Team Names:

- I. Mr. Hijam Jiten Singh
- II. Mr. Gurdeep Singh

4. Project Description:

Manual pineapple harvesting is time-consuming and labor-intensive (20–30 man days/hectare) and prone to several injuries due to the leaves' spines and sharp tips. Pineapple being a ground crop, harvesting tasks require farmers to stoop or squat while harvesting. Moreover, due to inherent constraints in northeast India, such as difficult hilly terrain, varying hill slopes and traditional cultivation practices, large machinery becomes non-feasible to use and adoption. Therefore, pineapple farmers in India have to constrain themselves to the age-old traditional methods of manual harvesting using locally evolved/fabricated hand tools.

In this project, we aim to develop a tool that will facilitate easy holding of pineapple fruit and allow cutting from a specific fruit-cutting position to reduce awkward working postures and injury from leave tips and spines of pineapple plants. With this design intervention, the pineapple farmers' drudgery would be significantly reduced. The newly developed innovative tool will ensure safety and also minimize unwanted injuries happening to among pineapple farmers involved in the pineapple harvesting task, thereby leading to better occupational wellness and productivity of the farming community as a whole in northeast India.

5. Project status at beginning of the Year:

Idea Level:

- Initially, a field survey was conducted to identify the associated problem in pineapple production in northeast India

- User study was conducted and discussed the issues with pineapple farmers from selected villages from 3 states (Assam, Meghalaya and Manipur).
- The issues in pineapple harvesting task was identified and initiated exploration of solutions to address the identified problem.

6. Interventions made:

- Exploration of multiple design concepts of manual pineapple harvester
- Out the multiple concepts, best design concept was selected
- Physical mock-ups was explored & studied
- Developed CAD model and renderings was done.
- Material selected fabricated was initiated.

7. Current status:

- The physical prototype of the product is ready for initial trials and refinement.
- The field trials of the prototype are yet to be conducted.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

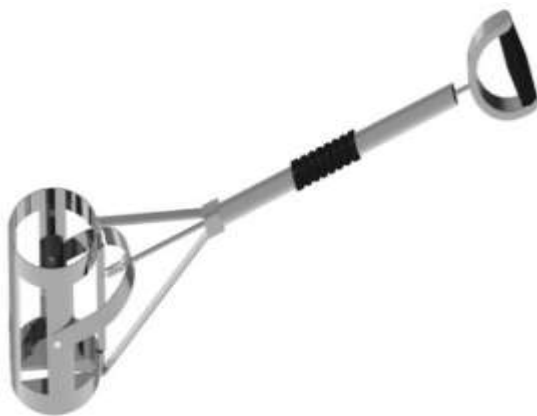


Fig. 1. CAD rendering of the apparatus



Fig. 2. Physical prototype of the apparatus

Project-07: Design and development of a floating device for aquatic agriculture.

1. Project Title : Design and development of a floating device for aquatic Agriculture.

2. Mentor Name : Dr. Sougata Karmakar

3. Student Team Names:

- I. Jitesh Singh Chauhan
- II. Hijam Jiten Singh

4. Project Description:

The project relates to the challenges in the cultivation of aquatic food crops. Farmers have to go inside the water bodies for 5-6 hours without any standard tool. Farmers also face difficulty in walking in marshy land, as the water bodies are covered with marshy land, and it is very difficult to keep balance while walking. The major challenges come when they go in depth, when the water level is high (above the chest level). The use of boat is also difficult as they cannot perform the agriculture activities while sitting comfortably on the boat.

Farmers sometimes use frugal design to float on water. Due to improper fabrication, they have to face many physical difficulties (awkward posture and discomfort) and even accident due to imbalance. These floating arrangements are also not durable and thus the farmers need to make a new one during every season.

In particular, the present project aims to develop a floating device along with PPE kit to facilitate the activities of the aquatic farmers in different phases of cultivations involved in aquatic agriculture. The device would help them to float in the water and perform activities like cleaning, harvesting while the water level is high (above the chest level) with ease of movement in water bodies.

5. Project status at beginning of the Year:

Idea Level:

- Based on the field survey the problem was identified.
- Initial concept exploration was done to address the problem identified.
- User need and requirements were discussed with the farmers of the aquatic crop.
- Through brainstorming many concepts were generated and digital model were generated.
- Final concept was selected based on the working environment and farmers inputs.

6. Interventions made:

- Refinement of concepts was done.
- Improvisation of basic features of intended prototype were done viz. It is planned to increase the weight of base of the floating device to improve the balance.
- Size of floating vessel/ball is increased to improve the stability.

7. Current status:

- Design Registration of the product has been granted (350209-001).
- Approval for utility patent filing from the institute IPR cell has been obtained and patent drafting is under process.
- An alpha prototype was developed and tested in the field before the final prototype.
- The manufacturing of beta prototype is under process.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Fig. CAD rendering of the product



Fig. Alpha prototype and testing

Project-08: Development of a SiC-based highly efficient fault-tolerant multi-port power converter for automotive application

1. Project Title : Development of a SiC-based highly efficient fault-Tolerant multi-port power converter for automotive Application.

2. Mentor Name : Dr. Chandan Kumar

3. Student Team Names:

- I. Somnath Meikap, PhD student, EEE department
- II. Kumar Mayank, MS student (e-mobility)

4. Project Description:

A SiC-based Multi-port isolated power converter is designed to fast charge an electric vehicle (EV). Its key advantages are Modular Design, Fault tolerance, High efficiency, and Isolation of ports. The designed converter system integrates a solar PV system, battery storage system, and electric grid with Fast EV charging for a green EV charging station that can work efficiently for 24 hrs. It consists of different converter systems with specific control strategies for their work. The prototype consists of an emergency stop button and a fault protection system for EV charging. It also has options to increase EV charger ports, Battery storage systems, and PV systems.

5. Project status at beginning of the Year:

Idea Level:

- Proof of Concept (Via Simulation)
- Designing Stage (Via CAD and Multiphysics Software)

6. Interventions made:

- Designing of Gate Drivers for SiC based systems.
- Optimization of Converter Size.
- Optimization of High Frequency transformer design.
- Selection of optimal operational Frequency.

7. Current status:

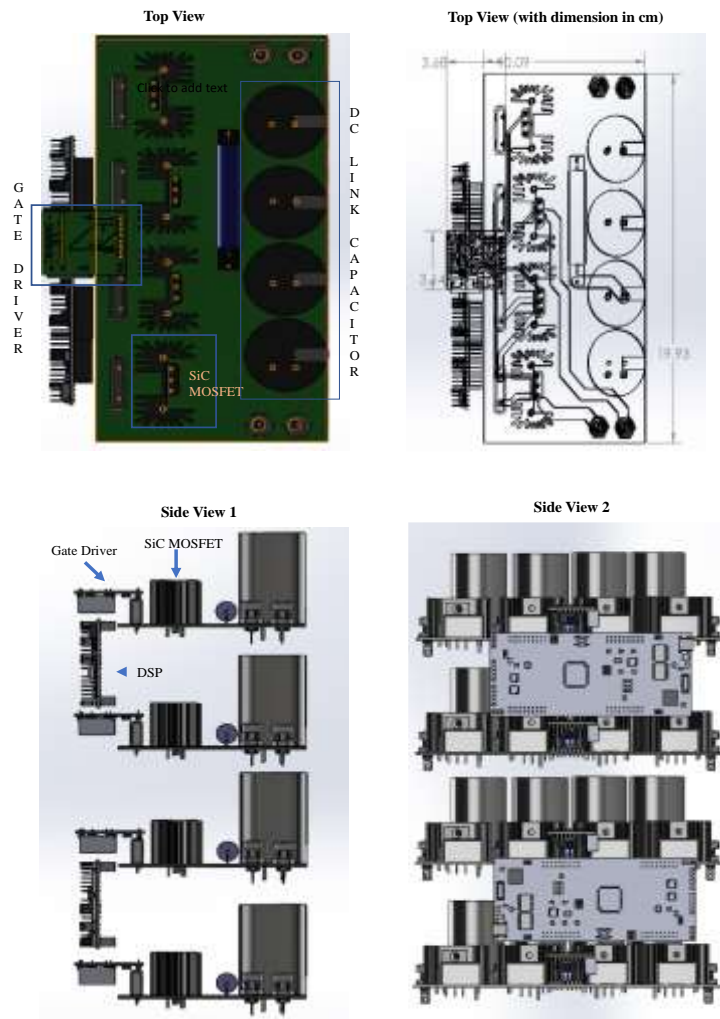
- Prototype Building Stage.
- Completion of Simulation to validate the working of the model.
- Completion of PCB designing.
- Completion of Peripherals designing.

- Quotation submission for different components is currently being processed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

DIMENSION OF THE CONVERTER IN 3D

- The 3D Model of Hardware Prototype is designed using EAGLE, FUSION 360 and SOLIDWORKS.



Project-09: Design and Development of Hip Protection Gear for the Elderly People

1. Project Title : Design and Development of Hip Protection Gear for the Elderly People

2. Mentor Name : Dr. Prasenjit Khanikar and Prof. Anugrah Singh

3. Student Team Names:

- I. Manish Dalakoti,
- II. Bikramjyoti Sahariah,
- III. Manashjyoti Baishya,
- IV. Himprakash Das,
- V. Jaikishan Mansukhani

4. Project Description:

Hip fractures caused by the falls in the elderly can lead to serious injuries and can even result in death. Some literature suggest that about 25% of the elderly who sustained a hip fracture will die in the following year. Osteoporosis is the primary reason for sudden hip fracture during a sidewall fall in elderly people. Methods for the prevention of falls in the elderly include the use of walking assistance devices that increase walking stability and the improvement of physical ability in the elderly through exercise. However, most falls unexpectedly occur due to the loss of balance and stability, and thus, it is difficult to prevent hip fractures with such methods during falls. Several kinds of soft pads and airbags have already been in use and some others are being tested to prevent hip fractures during a fall. Although the soft pads made of polymeric foams are cheap, they provide limited protection. In contrast, airbags are costly and they require power input for operation. Moreover, they are subject to electronic equipment failures. The objective of this project is to design and develop a high impact resistant material for the pad of the hip protection gear. It is proposed that 3D-printed polymeric lattice structures can be filled with shear thickening fluids to attain high energy absorption for impact mitigation on human hip during a sideways fall.

5. Project status at beginning of the Year:

Idea Level:

- No lattice or shear thickening fluid hip protector is available in the market or even studied
- The proposal was to combine both high energy absorbing materials to achieve excellent impact mitigation for hip protector

6. Interventions made:

- Lattice architecture with high elastic energy absorption capability is designed

7. Current status:

- Shear thickening fluid with different viscosities are prepared and being tested for compatibility with lattice structures to maximize the energy absorption
- The prototype will be made once an appropriate combination of shear thickening fluid and lattice material is finalized.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Cleaner production of porous carbon using plastic bottles for wastewater treatment: A circular economy approach

1. Project Title : Cleaner production of porous carbon using plastic Bottles for wastewater treatment: A circular economy Approach

2. Mentor Name : Dr. Selvaraju Narayanasamy

3. Student Team Names:

- I. Mr. Chandi Patra
- II. Ms. Tasrin Shahnaz
- III. Mr. Harish Kumar

4. Project Description:

The project proposal will be implemented according to the following set objectives:

Phase I: Collection of bottles of different commercial grades (hard plastic, single-use plastic etc.) and their conversion into fine powdered form.

Phase II: Pyrolysis/carbonisation of the plastic bits to convert it to porous carbon (involve pre-treatment, activation process and optimization of the process parameters)

Phase III: To design a protocol based on circular economy associated with cleaner production viz. minimal wastage/pollution and maximal carbon output.

5. Project status at beginning of the Year:

Idea Level:

This proposal aims to produce porous and efficient carbon via pyrolysis/carbonisation at high but controlled temperatures. The process shall be optimised for minimal loss, cost-effectivity and economical scalability. The plastic bottles shall be treated with disinfectants first to avoid any contamination. After the pre-treatment, the bottles shall be shredded to small bits (fine form) for increased surface area. Following this, the shredded plastic bits will be treated with acid/base/polymer/ligand for surface functionalization; post or prior to the pyrolysis/carbonisation step. The entire process shall be optimised for effective functional groups, optimised temperature and maximum carbon output.

6. Interventions made:

In the preliminary studies, we successfully prepared tar-like carbon using hard plastic via acid treatment (Sulfuric acid). The plastic bits were allowed to mix with Sulfuric acid at 373 K for 48 h. The formation of tar-like material verifies carbonization but since it was not in an inert environment, complete oxidation may have led to excess burning of the plastic bits into tar form.

The team has earlier prepared carbon from hard-shelled biomass. The process was optimized for minimal ash content and better carbon porosity. The same protocol shall be applied to plastic bits and accordingly optimized.

7. Current status:

- Different grades of plastic have been collected. The categorization is based on its hardness and commercial application followed by its breakdown into small bits.
- Preliminary acid-treatment carbonization.

Project-11: Design and Development of Inter cum Intra-row Paddy Weeder

1. Project Title : Design and Development of Inter cum Intra-row Paddy Weeder

2. Mentor Name : Prof. Karuna Kalita

3. Student Team Names:

- I. Mr. Sapunii Sebastian
- II. Mr. Debanjan Mukherjee

4. Project Description:

Paddy Weeder is a machine to uproot and destroy unwanted plants in the paddy field. Weeding by mechanical devices reduces the cost of labour and also saves time. Mechanical weeders are used to complete the weeding operation in due time at less cost. The paddy weeder which are available in the market are of inter row type. That is, they are used to operate only between the rows leaving the weeds unweeded between the plants. Hence, the objectives of the project is

- To design and develop inter cum intra-row power operated paddy weeder
- To fabricate and test the machine in actual working field
- To evaluate the field capacity of the machine
- To perform an economic feasibility on the cost of machine operation

5. Project status at beginning of the Year:

- A simple SolidWorks Model without defining the proper working mechanisms of linkages

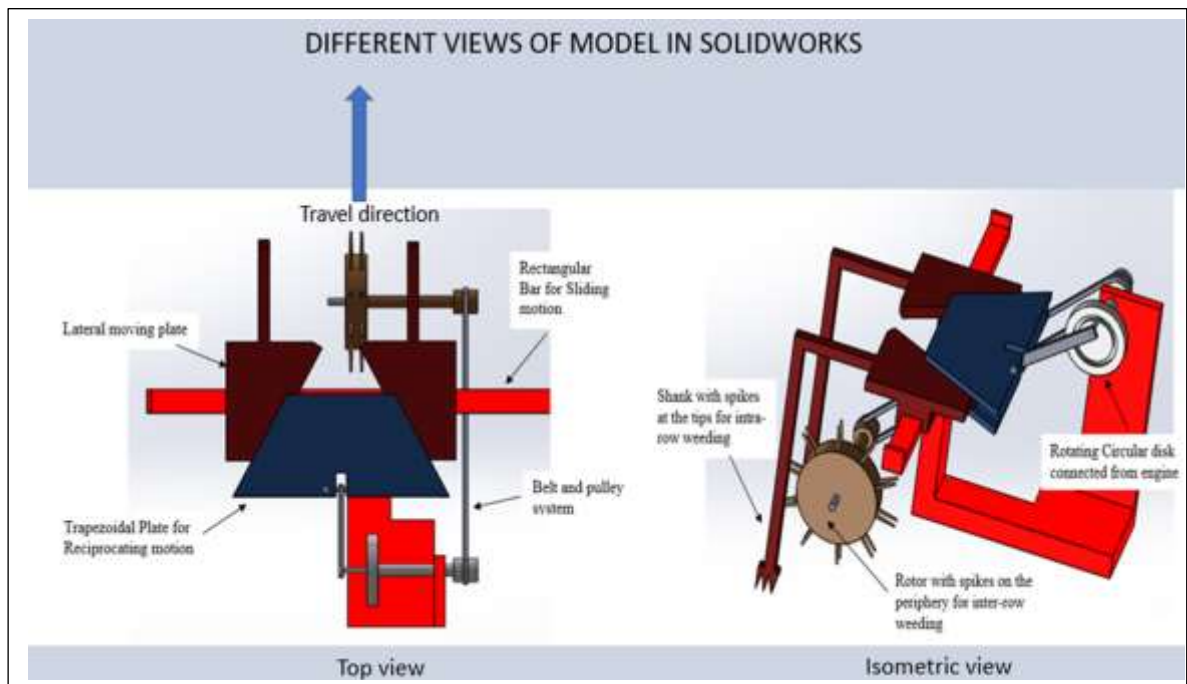
6. Interventions made:

- Proper working mechanisms have been defined with suitable dimensions

7. Current status:

- Major components for the prototype/machine have been purchased and fabrication has begun.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Development of Intelligent Vision System for Remotely Operated Vehicle (ROV) (Underwater)

1. Project Title : Development of Intelligent Vision System for Remotely Operated Vehicle (ROV) (Underwater)

2. Mentor Name : Dr. Nelson Muthu & Dr. Basireddy Sandeep Reddy

3. Student Team Names:

I. Sahil Narwal

4. Project Description:

The Proposed Project aims to develop an Intelligent Vision System for an ROV which will be capable for performing certain tasks underwater from various domains like, Hull Inspection of Ships, Lakes, Rivers, Underwater Construction. Development stage will include the retrofitting of various electronic components along with the sensors and Low Light fhd Camera. The camera will act as an “eye” of the drone to get the real time visuals from underwater bodies. For investigation in the water bodies, machine learning and deep learning algorithms will be implemented for certain tasks like fish recognition, image processing, feature extraction etc.

5. Project status at beginning of the Year:

Initially, the concept has been validated and few algorithms for image enhancement and feature extractions has been developed.

Idea Level:

Initially, the first plan of this project to see and analyze the work volume, Gannt Plannification was carried out which gave the clear idea about defining up the objectives also to narrow down the assumptions so as to make an efficient working prototype at the end of this year.

6. Interventions made:

- Selection of ROV for retrofitting has been done.
- CAD model for retrofitting of ROV is done, still working on to improve the design.
- Purchase of Various Electronic Components is done.

7. Current status:

- Procurement of Electronics is done.
- Design of ROV for Retrofitting is done.
- Working on Computer Vision Algorithms for image processing.

Objectives to be achieved by the end of this year:

- Improvised design of ROV with better maneuverability underwater.
- Development of Computer Vision Algorithms for better visual quality.
- Testing of the retrofitted ROV with the designed Vision system under various water different water bodies like rivers, lakes etc.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

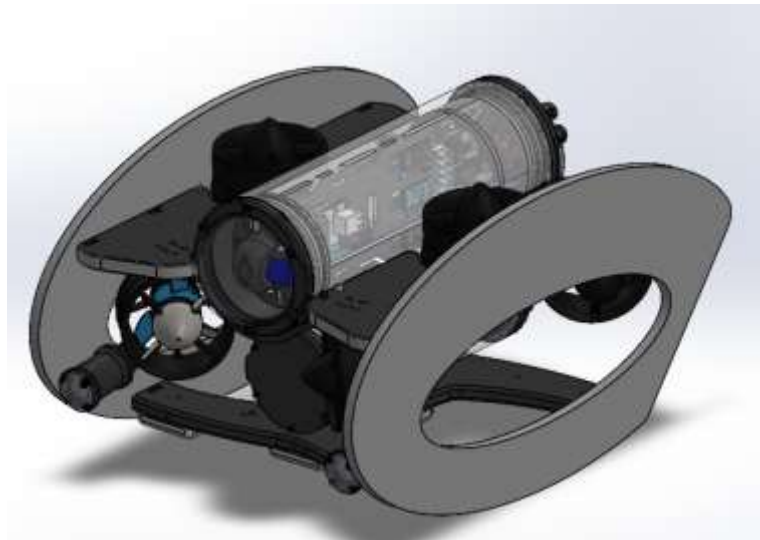


Figure 1 DESIGN OF ROV

Project-13: Image based material deformation measurement tool for Additive Manufacturing

1. Project Title : Image based material deformation measurement tool for Additive Manufacturing

2. Mentor Name : Dr. Biranchi Panda

3. Student Team Names:

I. Mr. Dodda Srinivas

II. Mr. Dhrutiman Dey

4. Project Description:

To develop an optical non-destructive deformation measurement tool for 3D printable concrete.

(The proposed tool can continuously capture the image of the target and process it for accurate deformation calculation.)

5. Project status at beginning of the Year:

Idea Level: To develop Optical, non-contact, computer assisted experimental set up for deformation measurement suitable for extrusion based additive manufacturing of cementitious material.

6. Interventions made:

- After reviewing the relevant literatures, it was decided to purchase the Intel Real-sense sensor, whose PO had already been released.
- Image processing algorithm was developed in python platform using OpenCV library.
- A hand-made layer stacking set up was developed to check the deformation and to ensure the working of the procured sensor.
- CAD model of the actual loading set up was developed and ready for 3D printing.

7. Current status:

- Algorithm for the image enhancement and segmentation is completed and will be checked once the sensor is received.
- Prototype of the loading set up was made for 3D printing.
- Upon seeing the results and needs, final realization of the final product will be manifested.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Figure 1 - Handmade layer stacking set up

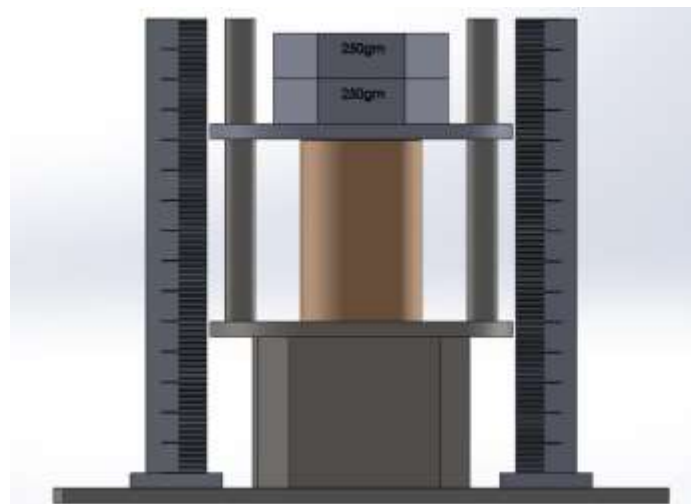


Figure 2 - CAD model of the actual loading set up.

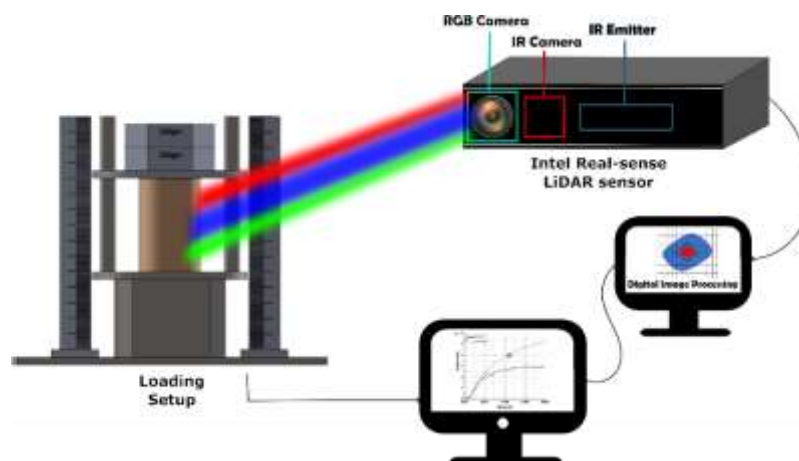


Figure 3 - Overlook of the final product to be delivered.

Project-14: Development of Polymerase Spiral Reaction based diagnostic for the detection of Japanese Encephalitis Virus

1. Project Title : Development of Polymerase Spiral Reaction based diagnostic for the detection of Japanese Encephalitis Virus

2. Mentor Name : Prof. Sachin Kumar

3. Student Team Names:

- I. Maitreyee Bhalme
- II. Akash Chandra Das
- III. Amey Rambatla

4. Project Description:

We are working on a methodology for early, accurate and cost-effective detection of JEV using state- of-the-art Polymerase Spiral Reaction (PSR) technology, an isothermal amplification method, using forward and reverse primer along with *Bst* DNA polymerase enzyme and SYBR Green dye for the detection to aid patients in early diagnosis. Our final output is providing a diagnostic test which would play a valuable and critical role in the care of illness, influence treatment modalities, and enable public health surveillance as our test meets all the characteristics of an ideal diagnostic test which include accuracy wherever used; heat-stable reagents with an extended shelf life; portability; minimal technical skills for operation; rapid, sensitive, and specific results; on-demand testing capability or minimal batch sizes; low-cost and/or cost-effective for patient care; and suitable for a broad range of clinical samples.

5. Project status at beginning of the Year:

Idea Level: Ideation complete

6. Interventions made:

- None

7. Current status:

- Procuring materials

Project-15: Versatile Standing cum Sitting Device (VSD) for speciallyabled children

1. Project Title : Versatile Standing cum Sitting Device (VSD) for Speciallyabled children

2. Mentor Name : Dr. Nelson Muthu

3. Student Team Names:

- I. Aman Rathore
- II. Yengala Sasibhushan

4. Project Description:

Design and manufacturing of a device that can be used for rehabilitation of specially abled children by allowing them to stand by taking its support, and can also transform into a chair that will allow the patient to sit when tired of standing. The VSD is designed to change from standing to a comfortable sitting position using a series of mechanisms. There are many standing devices in the market, but none provides modular adjustments and the ease of sitting and standing. The VSD provides various functions. First, a locking mechanism is provided to lock the VSD in a standing stance. Second, a dampening mechanism is provided to make sure that the VSD shifts from a standing stance to a sitting stance gradually when the lock mechanism gets disengaged. Finally, an adjustment option is offered for the height of the headrest via the use of lock knobs. It can also facilitate the patient's daily life routine while in therapy by the provision of a utility table.

5. Project status at beginning of the Year:

Idea Level: Designing stage

6. Interventions made:

- Initially the design was made suitable for patients having age 20+, changes were made in design to make it suitable for patients having age range 9-14 years.

7. Current status:

- Patented: Complete Patent Filing, Title: **A Versatile Standing cum Sitting Device for Rehabilitation and Standing Aid for Paraplegic Patients**, Patent Application No.: **202131028647 dt. 25.06.2021**
- Currently under Manufacturing by Yantrabot Technologies Pvt Ltd.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



VSD in sitting configuration

Project-16: Continuous Non Invasive BP Monitor

1. Project Title : Continuous Non Invasive BP Monitor

2. Mentor Name : Ramesh Kumar Soankar

3. Student Team Names:

- I. Kaviraj Prithvi
- II. Rohit Sagvekar
- III. Dhruv Kumar

4. Project Description:

A low non invasive continuous blood pressure monitoring system placed at the wrist that that allows minimal occlusion, small size and low error in a dynamic environment.

5. Project status at beginning of the Year:

Idea Level:

- Simple framework on algorithm to be used and general idea on components

6. Interventions made:

- Recruitment of expertise in relevant subdomains
- Prior art review , comparison and optimization.
- Novel low range preloaded actuator occupying minimum space

7. Current status:

- Fabrication of miniaturised actuator and sensor bed at the wrist region with focus on shape and alignment that allows minimum reading error.
- Development of techniques maximize comfort and calibration methods for better accuracy over a large population percentage

Project-17: Prototype development of a ring vibration isolator equipped with constrained layer damping

1. Project Title : Prototype development of a ring vibration isolator
Equipped with constrained layer damping

2. Mentor Name : Prof. Satyajit Panda

3. Student Team Names:

- I. Rahul Kumar
- II. Vishwanil Sarnaik

4. Project Description:

Different types of vibration isolators are commercially available at present, which are used to protect a delicate object from transferring vibration from the support structure or to cancel/reduce the transfer of vibration of a machine to surroundings. These available vibration isolators are broadly classified as active and passive vibration isolators. The active vibration isolators are usually comprised of sensors, actuators, controller, power supply unit, etc. So, these isolators are complex and expensive ones. Therefore, the passive vibration isolators are usually preferred, where the most popular passive vibration isolators are the rubber-based and spring-viscous damper based vibration isolators. However, rubber-based isolators cannot be used at the low frequency range since rubber materials possess very poor anti-vibration property at a low frequency. The spring-viscous damper based isolators also have the similar discrepancy to widen the frequency range of vibration isolation. So, these existing linear passive vibration isolators cannot provide fruitful vibration isolation in a wide range of frequency.

However, a wide frequency band of vibration isolation may be achieved through the nonlinear vibration isolators. Although a good number of nonlinear vibration isolators are proposed in the literature, these are not yet available commercially. In this line, presently these researchers intend to design and develop a nonlinear vibration isolator by the name of CLD-based Ring Vibration Isolator, where CLD stands for the constrained layer damping. This technology enables a vibration isolator to work within a wide frequency band of isolation starting from a low frequency, and it can also be achieved for different load ratings. Therefore, this CLD-based Ring Vibration Isolator is

expected to have a wide application starting from the home appliances to big industries leading to a scope for entrepreneurship by developing this product. However, this project is due to the development of prototype of this CLD-based Ring Vibration Isolator, where the main objectives are (a) Development of prototype of the CLD-based Ring Vibration Isolator and (b) Laboratory test of the isolator.

5. Project status at beginning of the Year:

Idea Level:

A cylindrical circular ring element made of spring steel was taken as the spring element of the proposed vibration isolator. First, its static analysis was carried out using the finite element procedure by applying a mass load, where the load and support ends are located diametrically. The results show softening structural behavior of the steel ring element under the mass load so that the nonlinear stiffness of the system decreases with the increasing load. It implies low natural frequency of the system at a high mass load, which is also verified theoretically. However, this low natural frequency of the system yields the shift of the vibration isolation frequency band towards the low frequency resulting in a wide frequency band of vibration isolation. Based on this observation, these researchers decided to develop a ring vibration isolator. However, to provide the damping in the system, the CLD tapes will be attached to the surface of the cylindrical circular ring element.

6. Interventions made:

In the later stage of theoretical analysis, it is observed that the vibration isolation does not arise in the low frequency range for the low load ratings although the circular cylindrical ring element shows softening behavior against the mass load. So, as per the theoretical analysis to date, the wall of the ring element is decided to be made in the sandwich configuration with the viscoelastic/rubber core, especially for the low mass load ratings.

7. Current status:

Presently, the wall of the cylindrical ring element is decided to be made in the sandwich configuration, where the core is made of a rubber material and the face layers are made of spring steel. This modification is done to achieve the vibration isolation at low frequency for the low load ratings. However, the work is in progress for the selection of a proper rubber material in the core and also for the optimization of geometrical dimensions of the ring isolator in a range of load rating (10 kg-50 kg). Once the material and geometrical dimensions are finalized through the theoretical design, the fabrication of the prototype will be started.

Project-18: Detection of SARS-CoV2 from sewage samples using Ultrasensitive Magnetic nanoparticle DNA probe-based PCR assay

1. Project Title : Detection of SARS-CoV2 from sewage samples using Ultrasensitive Magnetic nanoparticle DNA probe-based PCR assay

2. Mentor Name : Prof. Sachin Kumar

3. Student Team Names:

- I. Abhay Singh
- II. Aditi Rajan Madkaikar
- III. Mohamed Imdhijas A
- IV. Vijay Singh Bohara

4. Project Description:

SARS-CoV-2 is the etiological agent of COVID-19, and its ribonucleic acid (RNA) has been detected in faeces of not only symptomatic but also asymptomatic patients. The clinical observations imply that municipal wastewater of affected communities contain the virus.

Thus, Wastewater-based epidemiology (WBE) can be a game-changing technology for predicting and tracking local outbreaks of COVID-19 by facilitating:

- Early warning of disease outbreaks through viral load quantification in local wastewater treatment plants.
- Informing the efficacy of public health interventions at the local level.

Here we aim to construct a novel disease diagnostic tool called Ultrasensitive nanoparticle DNA probe-based PCR assay (UNDP-PCR) to detect SARS-CoV-2 variants.

The main objectives include:

- Design and optimization of UNDP-PCR assay for SARS-CoV-2
- Evaluation of specificity & reproducibility of UNDP PCR for SARS-CoV-2
- Screening of SARS-CoV-2 in sewage samples by UNDP-PCR to detect the spread of variants

Capturing viral genetic material via novel magnetic nanoparticle-based assay offers two advantages: Enhanced capturing of RNA by sandwich formation and Sensitive and robust quantification of RNA copy number.

Thus, two step detection via two sets of PCR primers can facilitate detection of SARS-CoV-2 variants from sewage samples.

5. Project status at beginning of the Year:

Idea Level: Ideation complete

6. Interventions made:

- None

7. Current status:

- Procuring materials

Project 19: Development of a cosmeceutical as a skin care product from plant source

1. Project Title : Development of a cosmeceutical as a skin care product
From plant source

2. Mentor Name : Prof. Latha Rangan

3. Student Team Names:

- I. Manish Kumar Gupta
- II. Nuzelu
- III. S. Sanjana

4. Project Description:

The present project provides 3, 5-dihydroxy 4', 7-dimethoxyflavone for use in cosmetic product as a possibility for curing hyperpigmentation, and improve skin ageing and fairness. The present disclosure also provides a cost efficient product for cosmeceutical industries. It may be superior alternative than other synthetic product such as kojic acid, which is known to be toxic, or products such as niacinamide serum and hyaluronic acid, which are expensive. The composition of the present disclosure is therefore a safe and cost effective alternative.

5. Project status at beginning of the Year:

Development of a cosmeceutical as a skin care product from a natural product

Idea Level:

Isolation and purification of 3,5-dihydroxy-4',7-dimethoxyflavone (DHDM)

Characterization of 3,5-dihydroxy-4',7-dimethoxyflavone (DHDM)

Product composition optimization

6. Interventions made:

Evaluation of the cell cytotoxicity of the product

Evaluation of the antioxidant of the product

ROS inhibitory activity of the product

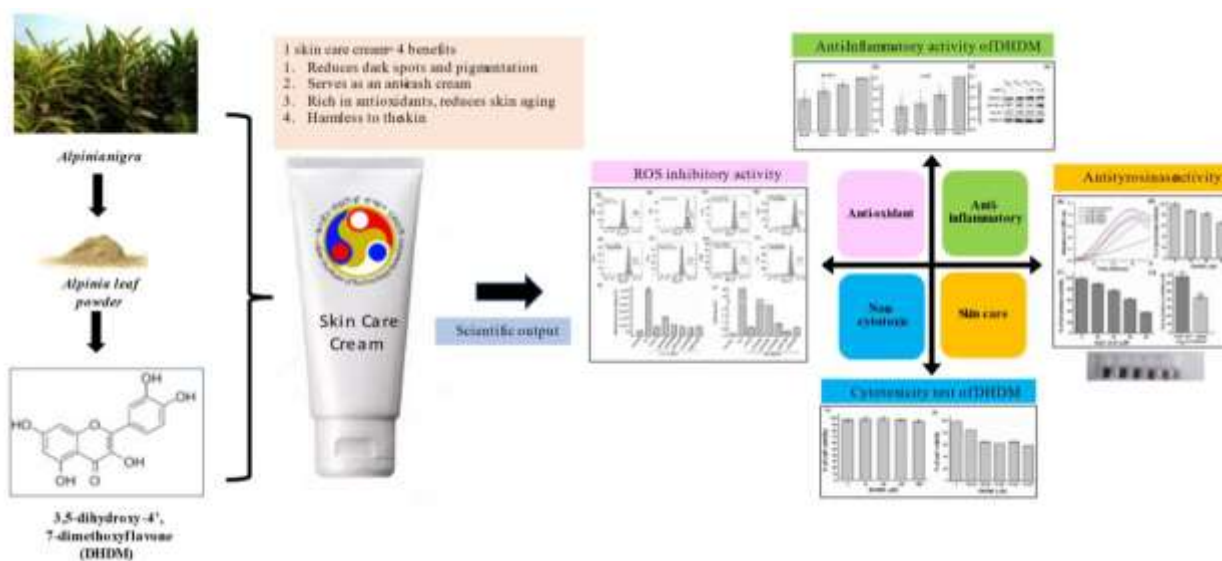
Evaluation of the anti-tyrosinase efficacy of the product

7. Current status:

Determination of functionality of the product

Testing the anti-inflammatory activity of the product

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Development of Indian water chestnut harvesting equipment

1. Project title : Development of Indian water chestnut harvesting Equipment

2. Mentor name : Prof. Supradip Das

3. Student team names:

I. Sonu

II. Aasmita Das

4. Project description:

To develop full-scale working prototypes of Indian water chestnut (Panifal/Singhra) harvesting equipment to address issues related to harvesting and test usability and ergonomic aspects.

5. Project status at the beginning of the year:

- Design work was ongoing
- Field study was remaining

6. Interventions made:

- Field study started
- Evaluated the local requirements for designing equipment
- Data collection from local community

7. Current status:

This project is intended to deliver the final finished product to farmers. The project demands to apply for patent and design registration before the commercialization of the product. On successful completion of the prototyping and testing, technology transfer and industry collaboration would be planned. We envision establishing an innovation-driven aquatic farm equipment manufacturing company 'FloatUP'.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:





■ Primery Research

Insights from interview.

1.Farmers stored mature nuts in a pot after applying ashe and in the month of february or March they put in a samall part of pond which is protected by net or some local densd leaf branch. After 40-50 days the seedlings are lifted from the nursery tanks and planted in the pond, at a spacing of 4-2meters or 2 to 3 meters when the soil of the pond.

2.If water level is more than waist in that case they have to dip in water or they use stone rock and wrapp up over it and thro in pond.

3.They apply oil to protect from water. This made from a mixture of milk from the "Akoma plant" and oil.



Water chestnut Farmer :> Sangeet Singh, Shikha Chaudhry, and Sarash Chaudhry
Badaupur Village, Gurgaon, Haryana

NewGen IEDC: Marwadi University

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Marwadi University		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. Sandeep Sancheti, Provost, Marwadi University		
Name of NewGen IEDC Coordinator	Mr. Vivek G Patel		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">• Mobile Number• e-Mail ID	7573042213 vivekg.patel@marwadieducation.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/18-19/02 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Preparing and Executing Business Models

- Date: 25 September 2021
- Outcome: To prepare business model



2. 'Luv Food Stop Waste' Movement under Azadi ka Amrit Mahotsav

- Date : 16 November 2021
- To develop a clear view of your value proposition, operations, customers, and finances



3. Sambhav: e-National Level Awareness Program

- Date : 19 November 2021
- To create awareness about funding opportunities offered by MSME



4. Program on Pitching Business & Presentation Skills Session – 1

- Date : 29 November 2021
- To prepare and present business ideas to the stakeholders



5. Program on Pitching Business & Presentation Skills Session – 2

- Date : 02 December 2021
- To prepare and present business ideas to the stakeholders



6. Career Advancement Workshop on IPR

- Date : 07 December 2021
- To get insights on copyrights, patents, designs and trademarks and trade secret protection to shield an invention from being duplicated



7. Sensitization - Wonder Women

- Date : 23 December 2021
- Create awareness about activities of MUIR Centre



8. Sensitization - Wonder Woman

- Date : 06 January 2022
- Create awareness about activities of MUIR Centre



9. Orientation of Student Startup Innovation Policy 2.0

- Date : 13 January 2022
- To spread awareness about funding opportunities and activities offered by SSIP Cell



10. ADIOS (A Dialog in Objective Silence)

- Date : 05-13 July 2021
- To think deeply, to think less about proving to the world, to not talk about Contemplation casually and to focus on improving their own clarity and peace of mind



11. Workshop on sensitization on Intellectual Property Rights (Women's Week)

- Date : 03 March 2022
- To create awareness about the benefits of Intellectual property among all sections of society.



12. Harnessing Technologies Through IPR

- Date : 12 March 2022
- To get insights on copyrights, patents, designs and trademarks and trade secret protection to shield an invention from being duplicated



13. Entrepreneurship as a Career (EDII)

- Date : 17 March 2022
- Entrepreneurship and Innovation minors will be able to sell themselves and their ideas.

14. JOSH: Have you got that in you

- Date : 03 March 2022
- To create awareness about the benefits of Intellectual property among all sections of society.



[B] To identify, develop & commercialize students' innovative ideas

1. CPI - Creativity Problem Solving & Innovation

- Date: 05 - 13 July 2021
- To develop faculty members in the area of Innovations.



2. Workshop on Laser Cutting (Engineers Day)

- Date: 15 September 2021
- To enhance capability of students in implementing disruptive technology.



3. Idea to Reality (I2R) Using Laser Cutting & Engraving

- Date: 24 February 2022
- To enhance capability of students to create innovative prototypes using Laser Cutting and Engraving process.



4. Ideation - First 'i' in I⁴6 Philosophy

- Date : 07 March 2022
- Most of the innovations came from simple creative idea however generating an idea towards innovation is kind of challenging. This workshop will focus on simple methodology by which ideas can be generated for further innovation. This workshop will be first step towards the I⁴6 philosophy.



5. 3D Printing: Hands-On

- Date : 26 March 2022
- To be aware students about a 3D Printer



6. Meeting the Match of Emerging Sectors

- Date : 30 March 2022
- To provide business insights of Emerging Markets



[C] To enhance Industry-Academia interaction

1. Smart Gujarat for New India Hackathon

- Date: 10 – 11 August 2022
- To provide students a platform to solve some of pressing problems facing in our daily lives.



2. Opportunities of Innovations in the Aerospace and Defense sectors

- Date : 24 December 2021
- To collaborate and establish networking with industries which ignites the young minds to think in the direction of innovation.



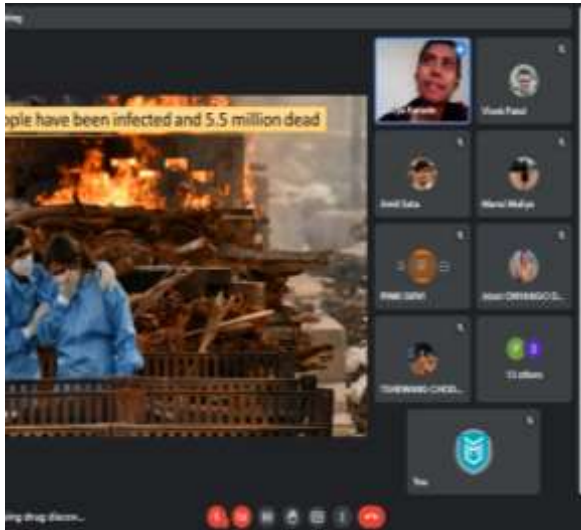
3. Building the Competence to Innovate & Design for 'Make in Global India' initiatives

- Date : 04 January 2022
- To collaborate and establish networking with industries which ignites the young minds to think in the direction of innovation.



4. Webinar - Revolutionising drug discovery with AI

- Date : 17 January 2022
- To enhance capability of students in understanding and implementing disruptive technology.



5. Entrepreneurial opportunities in EV field

- Date : 10 March 2022
- To enhance capability of students in understanding and implementing disruptive technology.



6. Internal Hackathon

- Date : 25 March 2022
- To provide students a platform to solve some of pressing problems facing in our daily lives.



7. Entrepreneurial Opportunities in the sector of IoT

- Date : 29 March 2022
- To enhance capability of students in understanding and implementing disruptive technology.



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

- Work carried out as planned

3. Other important highlights (new initiatives), if any:

- Able to provide financial assistance to 25 innovations.
- Established “Wonder Woman” in collaboration with Women Cell to promote Woman Entrepreneurs.
- Sensitized international students about Innovations and Entrepreneurship.
- Organized hands-on IP Awareness sessions and filed 20 IPR- designs on same day.
- Organized Internal Hackathon for Smart India Hackathon 2022.
- An FDP on multiple strategies for “Creativity for Problem Solving and Innovations”– A course conducted by Dr. Anil S Patel under GyanDan Initiative.
- Organized ADIOS (A Dialog in Objective Silence) to improve the decision-making abilities for the startup.

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1 : Khumb Organics

I. Project Title : Khumb Organics

II. Mentors Name : Dr. Aditya Saran

III. Student team details

- Ms. Karishma Baria
- Ms. Ruchita Rathod
- Mr. Chinmay Pitroda
- Mr. Dhaval Van

IV. Brief description of the student start-up

- Mushrooms are the good source of proteins, vitamins and minerals. The cost of production is low while the value of the product is high. It needs skills. Mushrooms grow on waste product. Here we wish to grow Mushroom on the substrate which will be prepared from the daily biodegradable waste of Marwadi University.
- Skill is critical and key for the success. In addition, we have isolated symbiont /endosymbiont of Pleurotus species responsible for nitrogen fixation. Also, we have developed a new and very low-cost method for sterilization of substrates.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

- Financial Assistance

VII. Future plan

- Protein enriched snacks will be prepared. Attractive packaging will be made for branding the snacks. Supply chain shall be developed

VIII. Important highlights

- 500 sqfeet area is under construction upscaling the production

Best Project-2 : Teleoperated Smart Transportation Vehicle (TSTV)

I. Project Title : Teleoperated Smart Transportation Vehicle (TSTV)

II. Mentors Name : Prof. Chandrasinh Parmar

III. Student team details

i. Mr. Viraj Shekhada

IV. Brief description about the student Project

Human errors, major cause for delayed deliveries and road accidents. With everything being called "smart" now a days, why would our vehicles remain mediocre? We are introducing a revolutionary and most efficient way to deliver your goods on time and safely. This is the concept of TsTv. A self - Remote Driving Truck, also known as an autonomous food truck, requires no human driver, similar to self-driving cars. Although this is more advanced than a normal self-driving car in a way as even self-driving cars have human presence to continuously monitor similarly, we can guide the car system via remote control, while our vehicle consists no human interaction objectively. This truck uses futuristic Machine Learning and AI Algorithms to identify and process roadways, other vehicles and obstacles to drive at the most efficient manner as autonomous when it loses internet connection/weak connection. Within built GPS, and live camera feed with clear vision, while its unique future all over world is. it doesn't transfer any virus including covid-19 from courier or item furthermore, because it sterilizes the item itself intime delivery supported with 222nm uvc sterilizer. Even an employment opportunity towards handicapped people's will be able to monitor the environment. We are eager to bring next level Technology to goods transport vehicles too.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.



VI. Contribution of NewGen IEDC in the same

- Financial Assistance

VII. Future plan

- Research Paper and Design Patent already published and shall go for Company registration

Annexure-A

Details of Student Projects

Project-01: Quantitative Algorithmic trading using Machine Learning

1. Project Title : Quantitative Algorithmic trading using Machine Learning

2. Mentor Name : Dr. R. B. Jadeja

3. Student Team Names:

I. Mr. Raj Panjawani

4. Project Description:

Stock price analysis has been a critical area of research and is one of the top applications of machine learning. Stock Price Prediction using machine learning helps you discover the future value of company stock and other financial assets traded on an exchange. The entire idea of predicting stock prices is to gain significant profits. Predicting how the stock market will perform is a hard task to do. There are other factors involved in the prediction, such as physical and psychological factors, rational and irrational behaviour, and so on. All these factors combine to make share prices dynamic and volatile. This makes it very difficult to predict stock prices with high accuracy. so they propose Algorithmic trading using Machine Learning.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Software

7. Current status:

- Algorithm under development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: EDM Analytics

- 1. Project Title** : EDM Analytics
- 2. Mentor Name** : Dr. R. B. Jadeja
- 3. Student Team Names:**
 - I. Ms. Nikhila Kathirisetty

4. Project Description:

Student's performance prediction is always a primary concern for any higher educational institution. Since these institutes have a large number of student's records and history, with the advancement in technology such as Artificial Intelligence and Machine Learning techniques are the best approach to predict student's future performance. Collecting past data on engineering students for a higher educational institute or employability and pre-processed data with several feature engineering techniques to choose relevant attributes. This involves training process of machine learning model by using SVM techniques and ANN for performance prediction This project will give the idea of a student's future performance in academic to an educational institute in decision making. Educational Data Mining (EDM) is a field that exploits statistical, machine learning and data mining algorithms over the different types of educational data. The main objective of EDM is to solve educational research issues.

They propose a new paradigm for students to predict success basing on mining methods which integrate novel features called as student behaviour basing on Emotional Quotient (EQ) and on a sequential feature selection used to classify key features. List of activities such as: Dealing with Your learners' expectations ,Acknowledging individual learners ,Listening to Your Learners ,Reading and responding to the feelings of individuals and groups ,Responding to learners' comments and questions ,Developing self-awareness as a teacher ,Recognizing your prejudices and preferences ,Your nonverbal communication ,Shaping and handling your feelings ,Revealing your feelings to learners ,Teaching with emotional intelligence one-to-one ,online and international students' – Nearest Neighbour, Decision Tree and Support Vector Machine are being evaluated for the proposed output model. In addition, collective approaches such as Random Woodland, Boosting, and

Bagging have been used to improve classification performance. The results obtained indicate that the student's actions and academic success have a good relationship. When the collaborative methods were used to enhance academic performance in the classificatory, an accuracy was obtained.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Software

7. Current status:

- Algorithm under development

Project-03: Smart Multipurpose Robot

1. Project Title : Smart Multipurpose Robot

2. Mentor Name : Prof. Chandrasinh Parmar

3. Student Team Names:

I. Mr. Rutvik Savsani

II. Mr. Chitrak Bhatt

4. Project Description:

Smart Multipurpose Robot is an entertainment + a friendly robot which can help and entertain persons in their daily life

Smart Multipurpose robots can be controlled from all over the world. It can greet people, guide people and can entertain people with their key features. It is an educational robot which also helps students and faculties in their daily life.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Product - Robotics, IOT & AI

7. Current status:

- Prototype is under trials and testing, Body work is to be done

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Retrofitting of 3D Printer for Pharmaceutical print et drug delivery system

1. **Project Title** : Retrofitting of 3D Printer for Pharmaceutical print et Drug delivery system

2. **Mentor Name** : Dr. Lalji Baldaniya

3. **Student Team Names:**

I. Mr. Rajesh Parmar

4. **Project Description:**

We are developing a system where Medicine in a 3D Printer using SIS/SLA 3D Printer based the Body Mass Index. The quantity of particulars is calculated based on the body mass index and customized medicine will be made

5. **Project status at beginning of the Year:**

- Ideation

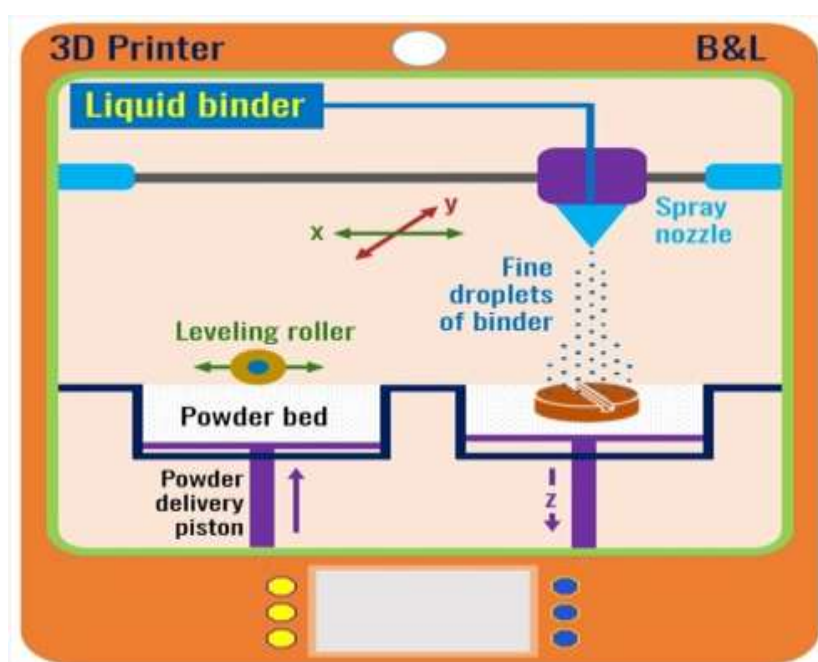
6. **Interventions made:**

- Product – Pharmaceutical

7. **Current status:**

- Ideation

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-05: Linear based dual axis solar tracking system

1. Project Title : Linear based dual axis solar tracking system

2. Mentor Name : Dr. Nikhil Chotai

3. Student Team Names:

- I. Mr. Smit Bhalodia
- II. Mr. Rushabh Joshi
- III. Mr. Kuldeep Bhojani

4. Project Description:

Parabolic trough collectors are used for industrial applications in a temperature range 15° - 40° C because flat plate collectors are not appropriate for this high temperature. In this Startup they aimed at improving the designs and effectiveness of a parabolic trough collector. Performances of parabola trough collector can be affected by losses such as convection and re-radiation from the receiver/absorber tube and improper tracking. To reduce these losses they have proposed a new design of the receiver tube which has reduced convective surface area with at least its 40% surface area covered in a material which is less thermally conductive than the base material. By improving the design in such a way, they are intending to achieve temperature up to 200° C in the absorber/receiver tube.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Product – Mechanical & Solar

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Detection of Human being trapped during Natural Disaster using UAV

1. Project Title : Detection of Human being trapped during Natural Disaster using UAV

2. Mentor Name : Dr.Tapan Trivedi

3. Student Team Names:

- I. Mr. Bhavdeepsingh Krishnawat
- II. Mr. Raj Panjawani

4. Project Description:

The recent work is mainly focused on to build a UAV mechanism that can assist the search and rescue operation in the earthquake like situations for the detection of human beings that are trapped under the debris. The important factor in search and rescue operation is timely detection and as there are areas that can't be accessed immediately and also include a risk factor of losing a life. The UAV mechanism consists of camera, thermal camera will scan the affected area and inform the location of human beings to the control station located at the site.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Product & Service - Unmanned Aerial Vehicle

7. Current status:

- Prototype Development

Project-07: Portable bone fracture detector

1. Project Title : Portable bone fracture detector

2. Mentor Name : Dr. Nikunj Rachchh

3. Student Team Names:

I. Mr. Jignesh Jani

4. Project Description:

The low-cost equipment developed in this project can identify the bone fracture (along with their size and location), which can reduce exposure of hazardous radiation of X-rays, CT-Scan, and MRI. Increase mobility of bone fracture detection in villages area, also reduce ionized radiation on children, pregnant women, elders.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Product – HealthCare

7. Current status:

- Ideation

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Mushroom farming through the substrate generated by the daily biodegradable waste procured at Marwadi University Campus

1. Project Title : Mushroom farming through the substrate generated by The daily biodegradable waste procured at Marwadi University Campus

2. Mentor Name : Dr. Aditya Saran

3. Student Team Names:

- I. Ms. Karishma Baria
- II. Ms. Chinmay Pitroda
- III. Ms. Ruchita Rathod
- IV. Mr. Dhaval Van

4. Project Description:

Mushrooms are the good source of proteins, vitamins and minerals. The cost of production is low while the value of the product is high. It needs skills. Mushrooms grow on waste product. Here we wish to grow Mushroom on the substrate which will be prepared from the daily biodegradable waste of Marwadi University. Skill is critical and key for the success. In addition, we have isolated symbiont /endosymbiont of Pleurotus species responsible for nitrogen fixation. Also, we have developed a new and very low-cost method for sterilization of substrates.

5. Project status at beginning of the Year:

- Proof of Concept

6. Interventions made:

- Product –Agriculture

7. Current status:

- Testing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Teleoperated Smart Transportation Vehicle (TSTV)

1. Project Title : Teleoperated Smart Transportation Vehicle(TSTV)

2. Mentor Name : Prof. Chandrasinh Parmar

3. Student Team Names:

I. Mr. Viraj Shekhada

4. Project Description:

Human errors, major cause for delayed deliveries and road accidents. With everything being called "smart" now a days, why would our vehicles remain mediocre? We are introducing a revolutionary and most efficient way to deliver your goods on time and safely. This is the concept of TsTv. A self - Remote Driving Truck, also known as an autonomous food truck, requires no human driver, similar to self-driving cars. Although this is more advanced than a normal self-driving car in a way as even self-driving cars have human presence to continuously monitor similarly, we can guide the car system via remote control, while our vehicle consists no human interaction objectively. This truck uses futuristic Machine Learning and AI Algorithms to identify and process roadways, other vehicles and obstacles to drive at the most efficient manner as autonomous when it loses internet connection/weak connection. Within built GPS, and live camera feed with clear vision, while its unique future all over world is. it doesn't transfer any virus including covid-19 from courier or item furthermore, because it sterilizes the item itself intime delivery supported with 222nm uvc sterilizer. Even an employment opportunity towards handicapped people's will be able to monitor the environment. We are eager to bring next level Technology to goods transport vehicles too

5. Project status at beginning of the Year:

- Proof of Concept

6. Interventions made:

- Autonomous Vehicle

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: SPC – Solar Panel Cleaner

1. **Project Title** : SPC – Solar Panel Cleaner

2. **Mentor Name** : Dr. Gaurang Joshi

3. **Student Team Names:**

I. Mr. Jenil Panara

4. **Project Description:**

While cleaning the solar panels with a piece of a cloth tied at the end of a long wooden stick, many parts remained un-clean. Also due to the edges present in the wooden stick, caused scratches over the panels. Analysing these factors, we can indicate the main problem was cleaning. So, analysing the problem we came up with our own design - 'SPC', which would overcome the problem of cleaning the panels and increase the working efficiency of the panels by 25-30%

5. **Project status at beginning of the Year:**

- Ideation

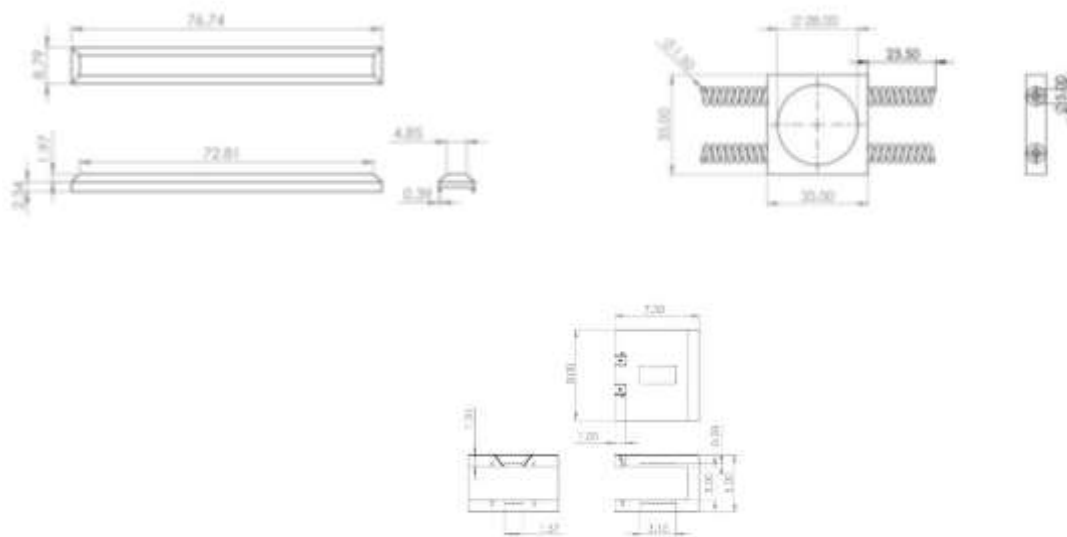
6. **Interventions made:**

- Product

7. **Current status:**

- Prototype Development

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-11: OFSTARD Construction

1. Project Title : OFSTARD Construction

2. Mentor Name : Dr. Tarak Vora

3. Student Team Names:

I. Mr. Madhav Kotecha

4. Project Description:

The Startup is about constructing a building that will be built from the renewable source materials with zero percent pollution and after it will have low operating cost as it will generate most of the energy by itself.

5. Project status at beginning of the Year:

- Proof of Concept

6. Interventions made:

- Product – Construction, Green Home Service

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: The Storyfy app

1. **Project Title** : The Storyfy app

2. **Mentor Name** : Mr. Jatin Kataria

3. **Student Team Names:**

I. Mr. Harshil Zalavadiya

4. **Project Description:**

StoryFy is an interactive story reading mobile application. It is like choose-your adventure stories where you get to choose what happens next in the story. Readers come to our platform; they read and choose the flow of the story. These Stories will be completely pre-defined and pre-written by us. Readers will have to just read.

5. **Project status at beginning of the Year:**

- Proof of Concept

6. **Interventions made:**

- Software – Social

7. **Current status:**

- App and Web Development

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-13: Get In to Dare

1. Project Title : Get In to Dare

2. Mentor Name : Dr. Devang Patel

3. Student Team Names:

I. Mr. Amish Savaliya

4. Project Description:

In the changing scenario of Education sector Educational Institutions are more active with opportunities and challenges. Various curricular activities are conducted by organizations which includes

- Competitions
- Workshops
- Hackathons
- Seminars
- Articles, letters, research papers

It is a platform for event's organizers, who can create their profile with various yearly activities, publish it and manage it with various tools, which will help to reduce their time and cost also

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Software – Event Management

7. Current status:

- App and Web Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Smart Testing Lab for Bitumen

1. Project Title : Smart Testing Lab for Bitumen

2. Mentor Name : Dr. Tarak Vora

3. Student Team Names:

I. Mr. Kush Bhanvadia

4. Project Description:

Testing in building material is very crucial; where guidelines for testing of various building materials are published by Bureau of Indian Standards. These methods require (1) to maintain various environmental conditions, (2) to put the specimen in specific conditioning as well as (3) to follow particular test methodologies. It is very important to maintain these test conditions as well as to take observations to derive test results.

It is proposed in this project that all the above-mentioned conditions to process particular test methodology will be done through an IoT based approach. IoT based approach will provide a total solution to a particular test method and will cover the following actions

1. Online control and maintenance of required environmental conditions like to maintain required ambient temperature and humidity levels.
2. Online control and maintenance of specific test conditions like placing samples in the oven at specific temperature and duration.
3. Performing specific test conditions in automated mode like to apply certain load at specific pace rate etc. as per test method.
4. Controlling all activities by installing various sensors, LVDTs or Load Cell and integrating them with a central controlled system.
5. Observation and recording of required data
6. Performing software based required calculation to derive test results.
7. Producing direct test reports without any human interference

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Advanced testing

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Development of Concrete Composite for Additive Manufacturing

1. Project Title : Development of Concrete Composite for Additive Manufacturing

2. Mentor Name : Dr Ankur Bhogayata

3. Student Team Names:

I. Mr Jaykumar Pandya

4. Project Description:

The project deals with the development of the concrete composite suitable for additive manufacturing (3D Printing) of the structural and building components. The project involves stages namely material identification, material testing, mix design of the selected materials, and extrusion of the composite appropriate for additive manufacturing. The Startup requires experimental investigations on the composites for strength and durability and for printability, stability, shape retention and layering of the extruded material in desired shape and volume

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Process & Product – Building Construction

7. Current status:

- Ideation

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Zero liquid discharge for RO water or waste water

1. Project Title : Zero liquid discharge for RO water or waste water

2. Mentor Name : Dr. Bhavesh Kanabar

3. Student Team Names:

I. Mr. Harish Prajapati

4. Project Description:

The zero Liquid discharge technology applied by using multiple membranes in RO plant, but for higher TDS water or sea water, this is not helpful. The new technique with mechanical vapour recompression technique is effective for absorption of vapour from wastewater. Then after compression the vapour is condensed in hear exchanger with incoming fluid. So, condensed water is pure water for reutilization in process.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Process – Optimization of Waste Water

7. Current status:

- Design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Digital twining of Additive Manufacturing

1. Project Title : Digital twining of Additive Manufacturing

2. Mentor Name : Dr. Bhavesh Kanabar

3. Student Team Names:

I. Mr. Jay Chaudhari

4. Project Description:

To develop defect free product on additive manufacturing process. Digital twin technique is applied to AMP. Digital Twin is virtual/digital replica of physical object that interacts with the physical object that interacts with the physical objects & its environment through sensors and exchange of data. Implementing Digital Twin to AMP Will allow us to monitor and control of the process

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Product

7. Current status:

- Preparing 3D model of 3D printer

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Multipurpose Food Making Machine

1. Project Title : Multipurpose Food Making Machine

2. Mentor Name : Prof. DhavalAnadkat

3. Student Team Names:

I. Mr. BrijrajsinhJadeja

4. Project Description:

Food industry is directly related to human health and hygiene. It is also important to provide quality foods quickly with least human intervention to provide hygienic food. There are numbers of mega kitchens across the country any many of them are using machines for some basic processes, but it was found that none of them are using a complete package of fully automatic machine. Hence a fully automated machine is to be designed and developed for food making. Novel part of the machine is use of sensor and IoT to control and monitor the functioning

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Product – Food Industry

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: IoT Enabled Oxygen Concentrator

1. Project Title : IoT Enabled Oxygen Concentrator

2. Mentor Name : Dr. Amit Sata

3. Student Team Names:

- I. Ms. Pragati Trambadiya
- II. Ms. Rajvi Joshi
- III. Ms. Varsha Chauhan

4. Project Description:

An Oxygen Concentrator is a medical device that gives you extra oxygen. Oxygen concentrator isn't the same thing as oxygen tank which delivers oxygen either in liquid or gas oxygen. Instead, the current concentrator is a machine that pulls in the air around you and filters out the nitrogen

5. Project status at beginning of the Year:

- Proof of Concept

6. Interventions made:

- Product – Healthcare

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Multipurpose EV Transportation System

1. Project Title : Multipurpose EV Transportation System

2. Mentor Name : Dr. Amit Ved

3. Student Team Names:

- I. Mr. Anuragsinh Revar
- II. Mr. Rhydham Bhalodia
- III. Mr. Bewketu Kehali

4. Project Description:

The Project aims to develop a multipurpose EV transportation system. This will include development of solar based chargers at parking, development of IOT enabled 2 EV Scooter for individual mobility and re-development of EV golf cart for carrying good or people. This E-mobility will solve the problem of energy crisis and environmental issues.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Product – EV

7. Current status:

- Ideation

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-21: Khumb Organics

1. Project Title : Khumb Organics

2. Mentor Name : Dr. Aditya Saran

3. Student Team Names:

- I. Ms. Onezabanu Qureshi
- II. Mr. Bhim Upreti
- III. Mr. Arsh Laliya
- IV. Ms. Ishita Sudani
- V. Ms. Komalba Rathod

4. Project Description:

The idea behind this project is to utilize the nutritional benefits of the oyster mushroom in such a way that it can take a place in every household. Most people, especially children don't consume mushrooms directly and hence a requirement of developing food products that look like their favourite food but have nutrition content from mushrooms. This start-up project will standardize the food and desserts recipes with mushrooms and then quality check of these products will be carried out. Based on the nutritional facts and market survey, large scale production of these products will be done.

Generally, people consume mushrooms as fresh produce but then its consumption becomes very limited. Availability of nutrients from mushrooms in different forms of food makes it easier to include in daily diet. Currently no such food products in the market exist that makes the best use of these organically grown oyster mushrooms. There is a wide market open ahead for this project to grow. The project utilizes the technology of the food and bakery industry.

Mushrooms are a good source of fibre, protein and a variety of vitamin, minerals and contain fewer calories. Vegetarian diet is restricted and cannot fulfil the requirement of proper nutrition. By providing the nutritional benefits of mushrooms in terms of different varieties of food, we can meet the nutritional requirements of the body. Enhancing the possibility of its consumption in different forms and tastes, everyone can pick the product of their choice to incorporate these in their daily diet and we can solve the problem of malnutrition.

5. Project status at beginning of the Year:

- Proof of Concept

6. Interventions made:

- Health and Nutrition

7. Current status:

- Design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-22: Vermi Compost Based Cocopit for Organic Farming

1. Project Title : Vermi Compost Based Cocopit for Organic Farming

2. Mentor Name : Dr. Archana Sharma

3. Student Team Names:

I. Ms. Hardika Shekhva

4. Project Description:

Vermi -Compost is a type of composting method in which certain species of earthworms are used to enhance the process of conversion of organic waste and for better final production. It is a mesophilic process involving microorganisms and earthworms. The earthworms consume an organic waste and it passes through their digestive tract and produce a granular form known as vermi compost. The Coconut husk is also added as one of the layers for vermicomposting. The vermicompost is prepared by this method is good for performance of plant and its growth and produces better yield

5. Project status at beginning of the Year:

- Proof of Concept

6. Interventions made:

- Product

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-23: Ball Slinger

- 1. Project Title** : Ball Slinger
- 2. Mentor Name** : Dr. Nishant Kothari
Prof. Uvesh Sipai
Ms. Ankita Mandviya
- 3. Student Team Names:**
 - I. Ms. Komal Bhagchandni

4. Project Description:

This project is going to be a NextGen bowling machine which help players in many ways, like players can set what type of balls they want to play through out many overs or next 10 to 15 balls, now there will be no need of someone who always set angles to make batsman play different types of deliveries like spinning the ball machine will automatically set itself as per the requirements, They will also add up some camera sensors which will help the coach who is sitting outside the nests to set where the next ball will be bowled and also capture the videos which a player can use later to get improvise.

In this Startup they will make a bowling machine which will not only be a player bowling or fielding partner but will also help them to analyse their performance in different conditions like a second coach.

5. Project status at beginning of the Year:

- Ideation

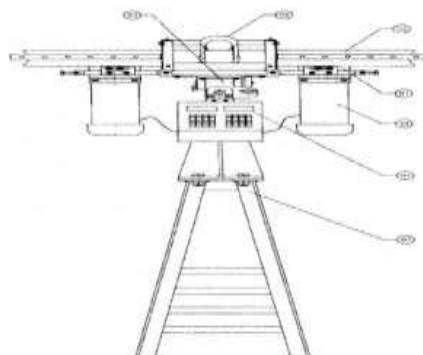
6. Interventions made:

- Product – Sports Equipment

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-24: Restoration of Eutrophic Ponds

1. Project Title : Restoration of Eutrophic Ponds

2. Mentor Name : Dr Aditya Saran
Dr. Archana Sharma
Dr. Amit Sata

3. Student Team Names:

- I. Mr. Ankit Rathod
- II. Mr. Tejasgiri Gosai
- III. Ms. Maitri Gajera
- IV. Mr. Nisarg Mehta
- V. Ms. Hiral Choma

4. Project Description:

Eutrophication is the term used to describe the biological effects of an increase in concentration of nutrients. Precisely it is difficult to set the level to identify eutrophication. Till date there is no method to restore the eutrophic effectively. This Startup is providing ultimate solution of eutrophication which is restoration. Restoration of eutrophic ponds will lead to the restoration of biodiversity.

5. Project status at beginning of the Year:

- Ideation

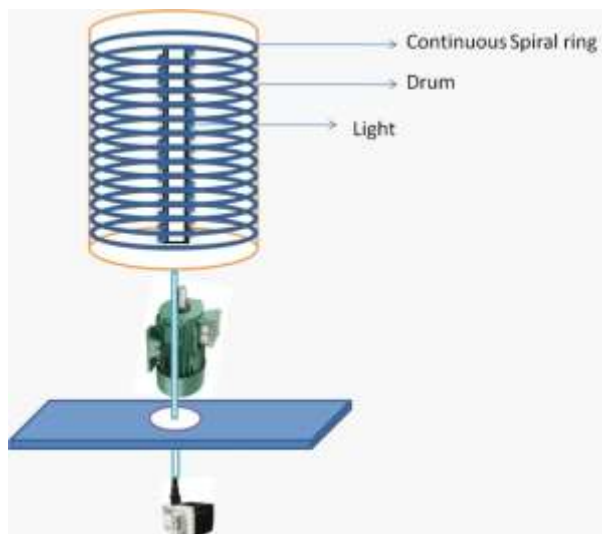
6. Interventions made:

- Product

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-25: Stubble to Sanitary Pads (S2S)

1. Project Title : Stubble to Sanitary Pads (S2S)

2. Mentor Name : Dr. Amit Sata
Prof. Vivek Patel

3. Student Team Names:

- I. Ms. Foram Kundalia
- II. Mr. Khushal Katdare
- III. Mr. Dhaval Anadkat

4. Project Description:

Globally, approx. 727 million tons of rice straw and 583 million tons of wheat straw is produced. Southern Asia contributing 215 and 194 million tons respectively. Stubble leads to pollution when burnt and if not does not generate significant income too. So, innovation proposed is to efficiently utilize the Stubble and meet the following aspects.

- Generate cellulose out of the stubble by chemical and mechanical processes.
- Prepare layers of sanitary pads using the cellulose thus generated.
- Producing packaging material for pads and disposing them too.
- Generating Source of income for the farmers.

5. Project status at beginning of the Year:

- Ideation

6. Interventions made:

- Product – Agriculture & Healthcare

7. Current status:

- Prototype Development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Jawaharlal Nehru New College of Engineering

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Jawaharlal Nehru New College of Engineering		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. K. Nagendra Prasad		
Name of NewGen IEDC Coordinator	Dr. K. M. Basappaji		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	9886139971 bas_km@jnnce.ac.in		
Financial Details	Sr. No.	Sanction Order No. / Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST–NewGen IEDC/18-19/03 Dated 13.11.2018	Rs. 60,00,000/-
	2		Rs. 47,50,000/-
	3		Rs. 60,00,000/-

1. Details of Activities Undertaken during the:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. INNOVATION & Design Thinking Workshop on 09-04-2022

- Here students get motivated with the importance of innovation and how the innovative project can be converted into product level.



[B] To identify, develop & commercialize students' innovative ideas

Nil

[C] To enhance Industry-Academia interaction

Nil

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Nil

3. Other important highlights (new initiatives), if any:

Nil

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Development of a cold bituminous mix for roads

I. Project Title : Development of a cold bituminous mix for roads

II. Mentors Detail : Mr. Arun V

III. Student team details

- i. Tejaswini R
- ii. Sritharan R

IV. Brief description of the student start-up

The construction and maintenance of road by traditional Hot Mix Technology will result in increased environmental pollution and energy consumption. Extensive research work as to be undertaken at the field of construction materials and technique to reduce energy consumption and environment pollution during road construction. The available alternative is Cold Mix Technology with increased use of Bitumen Emulsion. Preparation Ongoing, already made an MOU with NHAI, Government of India

- V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

- Funding for all materials and equipment's for this prototype
- Constant support for startup
- Encouraging students and motivate for statup and commercialization
- To accelerate the journey of idea to prototype by providing initial funding assistance.
- Finally converting student's idea into commercialization

VII. Future plan

- Commercialization

VIII. Important highlights

- Made an MOU with NHAI, Government of India

Best Project-2: Smart Irrigation Controller

I. Project Title : Smart Irrigation Controller

II. Mentor Detail : Prema K. N.

III. Student team details

- i. N. Gokul Krishna
- ii. Umesh Ramesh Hugger
- iii. Kishan S. N.

IV. Brief description about the student Project

- Due to uncontrolled irrigation system and water management, Over or under watering the crops results in various crop and soil related issues which directly effects yield and profit margin of the farmer. Irregular power supply makes it difficult for farmers to irrigate and control their farms at night time. High investment to adopt the advanced technology in farming and irrigation leaves agriculture backward. In Karnataka alone, it is estimated that nearly 7.5 L Hectare is potential number of farms to implement drip/sprinklers. Out of which, nearly 2 L Hectare are now under drip/sprinkler irrigation and is increasing annually as a result of various govt initiatives and benefits

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.



VI. Contribution of NewGen IEDC in the same

- NewGen IEDC provided required seed capital
- Through NewGen IEDC team members formed a great team when pitching of ideas was announced.
- It acts as an institutional mechanism for providing information on all aspects of start-up.
- NewGen IEDC helped in catalyzing and promoting development of this idea and providing us opportunity to work on it

VII. Future plan

- Plans for doing further research in product development
- Plans for commercializing.

Annexure-A

Details of Student Projects

Project-01: Smart Irrigation Controllers

1. **Project Title** : Smart Irrigation Controllers
2. **Mentor Name** : Prema K. N. Mr. Koushik R. Udupa &
3. **Student Team Names:**

- I. V. N. Gokul Krishna
- II. Umesh R. H.

4. **Project Description:**

Due to uncontrolled irrigation system and water management, Over or under watering the crops results in various crop and soil related issues which directly effects yield and profit margin of the farmer. Irregular power supply makes it difficult for farmers to irrigate and control their farms at night time. High investment to adopt the advanced technology in farming and irrigation leaves agriculture backward. In Karnataka alone, it is estimated that nearly 7.5 L Hectare is potential number of farms to implement drip/sprinklers. Out of which, nearly 2 L Hectare are now under drip/sprinkler irrigation and is increasing annually as a result of various govt initiatives and benefits.

5. **Project status at beginning of the Year:**

- Literature survey has been done.

6. **Interventions made:**

- Sustainability in nature. The results obtained from the study will be useful to all farmers

7. **Current status:**

- Prototype implemented in the Irrigation Platform.

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-02: Intelligent Air Quality Classifier using ML & IOT

1. **Project Title** : Intelligent Air Quality Classifier using ML & IOT

2. **Mentor Name** : Dr. Chetan K. R.

3. **Student Team Names:**

- I. Nidhishree M. P.
- II. Chetana Prabhu H.
- III. Ananya V. Bhatt

4. **Project Description:**

The researchers found that an increase in exposure to hazardous air pollutants is associated with a 9% increase in death among patients with COVID-19. This increase was really caused by the hazardous air pollutants, not by differences in wealth, other health reasons, or exposure to other types of air pollution. Essentially, the higher the air pollution index, the more it correlated to poor health outcomes due to COVID-19. The likely reason: these pollutants cause respiratory stress, thereby increasing vulnerability to severe illness from COVID-19. Hence continuous monitoring and prediction of severity levels is a big and an active challenge. In this project, we propose to acquire the air data using IoT device and sensors. The data acquired will be analyzed using Machine Learning techniques and severity classes can be predicted

5. **Project status at beginning of the Year:**

- Literature survey is in progress. Study area has been selected. Methodology to carry out this project has been finalized

6. **Interventions made:**

- Acquiring air quality parameters like CO₂, CO and methane levels with Raspberry PI and MQ2 and MQ7 sensors. Storage of air quality data in Fire store cloud database. Using a dataset of air quality parameters against which machine learning is applied. Sending email based on threshold values of air quality parameters
- Development of flask based web application for visualization and Google map to check air pollution impact at various locations

7. **Current status:**

- Project pilot implementation is in progress

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-03: Electric Mobility Vehicle for campus

1. Project Title : Electric Mobility Vehicle for campus

2. Mentor Name : Dr. Amith Kumar S. J.

3. Student Team Names:

- I. Sathvik S.
- II. Kevin Abhishek D. T.
- III. Karthik Shetty
- IV. Manohar H. S.

4. Project Description:

Present work is focused on the Design and Fabrication of Electric Mobility Vehicle for Personal use in order to overcome the aforementioned environmental problems and existing difficulty level faced by the people in the current cost price of fuel (petrol and diesel).

5. Project status at beginning of the Year:

- All required working principles are understood Gaining knowledge on current electric mobility.Literature survey is going to make it more efficient

6. Interventions made:

- Based on the objectives and scope of the project work, a close review on the following topics was carried out to understand the recent developments in the area of electric vehicles. Synergy and co-benefits of reducing CO₂,Charging infrastructure, Managing of energy Problems of using fossil fuels, Fuzzy logic classifier, Three dimensional infrastructure

7. Current status:

- Prototype prepared

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Development of Cold Bituminous Mix of Components

1. Project Title : Development of Cold Bituminous Mix of Components

2. Mentor Name : Dr. Arun V. & Dr. Anirudh N.

3. Student Team Names:

I. Tejaswini R.

4. Project Description:

The construction and maintenance of road by traditional Hot Mix Technology will result in increased environmental pollution and energy consumption. Extensive research work as to be undertaken at the field of construction materials and technique to reduce energy consumption and environment pollution during road construction. The available alternative is Cold Mix Technology with increased use of Bitumen Emulsion

5. Project status at beginning of the Year:

- Literature survey has been done. Aggregate gradation has been fixed. Material product has been finalized

6. Interventions made:

- This project has been collaboration with various government agencies like, National Highway Authority of India (NHAI), PMGSY PWD

7. Current status:

- Prototype implemented in Highways

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Laboratory Investigation on Com Pavements

1. Project Title : Laboratory Investigation on Com Pavements

2. Mentor Name : Dr. Anirudh N.

3. Student Team Names:

I. Sricharan R.

4. Project Description:

A new type of pavement, which is the main subject of this dissertation, has been used in the last few years. It is known as semi-flexible pavement, where the surface course comprises a semi-flexible material that has the potential to combine some of the best qualities of flexible and rigid pavements, namely absence of joints, long life and high bearing capacity. It also provides good protection against water ingress to the foundation since it has an impermeable surface

5. Project status at beginning of the Year:

- To develop a composite pavement mixture. Develop a design method which realistically predicts the life of a pavement including a grouted Macadam layer

6. Interventions made:

- Development of a composite pavement. The product will be useful to all Government agencies of Shimoga district like NHAI, PWD, SH, and PMGSY etc

7. Current status:

- Preparation of Prototype is on-going

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Intelligent Areca Drier

- 1. Project Title** : Intelligent Areca Drier
- 2. Mentor Name** : Dr. Jayavardhana Acharya N. & Dr. Abdul Saleem
- 3. Student Team Names:**
 - I. Krishna Kantha Holla K. G.
 - II. Naveena V.
- 4. Project Description:**

The problem faced in areca nut drying includes estimation of moisture in the boiled areca nut. And the size of the areca nut is also a parameter to be considered while drying. Hence an intelligent areca dryer is the need of the hour.
- 5. Project status at beginning of the Year:**
 - The identification of need for the drier is made after studying the complete areca nut processing. The conceptualization of drier with intelligent decision making capability is made
- 6. Interventions made:**
 - For optimal composting of yard waste
- 7. Current status:**
 - Prototype yet to be prepare
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**

Project-07: Green Energy E Vehicle Charging Station Team

1. Project Title : Green Energy E Vehicle Charging Station Team

2. Mentor Name : Prof. V. K. Deepankar & Prof. Chetan C. G.

3. Student Team Names:

- I. Karthik R.
- II. Ananya Ratna H. J.
- III. Ananya A. P.

4. Project Description:

This project also aims to integrate the ingenious design of Bhaskara's wheel concept to wind turbine and concatenate with solar power to meet the electric power requirements of the charging port

5. Project status at beginning of the Year:

- Design phase with a few designs ready to be implemented with all the suitable tools required

6. Interventions made:

- To reduce pollution caused by fossil fuel used for generating electricity.
Setting up of non-conventional energy sources for EV charging stations.
To develop a EV charging station by Using of local sources of energy (such as solar energy, wind energy) Improving the overall efficiency of electricity generation by the use of "Bhaskara's wheel"

7. Current status:

- Prototype yet to be prepare

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

Project-08: PSA Oxygen Concentrator

1. Project Title : PSA Oxygen Concentrator

2. Mentor Name : Mr. Nrupatunga C. M.

3. Student Team Names:

- I. Raghavendra G.
- II. Prabhanjana M. N.
- III. Skanda R. Naidu

4. Project Description:

This project's aim to make a working prototype of oxygen concentrator and to donate at least 5 units to local hospitals. Currently, patients are supplied with 2-5LPM of oxygen through oxygen concentrators. Maximum supply of oxygen through concentrator is 5LPM. Under critical conditions, if the patient needs greater than 5LPM then the oxygen supply is switched through oxygen cylinders. The goal of concentrator is to produce about 5LPM of 95% concentrated oxygen

5. Project status at beginning of the Year:

- The prototype is been built with the components available to test for the working same can be made a ready product with advanced components keeping in mind ease of use and cost

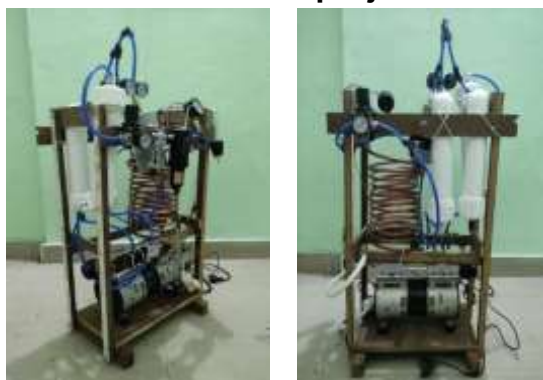
6. Interventions made:

- To provide secondary aid to the patients with low SPO2 levels.
- To support post covid recovering patients. Low cost oxygen concentrators.
- Portable design.
- Locally sourced raw materials.
- Low maintenance

7. Current status:

- Prototype prepared

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Development of Solar Heat Exchanger for Cooking

1. Project Title : Development of Solar Heat Exchanger for Cooking

2. Mentor Name : Dr. Ravi Kumar B. N.

3. Student Team Names:

- I. Vittal Amarnath Kathare
- II. Tarunkumar S.
- III. Uday R.
- IV. Vedashree N. Gowda

4. Project Description:

The solar cooking system designs available in the market are in general not user friendly. They depend on the intensity of sun light which varies throughout the day also not available in nights. The proposed project work intends to address these issues through the product "Innovative Solar Cooker"

5. Project status at beginning of the Year:

- Theoretical information regarding the product and its study is done

6. Interventions made:

- To develop solar cooking system using solar water heater to reduce the consumption of LPG. To fabricate Solar Cooker conforming to reduced consumption of LPG

7. Current status:

- Prototype Prepared

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: MSW Management Strategy for waste mini vehicle

1. Project Title : MSW Management Strategy for waste mini vehicle

2. Mentor Name : Dr. Sughosh P.

3. Student Team Names:

- I. Dattatreya S. Bhasari
- II. Pramathanath R.
- III. Roja B. C.
- IV. Ajith G. O.

4. Project Description:

The main objective of the study is to develop a software interface for collection of generated MSW and to optimize the vehicle route involved in transportation of collected waste

5. Project status at beginning of the Year:

- Travelling salesman algorithm which is a very basic version of evolutionary algorithm is applied for identifying the optimal route for the waste collection vehicle to travel in the given ward. Location of a set of predefined nodes (houses) are given along with the distance from each pair of houses and the distance from depot to every house is given as input to the algorithm

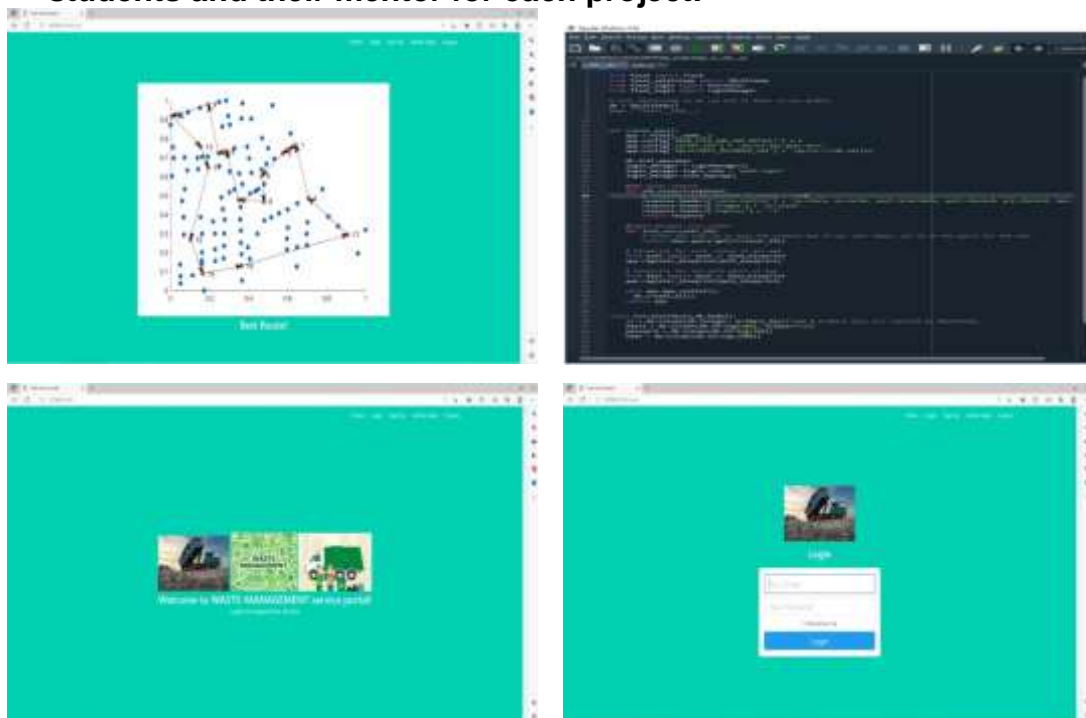
6. Interventions made:

- Development of a web interface for collection of MSW generation from a demarcated area. Process the MSW generation data and suggest an optimized path for haulers to transport the MSW. Suggest a simplified composting technique to reduce the inflow of organic components of MSW

7. Current status:

- Prototype preparing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Real Time & Secured wireless Health Monitoring

1. Project Title : Real Time & Secured wireless Health Monitoring

2. Mentor Name : Dr. Manjunatha P.

3. Student Team Names:

- I. Chethan R.
- II. Arjun Kamath

4. Project Description:

Patient Health monitoring using IoT is a technology to enable monitoring of patients outside of conventional clinical settings (e.g. in the home), which may increase access to care and decrease healthcare delivery costs. This can significantly improve an individual's quality of life. It allows patients to maintain independence, prevent complications, and minimize personal costs. This system facilitates these goals by delivering care right to the home. In addition, patients and their family members feel comfort knowing that they are being monitored and will be supported if a problem arises

5. Project status at beginning of the Year:

- Data and required codes are collected to process the sensors

6. Interventions made:

- To analyze and compute the patient health we are using Node MCU, which is the heart of this project. These smart devices are used to collect temperature, heartbeat, Pulse rate[ECG] which are used to evaluate the health condition of the patient. The final results are displayed on the android device, on8 server and also the results are sent to the user through SMS. • These data results can be stored in data base center which can be invoked from remote location at any time in an emergency case of patient without delaying the time

7. Current status:

- Prototype prepared, experiment on going

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: IoT & Web based Electrical Energy Monitoring System

1. Project Title : IoT & Web based Electrical Energy Monitoring System

2. Mentor Name : Mr. H. K. Pradeep

3. Student Team Names:

- I. Chethan
- II. Prashanth

4. Project Description:

The Project will help in solve the problem faced by both consumers and distributive company. The system consists of smart energy meter, which utilizes the features of embedded systems i.e. combination of hardware and software in order to implement desired functionality. With the help of Web Application consumer as well as service provider will get the used energy reading with the respective amount

5. Project status at beginning of the Year:

- Data and required codes are collected

6. Interventions made:

- To provide a complete details about cost with respect to units consumed by users. 2. To know which particular day the electricity consumption is more. 3. To reduce the dispute between consumer and power distributive company. 4. To reduce the electricity wastage by analyzing the power usage and thereby user can have control on electricity consumption and become energy efficient to reduce costs

7. Current status:

- Prototype developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Smart Water Quality Assessment using ML & IOT

1. Project Title : Smart Water Quality Assessment using ML & IOT

2. Mentor Name : Prof. Benak Patel M. P.

3. Student Team Names:

- I. Navaneeth N. Kamath
- II. Shashank G. Malode
- III. Neha C. B.
- IV. R. R. Shriya

4. Project Description:

Automatic real time water containment monitoring system to monitor the health of water reserved in tanks, dams or other containers of water. It will warn us automatically if there is any problem with water. This system is an integration of sensors with real time water monitoring using IOT environment. This includes microcontrollers, Wi-Fi modules and cloud storage. Whenever unacceptable quality of water is sensed, the data will be sent to respected authorities through alerts. Our proposed system will immensely help Indian population to become conscious against contaminated water as well as to stop polluting the water.

5. Project status at beginning of the Year:

- Acquiring water quality parameters like pH levels and turbidity with Raspberry PI and sensors
- Storage of water quality data in Firestore cloud database Using a dataset of water quality parameters against which machine learning is applied
- Sending email based on threshold values of water quality parameters
- Development of Android App for visualization and Google map to check a water pollution impact at various locations

6. Interventions made:

- Measure the water quality. Measuring water quality will reduce pollution that are caused due to hazardous substances and other human causes. The major concern is to find out whether water is pure or contaminated. Treating water at early stages reduce pollution, minimize the health problems that are caused due to water like water borne diseases.
- Ensuring pure water availability: Pure water should be purified in a fastest way possible before it's fully contaminated. Automate the process of checking water quality: Sensors does all of the work and it will be faster than the normal process. This immediate reporting cause to resolve the issues in less time so citizens will not face those issues for longer time

7. Current status:

- Prototype Prepared

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Cross breeding in plants using machine learning and IOT, identifying benefits to human

1. Project Title : Cross breeding in plants using machine learning and IOT, Identifying benefits to human

2. Mentor Name : Prof. Samara Mubeen

3. Student Team Names:

- I. TasmiyaMansoor
- II. Mohammed Faizan Ahmad
- III. Vivek Srinivasan
- IV. Varshini B. R.

4. Project Description:

Plants are of different species. Cultivation of plants of same species is traditional approach. Here in this project the outcome of cross breeding of plants of different species is analyzed. Different species of plant have different benefits for health. Here cross breeding in plants is done to check whether they provide more benefits to health or not using machine learning approach

5. Project status at beginning of the Year:

- Literature Survey

6. Interventions made:

- To study species and family of some plants.
- To get idea about which type of plants can be cross breaded.
- To identify whether cross breeding is possible in cultivation of plant of different species and of same family using machine learning approach. If the plants are cross breaded, the fruit obtained is the checked to see whether it is beneficial to health or not. Use IOT to see how the plant is developing after cross breeding. To develop an app which showcases the benefits of fruits to health after entering the details of plant by the farmer

7. Current status:

- Experiment is ongoing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Datta Meghe Institute of Medical Sciences

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Datta Meghe Institute of Medical Sciences		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. S. Z. Quazi, Director, R&D, DMIMS(DU)		
Name of NewGen IEDC Coordinator	Dr Abhay Gaidhane, Director, SEPH, DMIMS(DU)		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	9765404075 abhaygaidhane@gmail.com		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST–NewGen IEDC/18-19/03	Rs. 60,00,000/-
	2	Dated 13.11.2018	Rs. 47,50,000/-
	3		Rs. 60,00,000/-

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Sets of Workshop

- Introduction & Basics of Entrepreneurship
- Stages of technology development and commercialisation
- Cognitive Skills, Design and Critical Thinking Funding schemes / opportunities for start ups

- Six workshops were held on Entrepreneurship, technology development and commercialisation, Design and Critical Thinking. Total 268 beneficiaries

2. Workshop on rapid prototyping

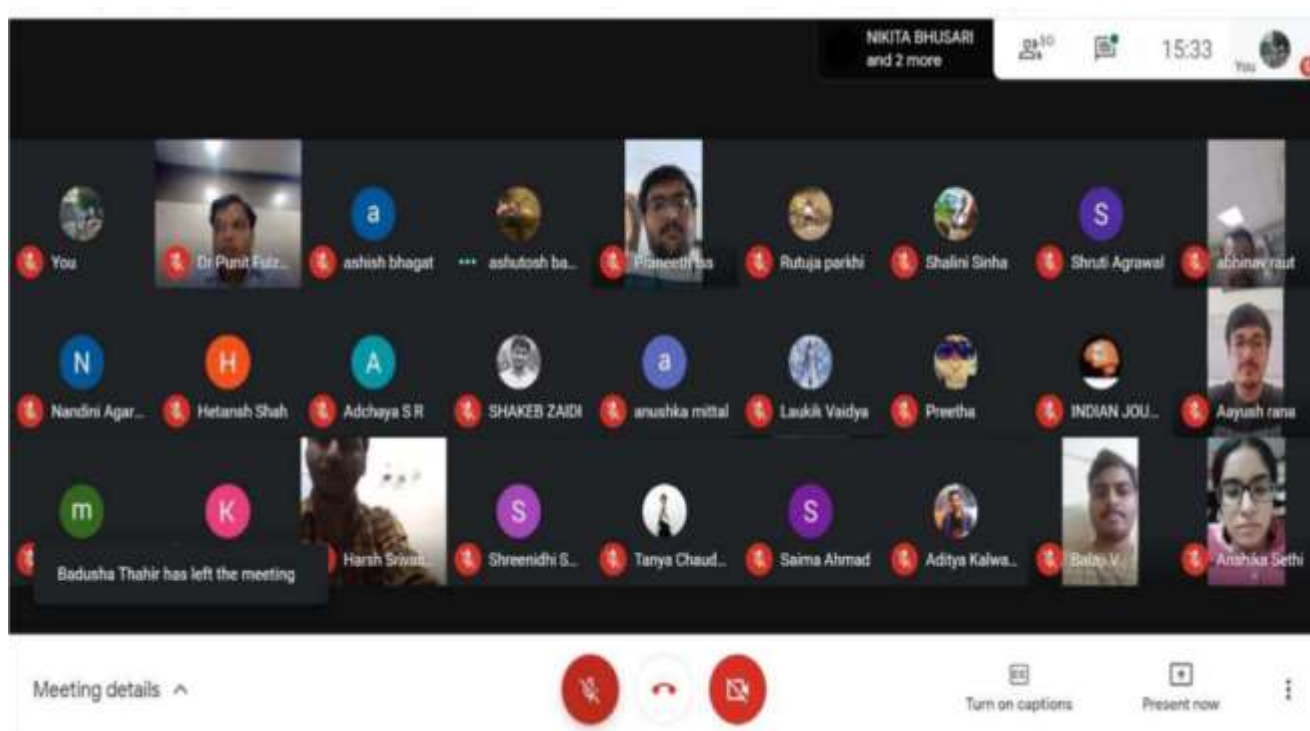
- One workshop held total of 78 beneficiaries

3. Set of workshops: 'Startup: Launching and Sustaining' programme

- Pre-Incubation Planning
- Registration of Start-up:
- Web portal for Mentoring of
- Startups:
- Seed Fund for Student Start-up Elevator-Pitch

4. Field trips to Incubation center

- YCCE TBI, CIVN VNIT



[B] To identify, develop & commercialize students' innovative ideas

1. Online Workshop on IPR, Innovation for Students and Faculty Members
 - Health science colleges – Six events
 - Engineering colleges – Five events
 - Eight events and 884 participants/ delegates
2. Seminar for Social entrepreneurship and Innovation
 - One event and 87 beneficiaries
3. Dissemination event for NEWGEN IEDC and entrepreneurship
 - In seven events nearly 1265 participants/ delegates
 - Health science colleges – Five events
 - Engineering colleges – Two events
4. Idea Competition
 - 59 ideas received and screened
 - 30 ideas were shortlisted
5. Workshop on Business plan Development – Scale-up and commercialisation
 - One workshop held 100 innovators participated
6. Business Plan Competitions
 - In one Competition, 47 beneficiaries & 3 Winners were provided special support for business development



[C] To enhance Industry-Academia interaction

1. Industry & academic linkage

Memorandum of Understanding for industrial linkage signed with Industry:

- Anatomiz3D Medtech Private Limited, Mumbai
- Venture centre Pune
- GNG - GENEXT GENOMICS PVT LTD, Nagpur
- Atmen Technovention Private Limited Pune
- Ceinsys Tech Ltd, Nagpur

Academic:

- iHealTH-AID Consortium (AIIMS Jodhpur- IIPH Gandhinagar- DMIMS)
- Indian Institute of Technology Kharagpur
- Indian Institute of Science, Bangalore

2. Interactive sessions with entrepreneurs/bankers/ investors/ potential customers. Interaction with Angels investors and Venture Capitalists

- Mr Bhagat, CEO, Atmen technovention Pvt. Ltd.
- Mr Sanas, CEO, MediAsha technology Pvt. Ltd, Pune
- Dr. Prakash Mugali, Founder chairman, Enerzi microwave systems Pvt. Ltd.
- Mr Prashant Kamat, CEO, Ceinsys Tech



11 JUNE 2021

IMPACT LECTURE SERIES



DR. PRAKASH MUGALI
FOUNDER, CHAIRMAN, MD
ENERGI MICROWAVE SYSTEM PVT. LTD.

Topic: Innovations, IP Rights and Work Life Balance

Time: 10.00AM - 11.30AM



MR. ANSHU DEY
FOUNDER, CEO
ATHEM TECH/INVENTION PVT. LTD.

Topic: Journey from Researcher to Entrepreneur

Time: 02.00PM - 03.00PM

REGISTRATION LINK: <https://forms.gle/WRUZGYNMGA3N0DK9>

DATA MEDGE INSTITUTE OF MEDICAL SCIENCES
(DEEMED TO BE UNIVERSITY)
SAWANGI (MEDGE), WARDHA

Impact Lecture Series : Part II

25th June 2021
Time: 10.00 to 11.30 AM



Dr. Gopinath Packirisamy

Head
Center of Nanotechnology
Professor, Department of Bioscience and Bioengineering
IIT Bombay

Topic: " Biomedical Application of nano fibers "

Registration Link:
<https://forms.gle/D9V99d9enw9GUVV68> or <https://bit.ly/5pyG54h>

* E certificate will be issued to the participant post lecture

Data Meghe Institute of Medical Sciences (Deemed to be University)
Sawangi (Meghe), Wardha

DR. PRAKASH MUGALI
Founder, Chairman, MD
Energi Microwave Systems Pvt. Ltd.

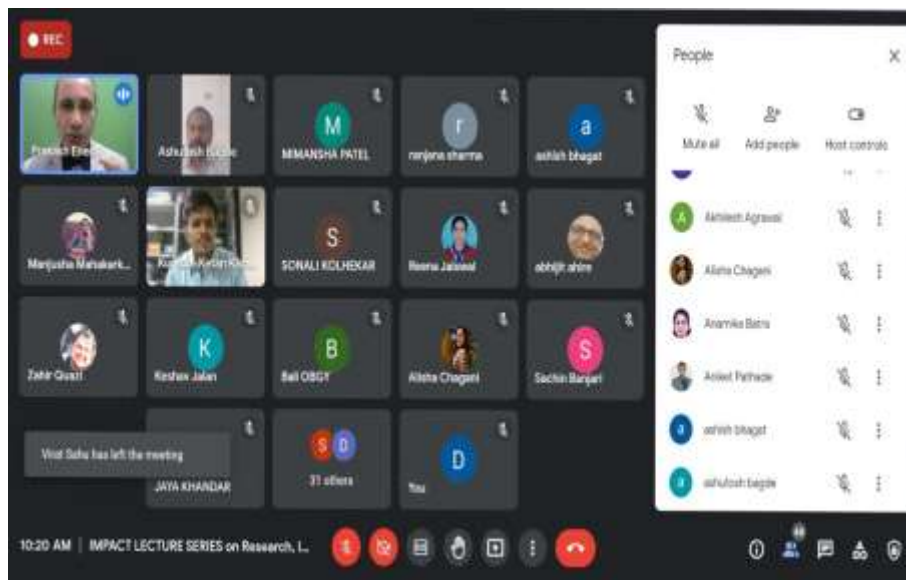
IMPACT LECTURE SERIES

TOPIC
INNOVATION IS THE NEW DNA OF ENTREPRENEURSHIP

DATE : 11 JUNE 2021
TIME: 10.00 AM - 11.30 AM

REGISTRATION LINK:
[HTTPS://FORMS.GLE/WRUZGYNMGA3N0DK9](https://forms.gle/WRUZGYNMGA3N0DK9)

DATA MEDGE INSTITUTE OF MEDICAL SCIENCES
(DEEMED TO BE UNIVERSITY)
SAWANGI(MEDGE), WARDHA



Material properties vary with size of material

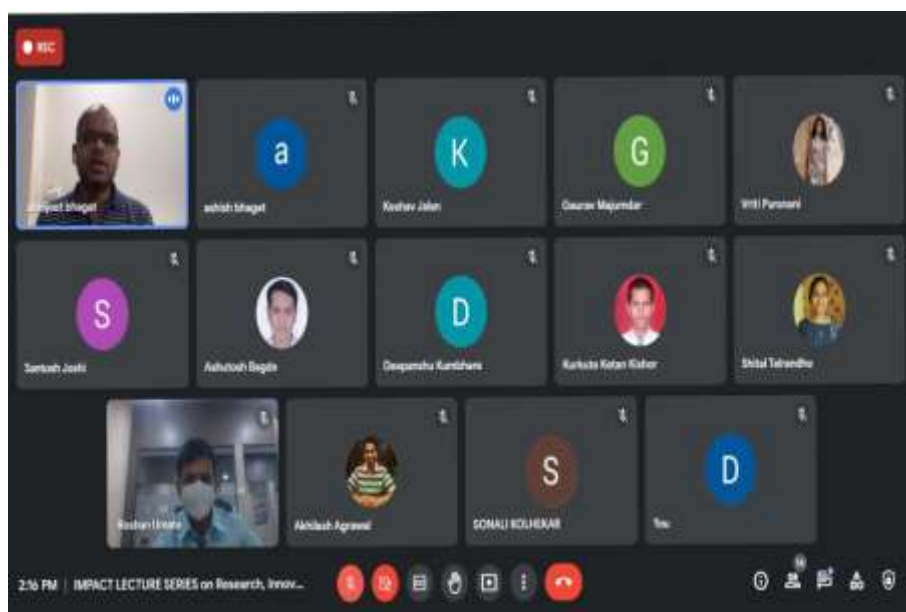
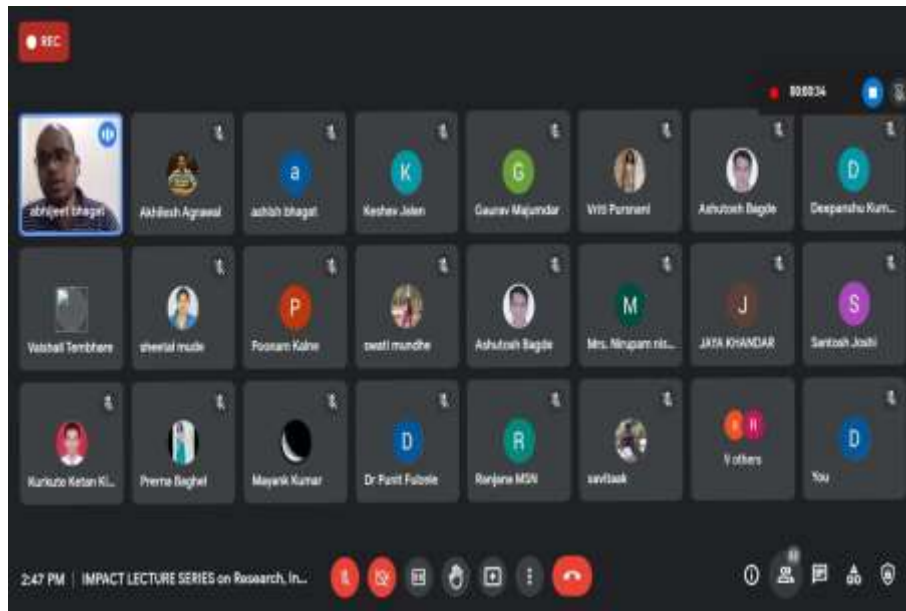


- > (Bulk) Gold is a shiny yellow metal
- > Gold (Au) nanoparticles appears red
- > Bulk gold does not exhibit catalytic properties
- > Au nanoparticle is an excellent low temperature catalyst

People

- Gopinath Pack...
- Rohan Umra
- Ashutosh Bagde
- Kurute Keta...
- dr. deepak awar
- kanika hotwar
- Diya Kumar
- 27 others

10:16 | mv-kalm-arp



COMPARISON BETWEEN TANGIBLE PROPERTY AND IP

	Rights for tangible Property	Intellectual Property
Use	Use (live, build)	Stop other from making, using
Sell	Sell	Sell
	Rent	License
	Mortgage	Mortgage
	Gift	Gift
Period to enjoy the rights	Indefinite	Definite (Different for each IP)

Participants (16)

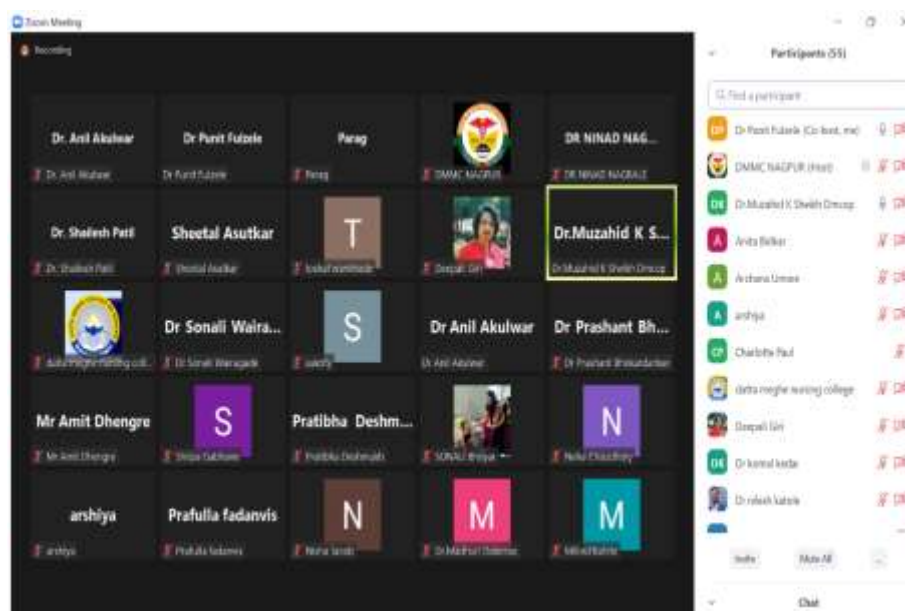
Search participants

- Dr. Parit Fulole (Zoom: me)
- Akhlesh Agrawal
- Valsabai Tembhere (Zoom: me)
- Valsabai Tembhere (Zoom: me)
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- Valsabai Tembhere (Zoom: me)

Chat

Send a message to all participants from this chat.

Send a message to all participants from this chat.





2. Deviation (shortfall) from the proposed action plan (with reasons), if any:
NIL. No significant deviation from the proposed action plan

3. Other important highlights (new initiatives), if any:

- Grants received from ICMR grant (Three grants), DRDO Grant for Bone Tissue Engineering (Jointly with IIT Kharagpur)
- Grants received from SERB grant, IMPRINT-IIC Grant for Development of Customized Implants Via Powder Metallurgy Process (Jointly with IIT Kharagpur)
- Received funding from Nidhi Prayas Grant, DST for two projects - Sleep Apnea & Device for Mandibular reconstruction
- Dr. Akhilesh Agarwal (Incubate) – Selected as ICMR Nurturing Clinical Scientist Fellowship for PhD at IISc, Bangalore
- Projects applied and under consideration
 - NIDHI TBI, presentation done.
 - SAATHI
- Received Membership of Society for Biomaterial & Artificial Organs India
- Faculty contributed as an expert panel and Jury for various hackathons and events organised by IIT Mumbai, IISc Bangalore, CSIR Kolkata
- Organised Impact lecture series - four talks by experts
- Established ITE Research Foundation, Section 8 Company
- MEDHA E-hackathon held from 14th to 28th May 22 with BETiC, IIT Bombay and VNIT Nagpur at DMIMS NewGenIEDC

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

- Total 20 Projects supported in the current year resulting in Eight Patents filed, Three Patents granted & Three start-ups incorporated
- Total 45 Projects supported to date resulting in 21 Patents filed, 13 Patents granted & Four start-ups incorporated

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialised) from the above list. The case-let should include:

Best Project-1: Customized Maxillary Appliance for Mild to Moderate Obstructive Sleep Apnea Patients

- | | |
|----------------------------------|--|
| I. Project Title | : Customized Maxillary Appliance for Mild to Moderate Obstructive Sleep Apnea Patients |
| II. Mentor Name | : Dr. Vikram Belkhode |
| III. Student team details | : |
| i. Dr. Sharayu Nimodkar | |

IV. Brief description of the student start-up

Obstructive sleep apnea is a potentially serious sleep disorder. It causes breathing to repeatedly stop and start during sleep. There are several types of sleep apnea, but the most common is obstructive sleep apnea. This type of apnea occurs when your throat muscles intermittently relax and block your airway during sleep. A noticeable sign of obstructive sleep apnea is snoring. Treatments for obstructive sleep apnea are available. One treatment involves using a device that uses positive pressure to keep your airway open while you sleep. Another option is an intraoral device (mouthpiece); we have designed a maxillary appliance which will be in the maxillary arch. In some cases, surgery may be an option, too the product is at the prototype validation stage

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

The intraoral scanning of the subject is done and the CAD designing of the appliance is done with the help of CAD software every patient has different anatomy so the appliance is designed accordingly which fits to the need of patients The appliance is designed in such a way that the base of the appliance adapts the patients maxillary hard and the soft tissue teeth and hard palate) the appliance is slightly over extended in the soft palate region to give support to the soft palate and keep it lifted to prevent down fall. Another layer of the appliance is designed keeping 2mm gap between the base appliance to make complete appliance hollow, the upper appliance is designed in such a way that it contains occlusal anatomy of the maxillary teeth so that it occludes with the mandibular occlusal teeth (in present occlusal relation) but at increased vertical dimension which is achieved by hollowing of the appliance by 2mm. The hollowed maxillary appliance has hole in anterior region in central incisor area to promote continuous in flow of the fresh are directly to the posterior's region of the tongue. One of the most important causes of OSA is fall back of the tongue



VI. Contribution of NewGen IEDC in the same

- Newgen IEDC supported the project with financial and infrastructural support for prototype development, fabrication and provided mentoring for development, regulatory approvals for the project.

VII. Future plan

- We plan to acquire necessary regulatory approvals, conduct clinical trial and commercialize the product through our startup" IRA Medical Technology Private Limited"

VIII. Important highlights

- Developed various prototypes and currently the project is under validation stage
- Indian & Australian patent filed & granted we have started our startup and named it IRA Medical Technology Private Limited. It is registered with the Ministry of Corporate Affairs

Best Project-2: Cold Plasma Disinfection Ionizer (CPDI)

I. Project Title : Cold Plasma Disinfection Ionizer (CPDI)

II. Mentor Name : Mr. Ajinkya Kottawar

III. Student team details

- i. Pranjali Sanjay Jaisingpure

IV. Brief description about the student Project

- Device works on the principle of COLD PLASMA (ionization) in which combination of negative and a positive ion is helping to kill the bacteria, virus and any kind of fungus. It takes only 60 seconds for disinfection of any objects as well as room disinfection

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.



VI. Contribution of NewGen IEDC in the same

- Newgen supported the project by providing the financial and technical expertise for the project completion. The components required for the fabrication and testing of the prototype were supported by NewGen IEDC

VII. Future plan

- Cold Plasma Disinfection Ionizer can be used in various situations, we plan to conduct further tests to analyse and improve the product and launch the same for potential consumers after proper testing and certification of the product.

Best Project-3: Reusable and adjustable surgical cutting guide for fibula free flap surgery in mandibular reconstruction

I. **Project Title** : Reusable and adjustable surgical cutting guide for Fibula free flap surgery in mandibular reconstruction

II. **Mentor Name** : Dr. Sandeep Dahake

III. Student Team

- Megha Kulkarni

IV. Brief description about the student Project

Aim: Development of adjustable and reusable surgical cutting guide for FFF surgery in mandible reconstruction

Objective: 1) Study of mandibular tumours, 2) study of fibula, 3) CAD of various components of device, 4) development of prototype using 3D printing, 5) testing of the prototype on RP assisted diseased mandible and fibula, 6) fabrication of proposed device in SS304L material, 7) testing of the actual device on 3D printed mandible and fibula, 8) case study using proposed device

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.



VI. Contribution of NewGen IEDC in the same

- This prototype was developed with the support of DMIMS NewGen IEDC grant.

VII. Future plan

- Certification of device
- Testing and validation
- Clinician feedback
- Regulatory approval
- Market launch

Annexure-A
Details of Student Projects

Project-01: Development of mini mandibular implants from novel biocompatible Zr₅₅Co₃₀Ti₁₅ metallic glasses

- 1. Project Title** : Development of mini mandibular implants from novel Biocompatible Zr₅₅Co₃₀Ti₁₅ metallic glasses
- 2. Mentor Name** : Dr. Jatin Bhatt
- 3. Student Team Names:**
 - I. Mr. Abhilasha Jain
- 4. Project Description:** Biocompatibility of the implanted materials is one of the most critical parameters that is addressed as a mandatory prerequisite during the development of biomaterials. Also, it is essential to check whether the implanted materials which are in close contact with tissues are avoiding to induce any toxic, irritating, inflammatory, allergic, or any carcinogenetic actions. Metallic glasses are considered as compatible implant candidate for biomedical applications because of their non-crystalline nature, high yield strength, high hardness, excellent corrosion, and wear resistance. Zr-based glassy alloys that are extensively studied for biocompatibility have either Cu or Al content in excess and it has been reported that excess of Cu and Al may result in biological toxicity. However, Zr₅₅Co₃₀Ti₁₅ metallic glass is free from such cytotoxic elements which are common constituents in many metallic glasses. Priorly, Vincent *et.al.* have successfully reported the biocorrosion evaluation and in vitro cytotoxicity testing according to 10993-5 specification ISO using human osteosarcoma (HOS) cell lines for novel metallic glass composition melt-spun Zr₅₅Co₃₀Ti₁₅. In his study, it was proposed that Zr₅₅Co₃₀Ti₁₅ metallic glass exhibit excellent corrosion resistance in SBF conditions with no changes in surface morphology. Also, the composition showed better cell compatibility of alloy under adopted physiological test environments. However in vivo testing has not been carried out so far. In vivo testing is crucial to evaluate the performance of material inside the human body where several other metabolic processes are carried on. The investigator proposes to conduct in vivo experiments on the same metallic glass composition to develop mini mandibular implants for use in minor and major dental surgeries. Dental implants are frequently applied to

unilateral defects in the mandible. Mini-implant survival is found similar to that of regular-diameter implants. Many patients refuse implant therapy due to high expenses. The author proposes minimally invasive and low-cost mini-implants that can benefit society at large.

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

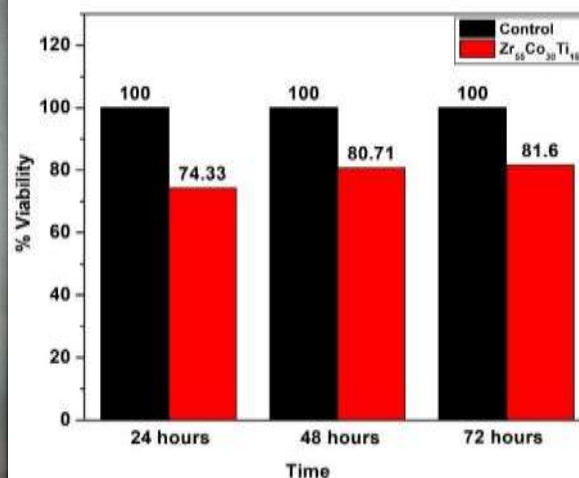
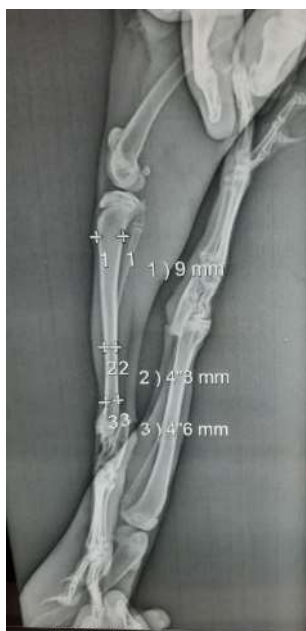
6. Interventions made:

- Validation of the PoC and development and validation.

7. Current status:

- Sample preparation and characterization in progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Tibia bone X-ray of Rabbit to design the implant

Project-02: Metal oxide- elastomer hybrid nanocoated self-sterilizing mask

1. Project Title : Metal oxide- elastomer hybrid nanocoated self-sterilizing mask

2. Mentor Name : Dr. Anju R. Babu

3. Student Team Names:

I. Sneha Bansod

4. Project Description:

Despite the extensive application of face-mask in preventing the COVID-19 spread, the cleaning and decontamination of masks is still a challenge. There are high chances of spreading the virus from contaminated masks. Antiviral nano-coating helps reduce the spread of the viruses through the handling of the masks. This project aims to design an elastomer-based antiviral coating for long-term use and secure a decontamination facility of personal protective wear. Titanium dioxides have proven to be active against viruses. In this investigation, a photoactive titanium dioxide-based elastomer nano-coating will be developed on face masks. Specifically, the project will integrate the antiviral activity and photocatalytic activity of titanium dioxide and surface hydrophobicity of elastomer to develop a mask coating capable of self-cleaning under solar illumination.

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

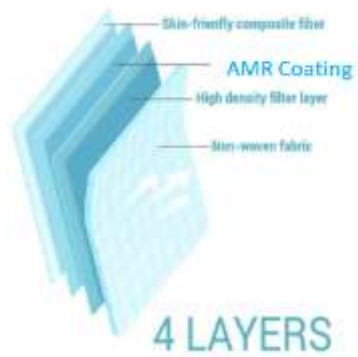
6. Interventions made:

- Development of technology and its validation

7. Current status:

The first part of the study focuses on nanocomposite material synthesis and characterisation. The TiO_2 nanoparticles are prepared using the sol-gel method. Next, the improved Hummer method is used to synthesise graphene oxide from natural graphite powder. Then rGO is synthesised using the thermal reduction method and nanocomposite synthesis using the hydrothermal method. The morphological and optical characterisation of the synthesised materials are performed using x-ray diffraction characterisation, Fourier transforms infrared, Raman spectroscopy, and impedance analyser

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Design and Development of a SMART Lower Limb Rehabilitation Robotic System

1. Project Title : Design and Development of a SMART Lower Limb Rehabilitation Robotic System

2. Mentor Name : Dr. Yogesh Singh

3. Student Team Names:

I. Rutupurna Choudhury

4. Project Description:

The existing models of rehabilitation robotic system were dealing with completely passive motion where some standard motions were provided to the system for performing continuous passive range of motion. These existing systems are unable to take the patients immediate reflexes into account. But the ever-increasing need of physiotherapy pushed the researchers to make intelligent systems to deal with patients' recovery, taking patients motivation and physiotherapeutic treatments into account. Presently, the existing commercial rehabilitation robot such as MotionMaker™ (Swortec, 2004) working on a serial manipulator system. Since serial robotic arm face the problem of error accumulation (Merlet, 2006) there is a scope of improvement by using a parallel mechanism to perform the same task. Few of the research scholar and scientist tried a few concepts to implement this idea (Bouri, 2009; Monaco, 2009; Mataee, 2015; Mohan, 2017). On the other hand, most effective therapeutic rehabilitation treatment techniques are the assistive ones. Assistive therapeutic treatments need to take patient efforts into account. This makes the system more interactive and many studies have been done to implement this possibility using impedance control (Akdoğan, 2011; Veneman, 2007; Vallery, 2008; Mohan, 2017). To minimize chances of accidental error (Wang, 2014) a lead screw-based system was suggested. Here, we are extending the idea of minimizing the chances of accidental error in the human machine interface passive parallel manipulator using shape memory alloy (SMA) spring actuation is implemented which has both the advantages minimizes error, replace the stiff actuator in continuous operation and minimizes the chances of accidental error in the human machine interface.

The proposed prototype of the system would be based on planar robotic manipulator using a soft/flexible shape memory alloy (SMA) spring as a linear actuator, which can be used to treat patient and test the feasibility of mechanism in the rehabilitation field. Also, it can be used to develop a new strategy for faster rehabilitation with the higher precision and higher accuracy, and minimize the tendency of the jerk while gait training due to the SMA spring actuators

5. Project status at beginning of the Year:

- Technology development (TRL4)

6. Interventions made:

- Validation of the PoC and development and validation

7. Current status:

- Design and FEM testing has been completed
- First POC fabricated
- The aim of this study is to investigate the capability of a 4-PR Planar robotic manipulator which can be used to treat patient and test the feasibility of mechanism in the rehabilitation field. A CAD model is designed and Analysis is done in ANSYS. This model has been designed in ADAMS for testing out the mechanism of the proposed model. Also, the FORWARD and INVERSE kinematics is done and graphs have been taken from MATLAB. Parallel robots are made up of closed kinematic chains that connect a fixed platform with a mobile one, which usually includes the end effector. Comparing to a serial robot, a parallel robot (PR) has better precision and dynamic performance, providing many applications such as rehabilitation, manufacturing, etc. Cad Modelling of the setup is done.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

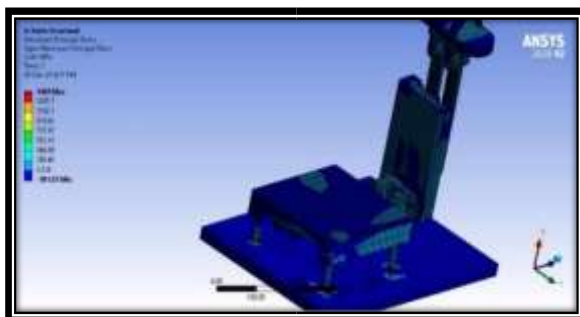
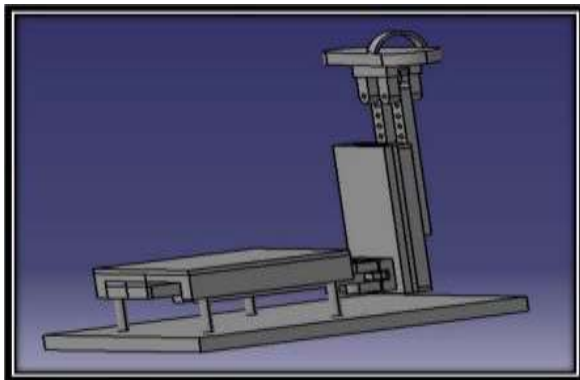
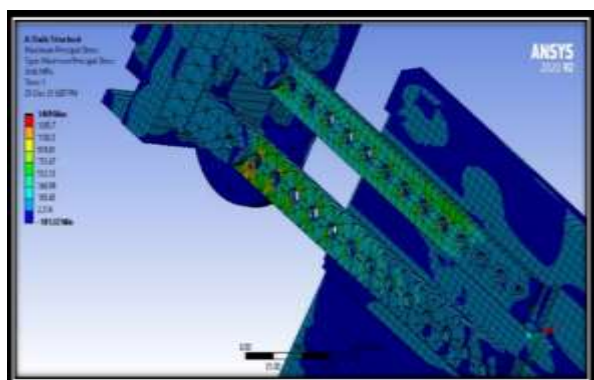


Fig ANSYS modelling of the



Project-04: 3D Bioprinting of tissue-engineered scaffolds for the treatment of lower urinary tract diseases

1. Project Title : 3D Bioprinting of tissue-engineered scaffolds for the Treatment of lower urinary tract diseases

2. Mentor Name : Prof. Bikramjit Basu

3. Student Team Names:

I. Sulobh Roy Choudhury

4. Project Description:

In recent decades, 3D bio fabrication has emerged as a potential tool to fabricate biologically active functional constructs for regenerative medicine and tissue engineering applications [1]. Regeneration or replacement of human urological tissues is required in several clinical cases, such as accidental damage, cancer, innervations disturbances, and congenital defects. However, repair and restoration of human urothelial tissues are challenging due to the extremely weak regenerative tendency of urothelial cell lines. The primary challenge is to use two different cell lines in different hierarchical tissue layers, since inner surface contains the urothelial cell lines and the smooth muscle tissues are present in the outer surface. Tissue-engineered constructs with tunable biological and physical properties are being investigated so that the fabricated scaffolds can support the regeneration of the native urinary bladder and urethral tissue. Significant limitations of conventional tissue engineering approaches are inappropriate pore size and distribution and the inability of distributing the cells inside the scaffold homogeneously. Therefore, the current research goal is to overcome these limitations and provide potential strategies for fabricating patient-specific tissue-engineered scaffolds. Bioinks are cell-laden biomaterials integrated into the additive manufacturing process to produce tissue-engineered scaffolds that mimic the extracellular matrix environment and support the adhesion, proliferation, and differentiation of the host's living cells within the 3D

printed construct. Despite significant investigation globally, the fabrication of suitable bioinks for the regeneration of tissue of very complex microarchitecture, such as urinary bladder and urethral tissue, with controlled cell distribution, high-resolution cell-deposition, vascularization, and innervations are still very challenging and not been investigated globally [2]. Therefore, we propose to fabricate the bilayer structure of bladder patch and hollow cylindrical urethra by 3D bioprinting approach using both the naturally and synthetically derived hydrogel to mimic the natural urinary tissue constructs using a pneumatic extrusion based bioprinter /bio plotter.

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

6. Interventions made:

- Development of technology and its validation

7. Current status:

- Design and FEM testing has been completed
- First POC fabricated
- The in vitro testing of 3D Bioprinter scaffold is under progress.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: 3D bioprinting of functional conduits for effective nerve repair

1. Project Title : 3D Bioprinting of functional conduits for effective nerve Repair

2. Mentor Name : Prof. Bikramjit Basu

3. Student Team Names:

I. Soumitra Das

4. Project Description:

Peripheral nerve injuries (PNIs) are a prevalent type of nerve injury, and restoration of such kind of nerve damage remains a more significant challenge in the field of regenerative tissue engineering. The conventional clinical treatment has many limitations and disadvantages, such as improper fitting and loss of native functionality, donor site morbidity, pre-existing injury to the donor nerve, donor-host mismatch, and host immune response. Moreover, the development of nerve conduits of gaps larger than 10 mm remains another issue. Therefore, this research proposal aims to develop an artificial nerve conduit for the substitution of injured peripheral nerves with patient-specific architecture, optimum mechanical properties, conductivity, and biodegradability. Here, we propose to develop a biomolecule functionalized hydrogel-based bioink to fabricate 3D tissue models using a pneumatic extrusion-based bioprinter/bio plotter. The major component of the semisynthetic-natural composite bioink is photocurable, which can significantly promote cell attachment, proliferation, differentiation, and biodegradation. However, due to inferior printing performance and insufficient mechanical properties, viscosity modifying synthetic biopolymers will be blended to improve the printability and buildability

of the bioink. Functionalized carbon nanofiber will be incorporated to improve mechanical strength and to mediate electrical field stimuli to promote neurogenic differentiation of stem cells such as neuro-2a or hMSCs, for better functionality of the printed nerve conduit. The biomolecule functionalized 3D bioprinter conductive nerve graft conduit will be tested to the adult Sprague-Dawley (SD) rat models according to ISO-10993 guidelines. The in vivo functional tissue regeneration will be assessed using histological, immunological, and electrophysiological analysis Aim and Objectives: Specific objectives of the study (indicating the methods to be followed for

achieving each objective and verifiable indicators). Peripheral nerve injuries (PNIs) are a prevalent type of nerve injury, and restoration of such kind of nerve damage remains a more significant challenge in the field of regenerative tissue engineering. The conventional clinical treatment has many limitations and disadvantages, such as improper fitting and loss of native functionality, donor site morbidity, pre-existing injury to the donor nerve, donor-host mismatch, and host immune response. Moreover, the development of nerve conduits of gaps larger than 10 mm remains another issue. Therefore, this research proposal aims to develop an artificial nerve conduit for the substitution of injured peripheral nerves with patient-specific architecture, optimum mechanical properties, conductivity, and biodegradability. Here, we propose to develop a biomolecule functionalized hydrogel-based bioink to fabricate 3D tissue models using a pneumatic extrusion-based bioprinter/bio plotter. The major component of the semisynthetic-natural composite bioink is photocurable, which can significantly promote cell attachment, proliferation, differentiation, and biodegradation. However, due to inferior printing performance and insufficient mechanical properties, viscosity modifying synthetic biopolymers will be blended to improve the printability and buildability of the bioink. Functionalized carbon nanofiber will be incorporated to improve mechanical strength and to mediate electrical field stimuli to promote neurogenic differentiation of stem cells such as neuro-2a or hMSCs, for better functionality of the printed nerve conduit. The biomolecule functionalized 3D bioprinter conductive nerve graft conduit will be tested to the adult Sprague-Dawley (SD) rat models according to ISO-10993 guidelines. The in vivo functional tissue regeneration will be assessed using histological, immunological, and electrophysiological analysis.

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

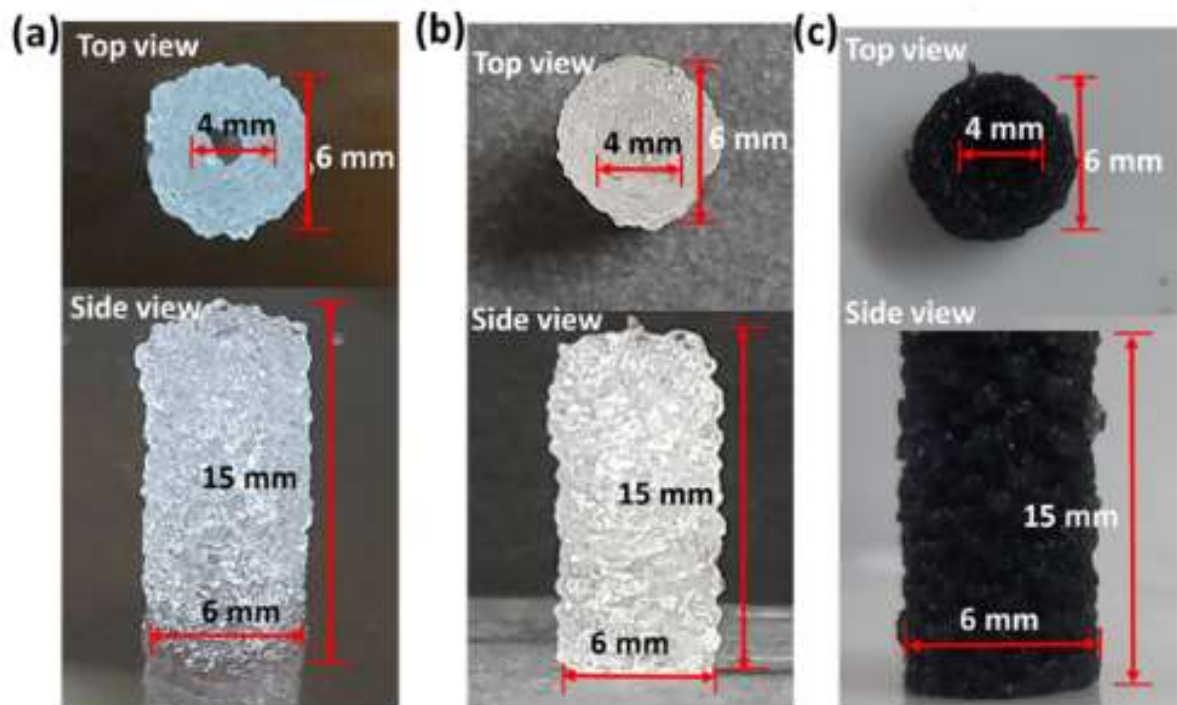
6. Interventions made:

- Development of technology and its validation

7. Current status:

- First POC fabricated
- The in vitro testing of 3D Bioprinter scaffold is under progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Cold Plasma Disinfection / Sanitization Ionizer (CPDI)

1. Project Title : Cold Plasma Disinfection / Sanitization Ionizer (CPDI)

2. Mentor Name : Mr. Ajinkya Kottawar

3. Student Team Names:

I. Pranjali Sanjay Jaisingpure

4. Project Description:

- Device works on the principle of COLD PLASMA (ionisation) in which combination of negative and a positive ion is helping to kill the bacteria, virus and any kind of fungus. It takes only 60 seconds for disinfection of any objects as well as room disinfection.
- Current status of the project: working prototype is ready for testing. Indian Patent Applied
- Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs

5. Project status at beginning of the Year:

- Technology development (TRL4)

6. Interventions made:

- Validation of the PoC and development and validation.

7. Current status:

- Working prototype is ready and testing done. Ready for commercialization.
- Indian Patent Applied

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Reusable and adjustable surgical cutting guide for Fibula Free Flap Surgery in mandibular reconstruction

1. Project Title : Reusable and adjustable surgical cutting guide for Fibula Free Flap Surgery in mandibular reconstruction

2. Mentor Name : Dr. Sandeep Dahake

3. Student Team Names:

I. Megha Kulkarni

4. Project Description:

Aim: Development of adjustable and reusable surgical cutting guide for FFF surgery in mandible reconstruction

Objective: 1) Study of mandibular tumors, 2) study of fibula, 3) CAD of various components of device, 4) development of prototype using 3D printing, 5) testing of the prototype on RP assisted diseased mandible and fibula, 6) fabrication of proposed device in SS304L material, 7) testing of the actual device on 3D printed mandible and fibula, 8) case study using proposed device

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

6. Interventions made:

- Development of technology and its validation

7. Current status:

- Working prototype is ready. Clinical validation initiates.
- Indian Patent applied Start-up incorporated

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Smartphone enabled Urinary Tract Infection detection, using colorimetric analysis of urine dipstick

1. Project Title : Smartphone enabled Urinary Tract Infection detection, Using colorimetric analysis of urine dipstick

2. Mentor Name : Ms. Jayalakshmi Jayakumar

3. Student Team Names:

I. Jyothilal

4. Project Description:

About 150 million people develop a urinary tract infection in a given year. Over the counter test kit available internationally, user has to check multiple colour changes of dipsticks to have a conclusive result. We are working on a colorimetric analysis of the dipstick and there by predicting the UTI accurately

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

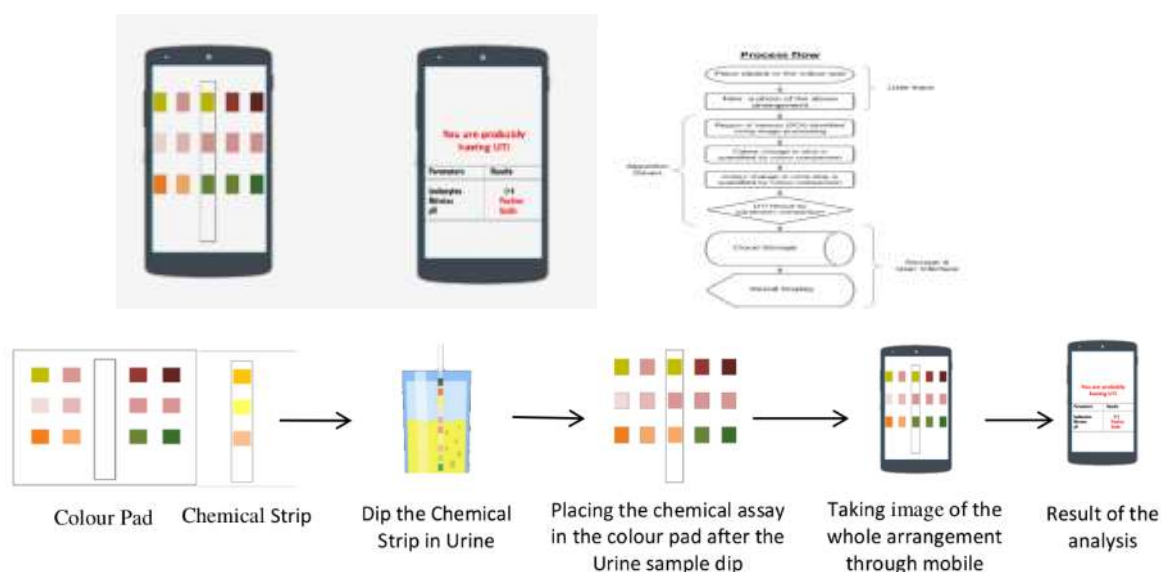
6. Interventions made:

- Development of technology and its validation

7. Current status:

- Algorithm has been developed and tested in vitro.
- Testing the Image processing module to accurately detect Start-up incorporated

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Helping Babies Breathe - AID or "HBB - AID" for Adherence, Implementation and Delivery of Helping Babies Breathe Clinical Practice Protocol to Save Newborn Lives

1. Project Title : Helping Babies Breathe - AID or "HBB - AID" for Adherence, Implementation and Delivery of Helping Babies Breathe Clinical Practice Protocol to Save Newborn Lives

2. Mentor Name : Dr. Archana Patel

3. Student Team Names:

- I. Kunal Kurhe Kolhe
- II. Savita Bhargav

4. Project Description:

- a. Birth Asphyxia is avoidable with training. 2 million babies die around delivery – due to birth asphyxia
- b. BAs trained in HBB need re-training within 6 months for skill retention
- c. 2 million babies die around delivery – due to birth asphyxia
- d. BAs trained in HBB need re-training within 6 months for skill retention

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

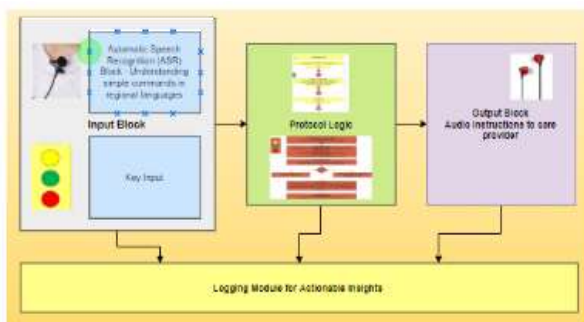
6. Interventions made:

- Development of technology and its validation

7. Current status:

- Device is being developed with four Color Coded Buttons Audio messages for Helping Babies Breath protocol have been recorded and are being edited Prototype development in progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Prototype development on Raspberry Pi 3



Project-10: Effectiveness of a Robust, Wearable, Wireless, Continuous Monitoring Ear Device (Neonatal EarSense or NEarSense or NES) for Core Body Temperature and Heart Rate in Newborns.

1. Project Title : Effectiveness of a Robust, Wearable, Wireless, Continuous Monitoring Ear Device (Neonatal EarSense or NEar Sense or NES) for Core Body Temperature and Heart Rate in Newborns.

2. Mentor Name : Dr. Archana Patel

3. Student Team Names:

- I. Cheryl S. Kolhe
- II. Savita Bhargav

4. Project Description:

Over 300,000 newborns die in India as a result of poor thermoregulation. Currently CBT of the newborn is measured by rectal or axillary thermometers and it may increase the risk of infection. Currently no devices are available in an Intensive Care Unit for thermoregulation of critically ill patients. A NOVEL wearable device on the ear of the patient, that will measure core body temperature and heart rate continuously and relay the readings with alerts using blue tooth to neonatal care unit monitor and the care giver's cell phone.

5. Project status at beginning of the Year:

- Technology development (TRL4)

6. Interventions made:

- Validation of the PoC and development and validation

7. Current status:

- Hardware Development – Completed
- a mobile application development and its testing for fetching and monitoring Realtime data using Bluetooth connectivity technique is ongoing.
- Prototype ready for testing & Validation The prototype is called "NEarSense"

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: A device for retraction and isolation of oral structures

1. Project Title : A device for retraction and isolation of oral structures

2. Mentor Name : Dr. Punit Fulzele

3. Student Team Names:

I. Ms. Ashwini Kallinkar

4. Project Description:

The device introduces a unique way for retraction and isolation of oral structures. The integrated retractor has a unique design for retraction of oral structures and includes an integrated inbuilt apparatus for suction of body fluids for the operative field. The said devices will improve the ability of the operator to maintain the operative field and remove the body fluids using a single device, thus improving the quality of the procedure, saving valuable operative time and reducing the number of instruments required for the procedure.

5. Project status at beginning of the Year:

- Technology development (TRL4)

6. Interventions made:

- Validation of the PoC and development and validation

7. Current status:

- Working prototype is ready. Commercialization in process Indian Patent applied

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: A bio-composite material for dental use

1. Project Title : A bio-composite material for dental use

2. Mentor Name : Dr. Aditya Patel

3. Student Team Names:

I. Abhir Mishra

4. Project Description:

At least 59% of endodontic failures can be attributed to apical percolation induced by leakage to address this problem we developed a novel cement comprising of dentine and GIC. The investigators evaluated in vitro the resin cement sealing

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

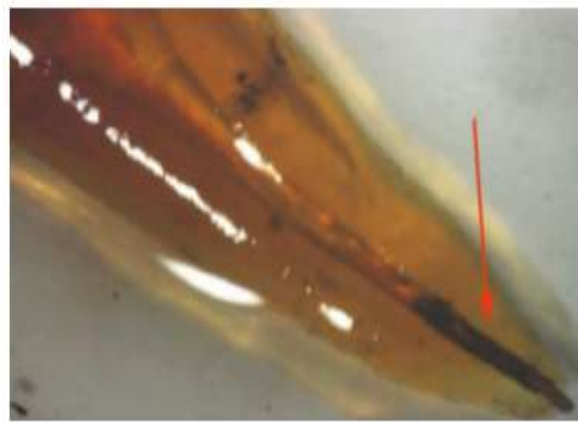
6. Interventions made:

- Development of technology and its validation

7. Current status:

- Proof of concept developed. Characterization in process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Solar drying cum moisture extraction from herbs

1. Project Title : Solar drying cum moisture extraction from herbs

2. Mentor Name : Dr. Rohan Pande

3. Student Team Names:

I. Pratik Chaudhuri

4. Project Description:

The aim of the project is to a) dry the herbs b) Extract the moisture that evaporates from the herb while it's drying. Solar dryers can be used to dry herbs using solar energy which is an environmentally friendly and sustainable.

5. Project status at beginning of the Year:

- Technology development (TRL4)

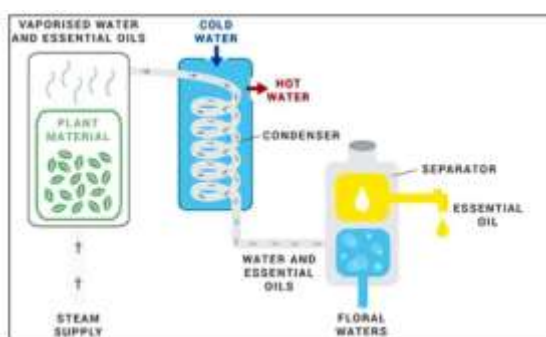
6. Interventions made:

- Validation of the PoC and development and validation

7. Current status:

- Design of components (Complete) & POC completed. Testing & validation in process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Design and development of acetabular mould to provide temporary implant during hip re-surgery.

1. Project Title : Design and development of acetabular mould to provide Temporary implant during hip re-surgery

2. Mentor Name : Dr. Aditya Kekatapure

3. Student Team Names:

I. Akhilesh Agarwal

4. Project Description:

Periprosthetic joint infection (PJI) is a surgical challenge in total hip arthroplasty (THA). Two-staged revision with resection of the hip components and treatment with a high-dose antibiotic spacer followed by hip re-implantation is the gold standard for chronic PJI eradication. We aim to present our innovative and cost-effective way of preparing a custom-fit, antibiotic-impregnated articulating cement spacer using 3D printed acetabular that requires no special instrumentation and takes very little time to prepare.

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

6. Interventions made:

- Development of technology and its validation

7. Current status:

- Prototype ready and clinical validation completed:
- We have designed an acetabular mold in a different size to meet the requirement.
- The mold has been fabricated in 3D printer and a case study to prove the successful utilisation was conducted.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Modified IV Cannula for Stimulation & Location of Nerves for Peripheral Nerve Block

1. Project Title : Modified IV Cannula for Stimulation & Location of Nerves for Peripheral Nerve Block

2. Mentor Name : Mrs. Priti Bhagat

3. Student Team Names:

- I. Bhupesh Sarode
- II. Subodh Daronde

4. Project Description:

Many surgical procedures of upper limbs & lower limbs are performed under regional anesthesia & peripheral nerve blocks. WE have designed an attachment for nerve stimulation which can be used along with an insulated needle. The proof of concept was fabricated by using FDM 3D printers. The prototype is under testing.

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

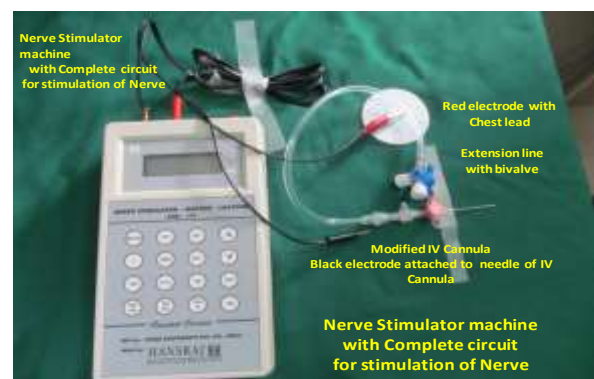
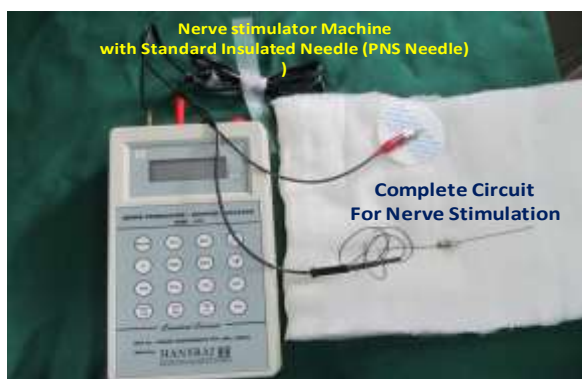
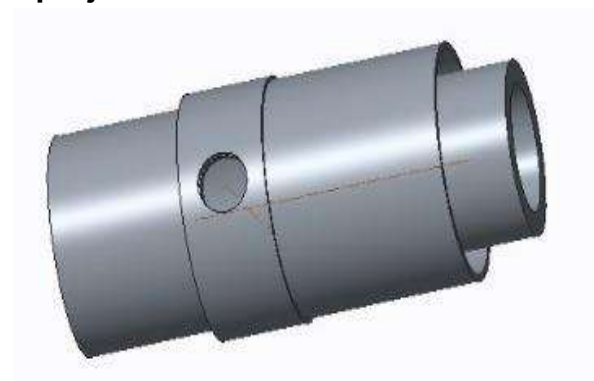
6. Interventions made:

- Development of technology and its validation

7. Current status:

- The proof of concept was fabricated by using FDM 3D printers. The prototype is under testing.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: A novel gait corrective device for osteochondroma patients

1. Project Title : A novel gait corrective device for osteochondroma Patients

2. Mentor Name : Dr. Renu Vyas

3. Student Team Names:

I. Ms. Diksha Jutshi

4. Project Description:

Gait analysis is a manner to evaluate the dynamic posture and coordination in the course of movement. This evaluation is a method to evaluate, record, and make any important corrections for a clean gait. The movement from one foot strike to the next on the same side is referred to as a complete gait cycle, as shown in figure 1. The stance phase lasts roughly 62 percent of the cycle and starts with foot strike and finishes with toe-off. The swing phase lasts for the final 38 percent of the cycle, starting with toe-off and ending with foot strike. The initial foot strike, or initial contact, is given a percentage of zero. A hundred percent refers to the number of times the same limb strikes the ground. Foot strike, opposite toe-off, reversal of fore shear to aft shear, opposite foot strike, toe-off, foot clearance, tibia vertical, and repeated foot strike are the events of the gait cycle that define the functional periods and stages of the cycle. When a person is unable to walk normally, they have aberrant gait or a walking anomaly. The abnormal gait is shown in figure 2 and this could be caused to injuries, underlying conditions, or leg and foot difficulties. Based on the symptoms or appearance of an individual's walk, it is classified into one of five kinds as spastic gait, scissor gait, steppage gait, waddling gait and propulsive gait. We propose to make a device that is an automatic corrective footwear which works by taking the pressure readings at the foot and counterbalancing it to the ideal values by bringing about actuation from either of the sides of the foot. The pressure at the major pressure points at the base of the foot remains in the same range for a particular weight range. This footwear is customized according to the weight range, the ideal pressure of the major pressure points is coded into the device and the comparison and the counterbalancing are based on it. Actuation is executed via the direction of rotation of motors. The error between the ideal and the present values of the pressure is measured at

every loop run and signals are passed to the motors. Actuation continues until the error is minimized.

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

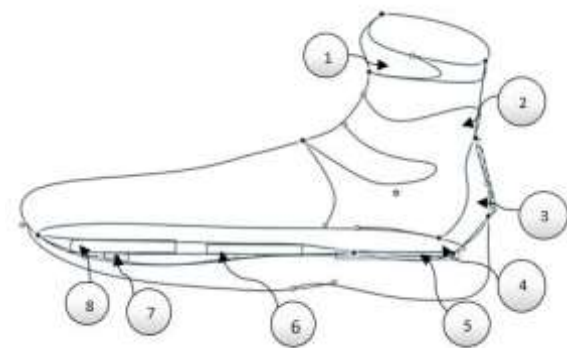
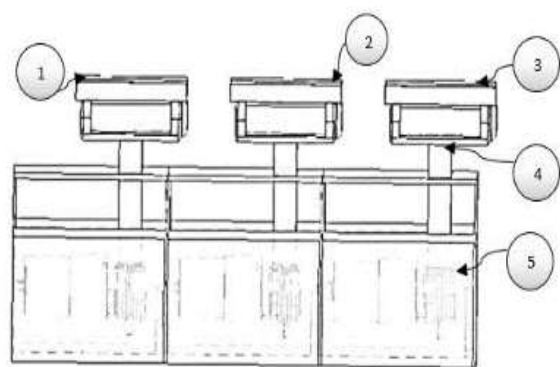
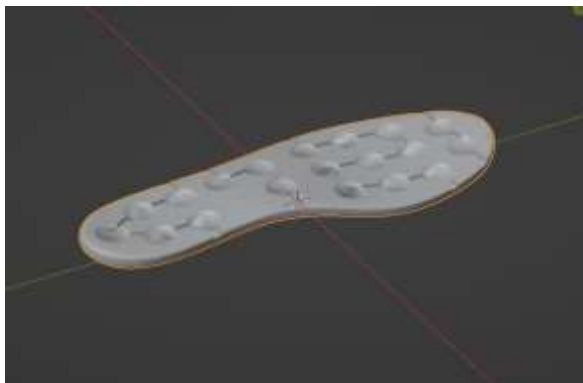
6. Interventions made:

- Development of technology and its validation

7. Current status:

- First POC fabricated Validation in progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Digital Jaw Articulator

1. **Project Title** : Digital Jaw Articulator

2. **Mentor Name** : Dr. Ashutosh Bagde

3. **Student Team Names:**

I. Balaji Paikrao

4. **Project Description:**

Articulation is an important step in prosthodontics and the use of technology in this process makes it easy and accurate so in this article, i will give some details about it and compare it with conventional articulators and summaries the advantages and dis advantages of digital articulator.

5. **Project status at beginning of the Year:**

- Research to proof feasibility (TRL3)

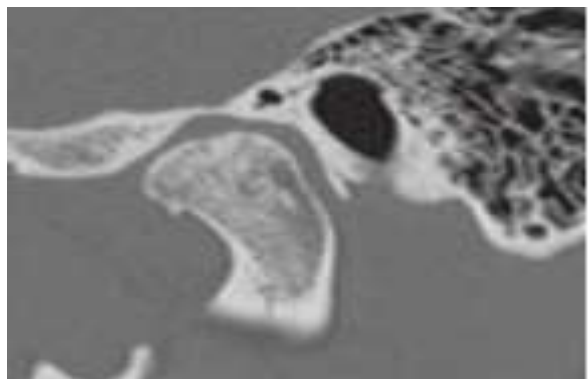
6. **Interventions made:**

- Development of technology and its validation

7. **Current status:**

- Design the articulator and a simulation study has been conducted. The prototype is ready & under testing.

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-18: Customized Maxillary Appliance for Mild to Moderate Obstructive Sleep Apnoea Patients

1. Project Title : Customized Maxillary Appliance for Mild to Moderate Obstructive Sleep Apnoea Patients

2. Mentor Name : Dr. Vikram Belkhode

3. Student Team Names:

I. Sharayu Nimodkar

4. Project Description:

Obstructive sleep apnea is a potentially serious sleep disorder. It causes breathing to repeatedly stop and start during sleep. There are several types of sleep apnea, but the most common is obstructive sleep apnea. This type of apnea occurs when your throat muscles intermittently relax and block your airway during sleep. A noticeable sign of obstructive sleep apnea is snoring. Treatments for obstructive sleep apnea are available. One treatment involves using a device that uses positive pressure to keep your airway open while you sleep. Another option is an intra oral devices (mouthpiece) we have designed a maxillary appliance which will be in maxillary arch. In some cases, surgery may be an option too the product is at the prototype validation stage

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

6. Interventions made:

- Development of technology and its validation

7. Current status:

- Developed various prototypes and currently the project is under clinical validation stage
- Indian & Australian patent filed & granted.
- Start-up incorporated

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Smart detection system for endodontic files

1. Project Title : Smart detection system for endodontic files

2. Mentor Name : Dr. Punit Fulzele

3. Student Team Names:

I. Akhilesh Agarwal

4. Project Description:

Repeated usage of single used endo file. Excessive torque or stress applied to endo file. Need to objectively measuring fatigue on the file. Functional requirements. The device should prevent the transfer of excess stress on the file. The device should not interfere with existing clinical protocol and easy to use. The device should alert regarding excess stress or torque

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

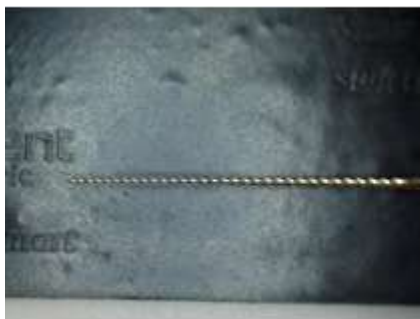
6. Interventions made:

- Development of technology and its validation

7. Current status:

- Proof of concept ready. Validation in process.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Iodine cross linked carbon nanodot coated antibacterial polymer surface for reducing biomedical catheter mediated HAIs

1. Project Title : Iodine cross linked carbon nanodot coated antibacterial Polymer surface for reducing biomedical catheter Mediated HAIs

2. Mentor Name : Dr. Santanu Dhara

3. Student Team Names:

I. Sayan Mukherjee

4. Project Description:

Hospital-associated infections (HAIs), infections acquired by patients during care in a hospital, remain a prevalent issue in the healthcare field. These infections often occur with the use of indwelling medical devices, such as endotracheal tubes (ETTs) or urinary catheters, which can result in ventilator-associated pneumonia (VAP) or Catheter-associated urinary tract infection (CAUTI). The most commonly available biomedical catheters are made of synthetic materials like silicone, polyethylene (PE), or polyvinyl chloride (PVC) which typically do not have antibacterial properties.

5. Project status at beginning of the Year:

- Research to proof feasibility (TRL3)

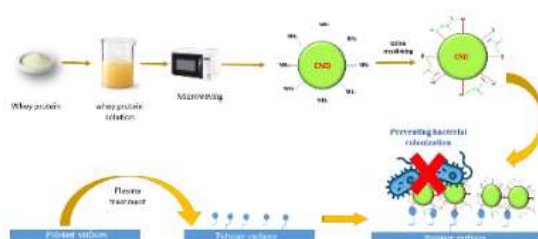
6. Interventions made:

- Development of technology and its validation

7. Current status:

- Material has been synthesized and characterization has been done. The thin layer of antibacterial coated material has been formed and the validation is in progress

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Chitkara University

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Chitkara University, Punjab		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. Archana Mantri Vice Chancellor, Chitkara University, Punjab		
Name of NewGen IEDC Coordinator	Mr. Sagar Juneja		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	9625441043 sagar.juneja@chitkarauniversity.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen-IEDC/18-19/05 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

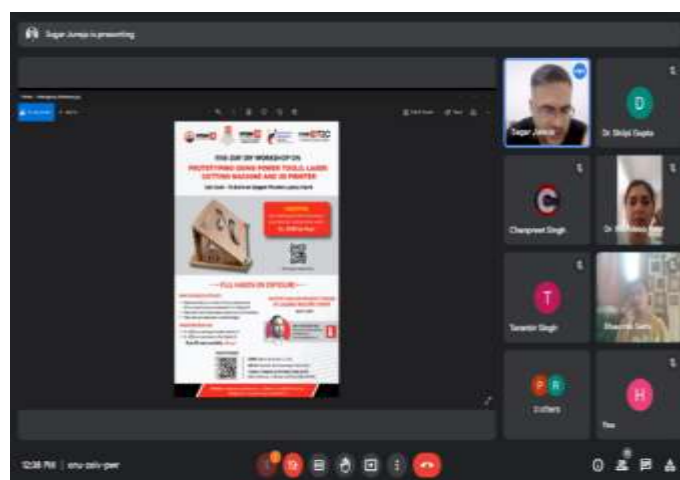
1. Five-day DIY Workshop on Prototyping

- A five-day hands-on workshop on prototyping was conducted from March 28 to April 1, 2022.
- A total of 20 participants including students, and faculty members attended and obtained hands-on experience on working with different prototyping tools available at NewGen IEDC.
- Mr. Chanpreet Singh and Mr. Krishna Das from Chitkara University were the resource persons



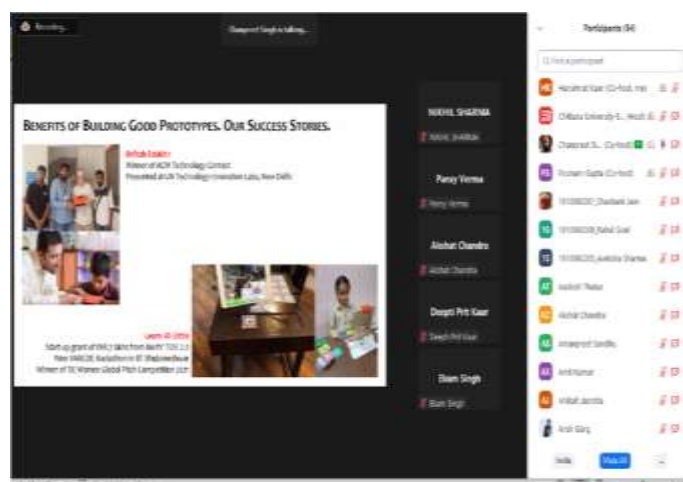
2. Webinar on 'Importance of Prototyping and Prototyping Techniques'

- A webinar on 'Importance of Prototyping and Prototyping Techniques' was organized for the students as well as faculty members to emphasis on the importance of doing hardware prototyping. It was held in March 2022 and was delivered by Mr. Sagar Juneja – Coordinator, NewGen IEDC. Close to 50 participants attended the session



3. Awareness Session about Funding Opportunities

- On February 26, 2022, an awareness session was conducted on procedure of submitting projects and winning prototyping funding for project development and it was titled 'Know How to Receive Funds for Building Your Projects'.
- In this session Mr. Sagar Juneja – Coordinator, NewGenIEDC talked about the facilities available at NewGen IEDC for prototyping support.
- Close to 60 students and faculty members participated in it



4. Awareness Session for Students

- On Dec 17, 2021, an awareness session was conducted for students on the topic 'How Students can benefit from Different Research and Innovation Activities of CURIN'.
- In this session Mr. Sagar Juneja – Coordinator, NewGenIEDC talked about various opportunities available for students under NewGenIEDC scheme.
- Close to 150 engineering students participated in it



5. Five-day Hands-on Workshop on Woodwork Up-Skilling

- This workshop was organized with an objective to teach students elements of product design and it was held during Dec. 13-17, 2021.
- Students built a 'laptop stand' in this workshop which they took away with them for personal use.
- They learned to use power-tools, hand-tools, and laser cutting machine in this workshop.
- 9 students participated in this workshop that was delivered by Mr. Chanpreet Singh – Co-coordinator, NewGenIEDC



6. Idea-Thon Finals: 5 Minute Project Pitch

- CURIN organized Idea-Thon to provide a platform for students to bring forth their most innovative ideas that have good commercial potential.
- The objective of the competition was to nurture those ideas and bring them to a level where they can be pitched for prototyping funding from NewGenIEDC.
- 50 ideas were received and 26 were shortlisted for final pitch that was held during Dec 6 and 7, 2021.
- Jury panel included Dr H.K.Mittal (Chairman-SISF Committee), Dr Jagdish Lal Raheja (Former Chief Scientist, CEERI) and Mr. Brijesh Aggarwal (Serial Entrepreneur)



7. Awareness Sessions on the Funding Opportunities for Student Projects

- An orientation session on how to win funding for innovative projects was conducted for first year engineering students on Nov 30, 2021.
- Four talks were held, in which different speakers talked about different types of funding opportunities available in the University for Student Projects.
- Sagar Juneja-Coordinator, NewGenIEDC spoke about NewGenIEDC scheme
- The session was attended by more than 500 students.



8. Five-day Rapid Prototyping Workshop

- Chitkara University NewGenIEDC conducted a five-day hands-on workshop on 'Design Techniques and Laser Cutting Operations' during Oct 11-15, 2021.
- The objective as to train students to how to build good quality prototypes using rapid prototyping technique.
- Mr. Chanpreet Singh – Co-Coordinator, NewGenIEDC and Mr. Gurpreet Singh – AP, Mechatronics delivered the sessions



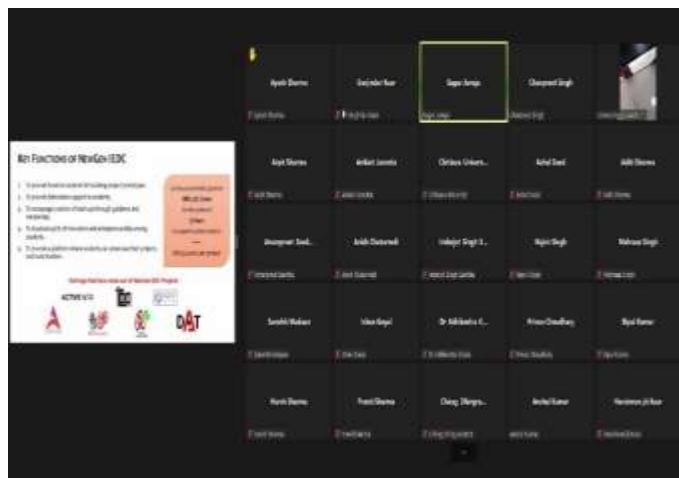
9. NewGenIEDC Awareness Drive

- When the university re-opened for students after the lockdown, our team conducted a three-day awareness drive to showcase about NewGenIEDC and its activities to the students.
- We witnessed a footfall of about 750 students who expressed interest in our activities.
- The idea was to encourage students to submit projects to NewGenIEDC and use central fabrication facility at the University for prototype development



10. Awareness Session for Mentors

- Mentors (faculty members) play a very important role in encouraging students to carry out innovative projects.
- We conducted an awareness session for faculty members to showcase them the NewGenIEDC activities, funding support and other initiatives.
- It was held on Sep 22, attended by close 100 faculty members and was delivered by Mr. Sagar Juneja from NewGenIEDC



11. Workshops on contemporary technologies

- During May-June 2021, three different workshops were organized for the students on contemporary technologies under STEAM School Program. Students from first year engineering courses participated in them.
- Topics of these workshops were - Make your first Android Chat-Bot, Machine Learning and Deep Learning for Real-time Applications, and Make Your First AR Application.



[B] To identify, develop & commercialize students' innovative ideas

1. Annual Progress Review of Sanctioned Projects

- Progress of 20 NewGenIEDC sanctioned projects was reviewed over a course of three days (Feb 11, 14 and 15, 2022).
- These review sessions were chaired by Dr. Archana Mantri – Vice Chancellor, Chitkara University, Punjab.
- Beneficiaries were asked to present current status of their project, future plans, discuss challenges. Emphasis was made on commercialization and IP protection of these projects.
- Jury panel gave valuable feedback and also gave direction to some of these projects



2. Webinar on Innovation to IPR

- A webinar was organized for students to educate them on how to convert innovative ideas into intellectual properties with great commercial potential. It was held on Feb 17, 2022
- Dr. B. Balamurugan from Galgotia University was invited to deliver this webinar, which was attended by close to 150 students and faculty members.



3. Webinar on Innovation and IPR

- A webinar on Innovation and IPR was delivered by Dr. Sachin Ahuja – Director, Research, Chitkara University, Punjab on Feb 4, 2022.
- The objective was to educate students on importance of IPR and how students should protect IPs of their projects.
- It was attended by close to 90 students



4. Expert Talk on Entrepreneurship

- On Jan 28, 2022, webinar titled Entrepreneurship Myths Demystified was conducted by Mr. Harmeet Kelley (Entrepreneur and Growth Strategist) for the students.
- The session was attended by students of different departments of engineering, and management. There were about 250 participants in the session



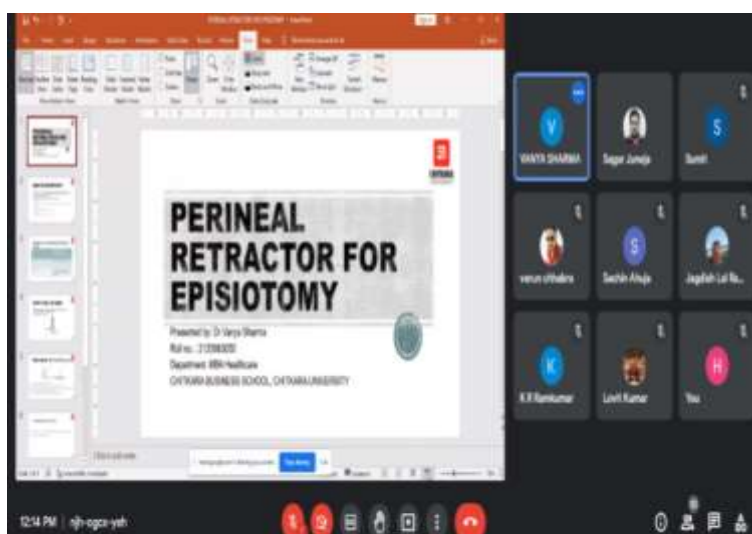
5. Expert Talk on Commercialization of Ideas

- Dr. Nitin Saluja – Associate Director (CURIN) delivered an expert talk on the topic Process of Innovation Development &TRL& Commercialization of Lab Technologies & Tech-Transfer on January 25, 2022.
- Participants learned about various processes involved in innovation development, and the need for the continuous measurement of the maturity level of a technology throughout its research.
- It was attended by close to 100 students and faculty members



6. Project Pitches for Funding Support from NewGenIEDC

- Four project ideas after a preliminary round were given an opportunity to pitch to a jury panel
- Jury comprised of four seasoned researcher and innovators from the university
- Three ideas were awarded funding from NewGenIEDC
- The event was held on Jan 20, 2022



7. Five-day workshop on IoT

- Carrying out IoT projects is a big craze among students, therefore to give them a good direction a five-day workshop was conducted
- Two open-source platforms namely Arduino and Raspberry PI were used in this workshop for building IoT applications.
- The workshop was held during Dec 13-17 and was attended by 30 CSE students. Dr. Pinaki Ghosh – Associate Professor, CSE was the resource person



8. Five-day workshop on MATLAB

- MATLAB is one tool that is used for students in a variety of projects ranging from image processing, AI, ML etc.
- In order to give students a hands-on exposure on MATLAB, a five-day symposium was conducted during 15-19 Nov 2021 and 64 students attended it.



9. Webinar by Alumnus Entrepreneur

- In order to motivate students to convert their projects into start-ups, a webinar was conducted for which an alumnus entrepreneur was invited to share his experience.
- Mr. Akshay Ahuja, who is Co-founder of two start-ups, delivered a talk on 'Zero Budget Entrepreneurship'. The session was attended by 50 budding entrepreneurs, which was held on November 17



10. Entrepreneurship Awareness Camp

- A three-day Entrepreneurship Awareness Camp was organized during October 28-30, 2021 wherein industry experts and entrepreneurs were invited to share their expertise with the budding entrepreneurs.
- Close to 70 student entrepreneurs from the university attended the camp



11. Grand Finale of Toycathon 2021

- Chitkara University had a proud privilege to organize the Grand-Finale of Toycathon 2021 that was held during June 22-24, 2021 and 20 teams participated in it.
- Toycathon-2021 provided a unique opportunity for students, teachers, start-ups, and toy experts/professionalism India to showcase their innovative and creative toys/games designs and compete for prizes worth Rs. 50 lakhs



12. Annual Flagship Event

- NOVATE+ 2021 was organized during Jan-May 2021 with a theme 'Confluence of Industry & Academia to Address Real World Problems'.
- 79 entries were received, 22 for shortlisted for final pitch round that was held on April 16-17, 2021. Each of these projects was joint project of industry and academia.
- Jury members in the final round were Dr. Shivraj Dhaka (Counselor, Indian Green Building Council) and Mr. Sachin Bharadwaj (DGM, Sigma Electric Manufacturing Corporation).
- 10 projects were shortlisted that received funding support from NewGenIEDC.



[C] To enhance Industry-Academia interaction

1. Industry Engagement Session

- Mr. Akshay Dolas, Principal Engineer, ADD Works, Mumbai delivered a session on the Real-time challenges while translating prototypes into end products.
- The talk was attended by 116 students & faculty members and it was held on March 16, 2022.
- The session included case studies of two innovative products designed by ADD WORKS - Mileage air filter and Ka'an binaural microphone. The objective of the session was to convert idea into actual product



2. Participation in Exhibition (external)

- A team from Chitkara University was invited to participate in the 11th edition of the annual exhibition MACHAUTO EXPO 2022 on March 11, 2022 in Ludhiana, Punjab.
- It was organized to provide a platform for the MSMEs units and academic organizations across the country to showcase their technologies & innovations.
- Our team showcased students projects done under NewGen IEDC in this exhibition



3. Expert Talk on AI and Robotics

- An expert talk was delivered by an industry expert on the topic 'AI and Robotics: Latest Trends in Technologies' and it was attended by about 100 students and faculty members.
- The resource person was Mr. Amit Kumar – AddverbTechnologies Pvt. Ltd. and it was held on Feb 21, 2022



4. One-day Workshop with Automotive Industries

- A team from Chitkara University attended a one-day workshop on 'Future Technologies in Automotive Domain for Sustainable Mobility'
- Held on Jan 28, 2022, in this workshop 10 different automotive manufacturing industries of the region discussed their problem statements.
- We participated to learn different industry problems of automotive sector, and to form collaborations with these industries for joint projects

5. Industry-Academia Connect Series (Webinar)

- Topic - Design of a Filter to Separate Carbon and Hydrogen from Gaseous Mixture
- Dr. J.P. Kundra from Cheema Boilers, Mohali shared a problem statement on the need of a filter for their industry.
- Talks a going on for the joint project with a team from the university.
- The session was held on Jan 24, 2022



6. Workshop in collaboration with industry

- Three-day workshop was conducted in collaboration with SSS Consultants, Bengaluru for Electrical Engineering students on the topic Building Management System.
- Students learned about innovation in building management system, how various devices work together to make smart buildings.
- It was held during December 9-11, 2021



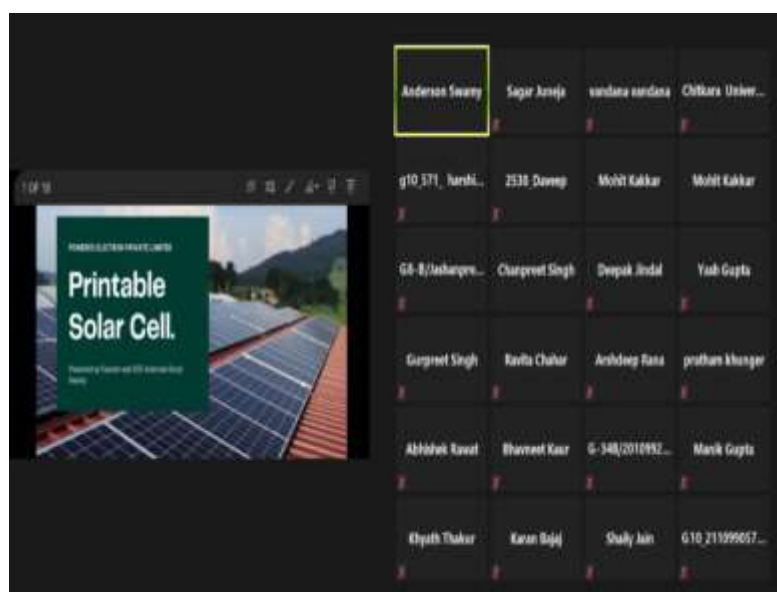
7. Webinar on Digital Transformation

- Mr. Rajesh Pawar – Cigniti Technologies was invited on Nov 24, 2021 to deliver a talk on the topic 'How Companies are Embracing Digital Technologies'. The talk was attended by many student start-ups.
- The main objective was to educate young start-ups to remain always ready for transformation in order to do well in any scenario.



8. Industry-Academia Connect Series (Webinar)

- On Oct 23, 2021, Mr. Anderson Swamy founder of a start-up Powered Electron was invited to discuss a problem statement on the topic 'Printable Solar Cells'.
- The session was attended by about 70 students and faculty members to explore the possibility of carrying joint project with this start-up in the area of printable solar cells



9. Collaboration with CDAC Mohali

- On May 10, 2021 Chitkara University got into formal association with CDAC Mohali to work on joint projects in the area of CyberSecurity, Healthcare Technologies, AgricultureTechnologies, Artificial Intelligence and EmbeddedSystems



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

None

3. Other important highlights (new initiatives), if any:

- As evident from our activity list for the FY 21-22, we made conscious efforts on training our students and faculty members on prototyping techniques and product designing skills. To further this effort, we developed a product in NewGen IEDC – A mobile phone stand (*its design has been registered*). It is now one of the corporate gifts that we give to university guests. Close to 1000 mobile stands have been manufactured in our facility in the last 6 months



- ii. We are building a strong industry connect with the regional industries for mentoring and doing joint projects. Currently, more than 10 joint projects with regional MSME industries have been supported under NewGen IEDC. We have industry mentors, reviewers as well as investors on board.
- iii. One of the NewGen IEDC prototyping funding grantee won 'Women Entrepreneur of the Year 2022' award – A project titled **Learn-o-Little** by **Neha Tuli** was one the first projects that was sanctioned by Chitkara University NewGen IEDC in 2019. She later founded an EdTech start-up - 6DOF Solutions Pvt. Ltd. that is currently incubated at Chitkara University. In April 2022, she won 'Women Entrepreneur of the Year' award at Annual STPI Awards 2022 organized by Software Technology Parks of India, Mohali & TIECON 2022

Founder of Chitkara's incubated EdTech startup Dr. Neha Tuli, felicitated with STPI's Women Entrepreneur of the year award at TIECON

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Dr. Neha Tuli, Founder of 6DOF Solutions Pvt. Ltd. (an EdTech start-up incubated by Chitkara University, Punjab), was honoured with the prestigious 'Women Entrepreneur of the year' award by Software Technology Parks of India, Mohali & TIECON 2022 at its Annual STPI Awards 2022. TIECON is the world's largest

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Adsorbent Shoe Pads: Eliminates Sweat and Foul Odor

I. Project Title : Adsorbent Shoe Pads: Eliminates Sweat and Foul Odor

II. Mentor Name : Dr. Mohit Kapoor

III. Student team details

- i. Adhish Singh

IV. Brief description of the student start-up

This proposal presents a waste-derived reusable adsorbent pad that you can wear on your feet to eliminate the sweaty smell and odor. The proposed anti-odor removal patch includes mainly two layers namely the moisture-absorbing layer and malodor removing layer/ freshening layer where in the moisture-absorbing layer is made of waste-derived cellulose fibers and the mal-odor removing/freshening layer made of carbonized rice husk and citrus (e.g., lemon, orange, etc.) rind.

The two layers adhered together using an adherent/ glue material. Further, the patch incorporates an adhesive layer that helps in attaching to something, such as the interior of an end user's shoe. Further, this adsorbent shoe pad consists of carbon-based Quantum Dots (QDs) which have surface functionalities capable to kill bacteria and other microorganisms. The adsorbent pad will absorb moisture, Volatile Organic Components (VOCs), and microbes and eliminate skin infection. The use of natural flavonoids will provide refreshing natural essence to the feet. The proposed work will be developed into a prototype and tested for its adsorption-desorption cycle to ensure there usability of the pads. This will help contribute to the sustainable economy and help this become a go-to product for smelly feet.

Salient Features: -

1. Two layers pad - moisture-absorbing layer, and malodor
2. layer - made up of waste-derived cellulose fibers
3. Malodor layer made of carbonized rice husk and citrus rind.
4. Consists of carbon-based Quantum Dots (QDs)
5. Capable to kill bacteria and other microorganisms.
6. Absorb the moisture, Volatile Organic Components (VOCs), microbes
Eliminate skin infection

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

Following is the description of journey of the team members in their own words
You're not alone if you find that your feet stink when you remove your shoes. It is fairly common to have stinky feet. We all have been there. That's how the idea was born to create a thin, yet durable adsorbent pad capable of eliminating foul odor, and microbial growth in the shoes and feet. With the help of the grant, we began developing various anti-microbial adsorbent materials from waste biomass, and flavonoid-containing compounds. In particular, we

were highly interested in rinds of citric fruits, along with rice husk (a commonly found waste material in Indian agricultural fields.) Currently, we have tested for anti-microbial activity of the adsorbent material in a powder state. These adsorbent materials have been cast into polymeric membrane-type material, which is currently being tested for their thermal stability, and physical durability



Figure: (a) fabricated adsorbent pad, (b) magnified area on the pad indicating porosity, (c) high brittleness of one of the membrane design

VI. Contribution of NewGen IEDC in the same

- This passionate journey couldn't have been possible without the help of the Newgen IEDC grant. The grant provided us with an opportunity to take a stride ahead toward creating a sustainable adsorbent material that can help us avoid bad experiences on a daily basis. The funding support we are provided with offers us the freedom to test various designs and fabrication processes

VII. Future plan

- We want to take the prototype to the minimum viable product (MVP) stage, followed by possible iterations and design changes that will go into the making of our product. At this point, our short-term goal is to design an inexpensive and sustainable shoe pad that people can wear/stick without even having a feel of it

Best Project-2: High Temperature Erosion / Corrosion Behavior of Alloy Powder Coatings on Boiler Steels

I. Project Title : High Temperature Erosion / Corrosion Behavior of Alloy Powder Coatings on Boiler Steels

II. Mentor Name : Dr. Rakesh Goyal

III. Student team details

- i. Hemender Yadav
- ii. Hitesh Singla

IV. Brief description about the student Project

There is great problem of Erosion and Corrosion arising in boilers due to flue gases caused by burning of coal fuel. This is decreasing the working life and efficiency of the boilers. To address the above said problem, we are developing novel materials solutions. Such solutions are further used for the coating of boiler components and ultimately shall provide a protection against the high rate of wear and corrosion.

The findings will be published and shared with the boiler manufacturing industries. The same can be validated by these industries.

Salient Features: -

- 1. Reduce the high rate of wear and corrosion
- 2. Effective and economical coating technology

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Following is the description of journey of the team in its own words –

In the ideate phase of the design thinking process that initial ideas for problem solving are developed that there is lot of erosion/corrosion problem in the boiler tubes which is decreasing its output and life. In this phase it is very important to generate as many ideas as possible and to select one idea from them. So, we have generated the ideas to counter this degradation problem. By changing the whole tube material with the special alloy materials, making the boiler tubes thicker and heavier to apply corrosion resistant coatings on these tubes. But some of the ideas when discussed were not feasible or were increasing the cost of the process. In ideate phase the problem statement has been defined with the help of ideas and an exhaustive literature survey. Typically,

these ideas are rough- those that it results from the brainstorming and literature survey. The important thing is to “think outside the box” and generate multiple ideas so that in the next stage draw some options for prototyping. The objective of the Idea generation phase is to find creative ideas that will solve the targets and challenges of industry. And it has been decided to protect the boiler tubes by depositing various powder coatings



Video Demonstration - https://youtu.be/PiBUphUj_2o

VI. Contribution of NewGen IEDC in the same

- NewGen IEDC is channelizing the knowledge and energy of students towards becoming active partners in the economic development process. In this project, it is helping in purchasing the materials required for projects. The team is managing the mechanism of quotation calling, selecting the best materials for the projects, helping in procurement of the best materials. NewGen IEDC also monitors the progress of the projects through annual review progress presentations which helped the students to achieve the targets in the shortest possible times

VII. Future plan

- To move to the industry with our findings so they can validate the same. More problems of degradation of different types of industries other than boiler will be taken into consideration as a project. So the losses due to degradation may be reduced to the minimum as possible

Best Project-3: Hybrid Tea Brewer

I. Project Title : Hybrid Tea Brewer

II. Mentor Name : Dr. Prateek Srivastava

III. Student team details

i. Meena Pundir

IV. Brief description about the student Project

We are developing a smart machine which can brew tasty tea and coffee in minimum time. We have already registered the company Sustainergic Tech Pvt. Ltd.

Salient Features: -

1. Electrical as well as Solar operated machine
2. Free from human touch
3. Time efficiency (up to 10 cups in 4 mins)
4. Pressurized steam to brew tea
5. IoT based and Fault Detection & Diagnostic

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Following is the description of journey of the team in its own words –

The team started with the idea to develop a tea/coffee brewer which can provide tasty and hygienic tea/coffee in less time. Initially we worked on the design of the project. After initial design we tried to find out the company who can do the manufacturing of the brewer and boiler as per our design. In the first go the testing was conducted and there were some issues with the brewer. The brewing was not happening properly. We redesigned the brewer and second level of testing started. Thereafter now the process of manual testing is completed and now we are working on the development and testing of controller.



Video Demonstration - https://youtu.be/hpAiXeOpM_A

VI. Contribution of NewGen IEDC in the same

- NewGen IEDC has helped in getting the funding for prototyping of the machine. The NewGen IEDC team has helped in guiding and provided technical inputs from time to time

VII. Future plan

After the successful testing of Hybrid Tea Brewer we will commercialize the machine and in the next phase we are planning to prepare the IoT enabled tea/coffee brewer

Best Project-4: Liquid Filling and Sealing of Polymeric Capsules

I. Project Title : Liquid Filling and Sealing of Polymeric Capsules

II. Mentor Name : Dr. Nitin Verma

III. Student team details

- i. Vaibhav Raghuvanshi
- ii. Shreyas Satyendra Kumar
- iii. Vanshika Chayal
- iv. Isha, Student
- v. Komal
- vi. Navin Kumar Sharma (Industry Partner)

IV. Brief description about the student Project

The project emphasizes the technology required for the preparation of polymeric banding solution. We produced a biopolymer-based banding solution which will be applied over the capsule to effectively seal the liquid-filled, HPMC capsules. Thus, liquid filling and sealing of hard gelatin capsules with optimal concentration of banding solution becomes a significantly more viable choice for the manufacture of high-quality capsules.

Salient Features: -

- Highly effective sealing and banding solutions,
- Less expensive,
- Liquid filling and sealing of hard gelatin capsules with optimum banding solution more feasible for the development of quality capsules

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Following is the description of journey of the team in its own words –

Major global pharmaceutical markets accept the non-animal components of the polymeric banded capsule formulation for medicinal and therapeutics application. Optimizing polymeric concentration is critical for achieving perfect, uniform, and stable capsule sealing and avoiding counterfeiting. Furthermore, the liquid capsule sealing methodology is designed to prevent fabricating: a sealed capsule can only be opened by splitting it into two halves. As a result, replacing its contents without compromising the capsule's integrity is difficult. Polymeric banded capsules are used to provide reduced leakage of liquids filled, higher user acceptance since they are vegetarian, and increase active pharmaceutical ingredient (API) release profiles.



Video Demonstration – <https://youtu.be/dyPKHyZdkMc>

VI. Contribution of NewGen IEDC in the same

- NewGen IEDC inculcates the spirit of innovation and entrepreneurship among us, supported and encourage through proper guidance, mentorship and financial support

VII. Future plan

- First we go for patent filing of this innovative technique
- Secondly we will discuss it with our industry partner to transfer this technology from pilot scale to large scale

Annexure-A

Details of Student Projects

Project-01: Conversion of Waste Leaves to Biofuel

1. Project Title : Conversion of Waste Leaves to Biofuel

2. Mentor Name : Dr. Nitin Saluja

3. Student Team Names:

I. Ankita Rani

4. Project Description:

In the global scenario, the trend is shifting from conventional sources of energy to non-conventional. Thus, the demand for the bio-fuel is increasing continuously. The project involves the conversion of waste leaves to the biofuel which can be easily burnt in the bio-burners of industries and home-chuhlaas. The leaves are form of biomass which has the potential of generating energy equivalent to wood i.e. 18MJ/kg. Based on the project procedure, leaves are processed non-thermally to increase its calorific value, and convert it into compact form

5. Project status at beginning of the Year:

- The idea was ready with the prototype design

6. Interventions made:

- Provided support in making full-fledged product.
- NewGen IEDC provided grant to the project
- Identification of the vendors
- Procurement of components
- Support in 3D designing, fabrication of metal frame etc

7. Current status:

- The dryer has been designed and the fabrication has been done. The major components include magnetron, transformer, capacitor, thimbles and diodes.
- Initial testing of the prototype is done; optimization is going on to reduce the drying time

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Agro waste Management – Dev. of Multipurpose Chemically Stable, Thermal & Ion-conducting Membrane

1. Project Title : Agro waste Management – Dev. of Multipurpose Chemically Stable, Thermal & Ion-conducting Membrane

2. Mentor Name : Dr. Jyotsana Kaushal

3. Student Team Names:

I. Lata Rani

4. Project Description:

The idea is to provide clean water and sufficient energy to the coming generation as it is the primary challenge for the scientific community. To develop clean water production systems, efficient energy storage devices and many other technological or biotechnological devices, nano-porous architecture or precisely membranes are playing a dynamic role. Therefore, membrane technology and its developments come up as a solution. India has world's largest agro economic system, where rice and rice-husk are produced in large amount. Due to improper management, burnt rice-husk, which consist of silicon compounds, are randomly scattered in field, resulting the reduction of fertility. The bio-produced silicon based compounds are highly effective for membrane preparation. In the present proposal the Nafion-silicon oxide based compounds will be developed for water purification and ion exchange membrane. During the extraction of silica from rice husk ash, water dissolvable alkaline silicate will help to form Nafion-silica porous membrane which will produce clean water

5. Project status at beginning of the Year:

It was well researched idea and team was ready with the framework

6. Interventions made:

- Funding provided by NewGen IEDC
- Identification of vendors for procurement of components
- Support in mechanical design of the product

7. Current status:

- In this project, rice husk has been used for the production of a bio-sorbent membrane.
- Several experiments have been conducted for the production of a stable membrane using optimization of different materials.
- Currently, the testing of the developed membrane is going on

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Fully Automatic Bottle Labeling Machine for Pharma Industries

1. Project Title : Fully Automatic Bottle Labeling Machine for Pharma Industries

2. Mentor Name : Mr. Sumit Kumar & Dr. Prateek Srivastava

3. Student Team Names:

- I. Sahil Thakur
- II. Mr. Sumit Saini

4. Project Description:

In Micro Small and Medium Enterprises (MSMEs) automation is not implemented of its full and as a result, there are various machines that operate at low efficiency and slow processing speeds. The problems such as less flexibility, less accuracy, high rejection rate, and slow processing speed need to be addressed to bring MSMEs at par with the large industries in terms of adoption of the latest automation technologies which offer various benefits to the users. In Pharmaceutical MSMEs, semi-automatic machine operation is mostly used for the product labeling. We are developing a technical solution to fully automate this machine. Thus it will help the MSMEs to enable flexible operations like a variety of products to be labeled, improve accuracy, reduce the current rejection rate and increase the labeling speed. Additional advantages of the proposed technical solution include ease in troubleshooting, high-quality production, efficient operation, and digital interface to the operator

5. Project status at beginning of the Year:

It was well research idea, with a basic prototype ready

6. Interventions made:

- Funding provided by NewGen IEDC
- Support in procurement of components

7. Current status:

- Studied the existing machines and carrying out following modifications – incorporating servo motors, variable frequency drives, high speed PLC and HMI
- Panel engineering is complete, PLC and HMI programming is under process.

- Industry partner – SA Automation Pvt. Ltd., Mohali
- Video and Photographs: <https://youtu.be/ijwxxhRU8Xo>

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: High Temperature Erosion / Corrosion Behavior of Alloy Powder Coatings on Boiler Steels

1. Project Title : High Temperature Erosion / Corrosion Behavior of Alloy Powder Coatings on Boiler Steels

2. Mentor Name : Dr. Rakesh Goyal, Dr. Rupesh Gupta
Dr. Sheifali Gupta and Dr. Punam

3. Student Team Names:

- I. Hemender Yadav
- II. Hitesh Singla
- III. Himakshi Gupta

4. Project Description:

Various industries are facing a critical problem of hot corrosion and wear degradation of metals in the boilers (for generating high pressure steam) under high temperature environment. This corrosion in the boiler is caused by flue gases generated after burning of coal and biomass fuel. The boiler components are subjected to high rate of wear and corrosion by chlorides (NaCl, KCl), sulfides (Na₂SO₄, K₂SO₄) at such an elevated temperature. To withstand the high rate of wear and corrosion in harsh environment, the components should possess excellent high temperature corrosion and wear resistance. To address the above said problem, we are here to propose a solution which shall include the development of novel materials solutions. Such solutions are further used for the coating of boiler components and ultimately shall provide a protection against the high rate of wear and corrosion. These coating technologies are very effective and economical as well to achieve the desired results. It has also been experimentally proven in previous literature reviews that coating is probably the only effective solution to provide the protection. These kind of coating on the metal components is also termed as surface technology treatment. One of such famous and efficient surface technology treatment used is known as thermal spraying. Coatings containing hard phases like Cr₃C₂ and nano powders like CNT, CeO₂ on the components provide better protection. So we shall work in the development of thermal spraying powders containing hard phases. With the help of this type of spraying the tube steels can be coated with thermal spraying powders containing hard phases and their working life may be enhanced.

5. Project status at beginning of the Year:

It was a well-researched idea and team had all the theoretical background needed for implementation

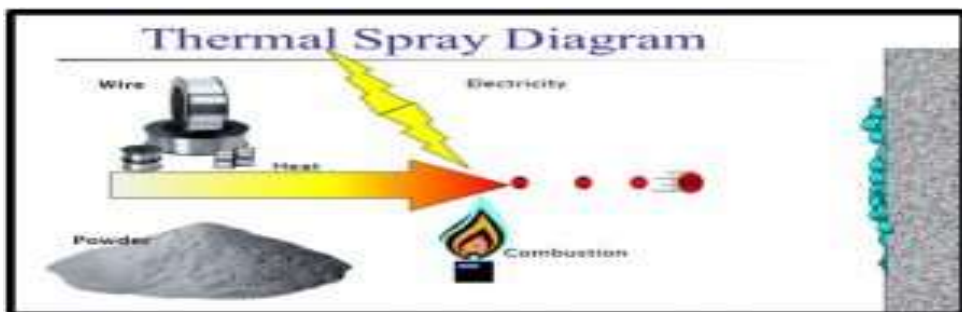
6. Interventions made:

- Provided support in making full-fledged product.
- Provided grant from NewGen IEDC.
- Support in identification component manufacturer

7. Current status:

- Industry Tie-up – Karan Boilers, Ambala
- Spectro-analysis of the material of the boiler tube done and sample preparation done.
- Coating powder procured and compositions are being prepared
- **Video and Photographs:** https://youtu.be/PiBUpHuj_2o

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Wind Turbine Driven Generator for Vehicles

1. Project Title : Wind Turbine Driven Generator for Vehicles

2. Mentor Name : Dr. Prabhjot Singh

3. Student Team Names:

- I. Yash
- II. Utkarsh Upadhyay
- III. Arjun Singh
- IV. Pavneet Singh
- V. Prashant Kashyap

4. Project Description:

The automakers still need to overcome the challenges before the adoption of these vehicles in market. Most of the electric vehicle models have improved significantly in just few years, a limited driving range does present a challenge to many drivers. This project relates to self-sustaining equipment for the generation of electricity, and more specifically, it relates to wind turbine-driven generators for vehicles. This device is used for the generation of electricity to charge the any type of vehicle batteries, provided vehicle is in motion. The motion of the vehicle will lead air to travel over the body of the vehicle, which will force the air into the nozzle, thus increasing the speed of air flowing. This will exert force on multiple turbines, rotating them and producing electricity that can be used to charge the batteries, and hence increase the distance traveled by the electric vehicles. No extra energy input is required to operate wind turbines. As the vehicle moves, the air around the vehicle will rotate turbines for the production of electricity. The whole process is self-charging and continuously recharges the vehicles with wind energy while moving. The invention relates to a method for generating electrical energy using high wind pressure generated by moving vehicles, thereby not disturbing the aerodynamics of the air and utilizing maximum air. The air is compressed by using the nozzles which are fitted into the conical-shaped partitions, which will cause the turbine to rotate, and thus the electrical energy produced will be used by the vehicle

5. Project status at beginning of the Year:

It was well researched idea and the design of the turbine was projected.

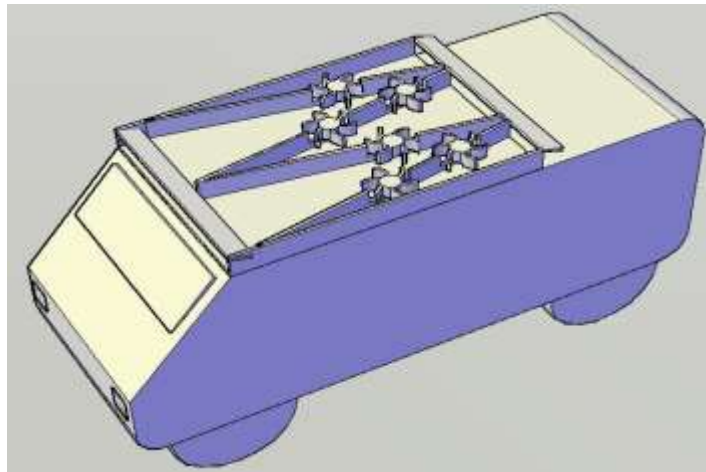
6. Interventions made:

- Provided grant from NewGen IEDC.
- Supported in procurement of all the components.
- Fabrication facility was provided

7. Current status:

- The design of the turbine has been made. It is tested to various parameters in the simulation environment. Hardware implementation is going-on
- Patent filed - 1962/DEL/2015
- **Video and Photographs:** <https://youtu.be/DCTiu5WWZUs>

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Design of Nano-bubbles Generator for STP

1. **Project Title** : Design of Nano-bubbles Generator for STP

2. **Mentor Name** : Dr. Jyotsna Kaushal

3. **Student Team Names:**

I. Shivam Sahani

4. **Project Description:**

Nano bubble generator is a disruptive technology having a potential for reducing water crisis globally. Nano bubble increases Dissolved Oxygen (DO) in large-scale waste water treatments to improve waste water quality. A well-designed system integrating nano bubbler with STP will improve the aeration efficiency in STP by improving DO levels to reduce the BOD and COD efficiently

5. **Project status at beginning of the Year:**

The team had well researched theoretical idea

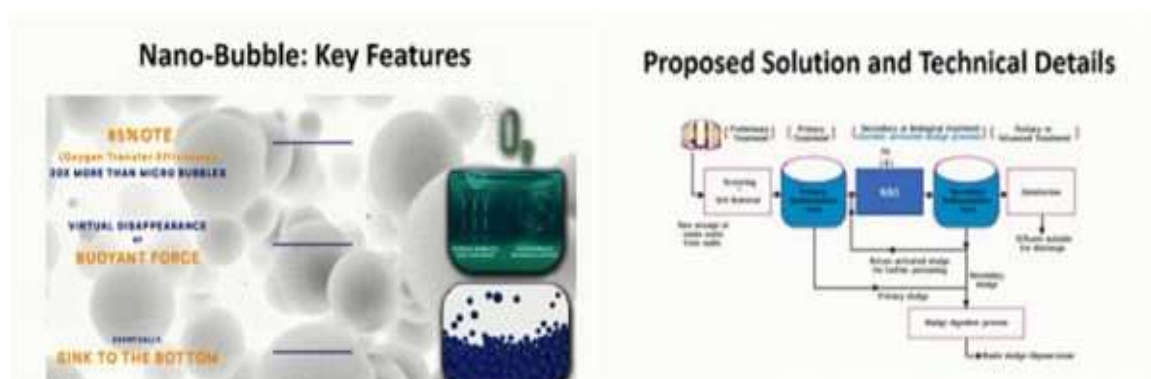
6. **Interventions made:**

- NewGen IEDC provided grant to project

7. **Current status:**

- A system is developed in this project to integrate the nano-bubbles generator with the STP
- Schematic design ready, hardware components procured, working on the implementation
- Industry partner – ECO Paryavaran Ltd., Mohali
- **Video and Photographs:** <https://youtu.be/q2DGRPNBEhM>

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-07: Development of a Novel, Low Cost & Compact Total Organic Carbon Analyzer

1. Project Title : Development of a Novel, Low Cost & Compact Total Organic Carbon Analyzer

2. Mentor Name : Dr. Ajay Goel

3. Student Team Names:

- I. Akhil Shetty
- II. Mr. S. K. Rana

4. Project Description:

Total organic carbon (TOC) analysis is a well-recognized technical approach that presents a valuable insight about water quality for process control and regulatory compliance. If properly configured and applied, TOC analyzers offer a unique capability to support a wide range of applications. Commercially available combustion-type and membrane-based TOC analyzers are expensive and require costly maintenance. Significant cost savings can be derived from a novel and simplified approach to oxidize organic carbon and detection of Carbon dioxide. Based on detailed literature review and industry recommendations, we decided to work on development of a novel, low-cost TOC analyzer with UV oxidation & conductivity as a parameter to measure organic content in water. The analyzer will be automatic and will continuously measure TOC in pure and high purity water

5. Project status at beginning of the Year:

- It was a theoretical idea to initiate the process

6. Interventions made:

- Provided grant from NewGen IEDC

7. Current status:

- Conductivity measurement will measure the water purity.
- Conductivity cells of required sensitivity developed and UV oxidation chamber fabricated.
- Industry partner - Bio - Age Equipment & Services, Mohali
- **Video and Photographs:** https://youtu.be/q8zIXVOt7_g

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Development of Hybrid Pulse Power Device Using 3D-Graphitic Carbon

1. Project Title : Development of Hybrid Pulse Power Device Using 3D-Graphitic Carbon

2. Mentor Name : Dr. Pankaj Kumar

3. Student Team Names:

I. Shagun Sharma

4. Project Description:

The rapid depletion of fossil fuels and increasing demand of portable energy-storage devices paves a new research field to store harvested energy. The development of efficient portable energy storage devices for portable electronic circuits becomes a major research interest. The batteries are suffering from cyclic stability and high safety risk-factors. The electrochemical capacitor or super-capacitor, that has the features of high surface-to-volume ratio, carbon/or metal compounds-based electrode, and solid-polymer/or ionic-liquid based electrolytes. The carbon- and carbon-based allotropes are adequate to make super capacitors because of its high chemical stability, good electrical conductivity and abundant availability. Among the carbon allotropes, graphene is a unique material, due its excellent physicochemical properties, such as high surface-to-volume ratio, metal-like electrical conductivity, good thermal conductivity, tremendous mechanical and chemical stability etc. Therefore, the present proposal is based on 3D-graphene like a network of doped hetero atoms. Interestingly, depending on the doped atoms the graphene can behave like p-type or n-type semiconductor. Herein, both type of semi-conductors will be produced, whereas p-type semiconductor graphene will be used as cathode and n-type semiconductor will be used as anode electrode. Additionally, non-aqueous electrolytes with specific ionic liquid will be applied to construct the pouch cell, whereas expected outcome voltage is 2.8 V from every cell with outstanding power density and power deliverable capability. Many pioneer industries in India are making huge research efforts for constructing the carbon or graphene-based super-capacitors. Through the present methodology, mass production and industrialization are targeted

5. Project status at beginning of the Year:

It was a well-researched idea and team had a basic prototype ready.

6. Interventions made:

- Provided funding support & identify vendor for the procurement of components

7. Current status:

- 3D graphene based electrode material has been produced
- Testing of the electrode material is going on to get the desired properties
- Coin cells will be made out of this material
- Patent filed – 202011043463
- **Video and Photographs:** <https://youtu.be/gl8coxGKbKY>

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Micronized Formulation of Ivermectin-Doxycycline: A Promising Anti-Viral Approach

1. Project Title : Micronized Formulation of Ivermectin-Doxycycline: A Promising Anti-Viral Approach

2. Mentor Name : Dr. Manju Nagpal

3. Student Team Names:

I. Ms. Malkiet Kaur

4. Project Description:

Ivermectin has been reported in recent studies, a miracle drug in the treatment of COVID-19 along with doxycycline, but efficacious only at higher doses (12mg/day) and this higher dose is also accompanied with several side effects such as cardiac toxicity. Since, COVID-19 mainly affects the respiratory system especially Lungs, therefore current proposal emphasizes the development of carrier system of Ivermectin targeting lungs directly so that maximum drug reaches the target site. Drug delivery system composed of combination of both drugs helps in reducing the dose and thereby dose related toxicity issue can be resolved. To reduce the dose related toxicity and increase the efficacy, combination of Ivermectin and doxycycline carrier system in micron size range can be helpful in the treatment of COVID-19. For this, a combination of polymers PLGA and PEG has been selected. Both these polymers can be conjugated chemically in the presence of EDC/NHS. PLGA will be helpful in showing better penetration from the epithelial layers and will show high drug bioavailability. The mechanistic approaches will be evaluated and validated using in silico and in vivo biological interventions. In conclusion, Combination of 2 drugs: Ivermectin and doxycycline can be used for the treatment of COVID 2019 via lung targeting.

5. Project status at beginning of the Year:

It was well researched idea inspired by COVID-19related problems

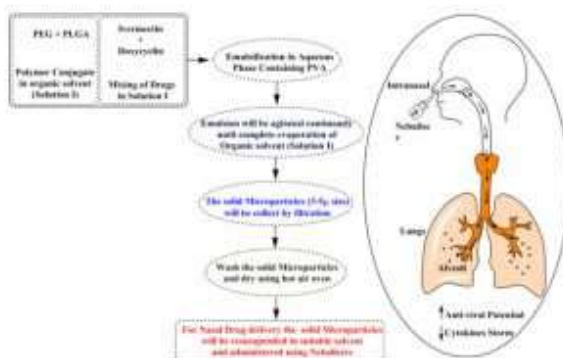
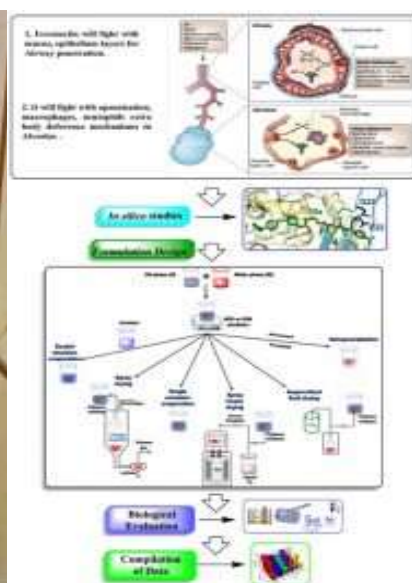
6. Interventions made:

- NewGen IEDC Provided funding support

7. Current status:

- Polymers have been selected and pre-formulation studies have been carried out on drugs and polymers.
- Optimization of the formulation is being done.
- This will be followed by evaluation of optimized batch.
- Patent filed – 202111054543
- **Video and Photographs:** <https://youtu.be/gnwwxArciEQ>

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Hybrid T Brewer

1. Project Title : Hybrid T Brewer

2. Mentor Name : Dr. Prateek Srivastava

3. Student Team Names:

I. Ms. Aina Mehta

4. Project Description:

Tea is one of the most traditionally followed beverages in India. This hot beverage is a regular entertainer, a source of living, a refreshing drink, an excuse for discussions, a part of Indian culture and a household hospitality tradition. Now the tea has many flavors based on addition of Indian herbs while its preparation. In India there is no machine available which can provide tasty and hygienic brewed tea. We are developing a Smart tea/coffee brewer which work on both electrical energy and solar energy

5. Project status at beginning of the Year:

It was theoretically researched idea and inspired from similar product. The team was one of the winners of Novate+ 2021

6. Interventions made:

- Procurement of the components

7. Current status:

- The mechanical part of the project is complete. Work is going to start on electronics and panel design
- Team plans to make it IoT based, and run it using solar thermal for high efficiency
- Start-up -Sustainergic Tech Private Limited
- **Video and Photographs:** https://youtu.be/hpAiXeOpM_A

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Agronic Culture: Bin Farming for Healthy Beings

1. Project Title : Agronic Culture: Bin Farming for Healthy Beings

2. Mentor Name : Ms. Shalini Somra and Mr. Gautam Malik

3. Student Team Names:

I. Arryan Madhu Chitkara

4. Project Description:

Agronic Culture – Bin Farming for Healthy Beings essentially promotes and entails barrel and bin farming for producing organic and superlative food products. The main idea behind this setup is to promote healthy culture through organic food, build a repository of herbs and medicinal plants, take a step closer to Sustainable Development Goals, to be in sync with the 3Rs—Recycle, Reduce, and Reuse and to create a portable and compact farming system in less space. The old unused or already used barrels can be recycled in the process and thus, contribute to the increase in the rate of recycling. The setup of Agronic culture is easy, as it occupies less space and not relies on non-renewable resources for its energy requirements. Moreover, Agronic culture entails a proactive approach towards countering crop failures that occur due to various environmental issues and ensures minimum wastage. Furthermore, the wastage can be greatly minimized as the manure used for barrel farming is produced from the kitchen waste. Barrel farming done under the culture veritably improves water aeration, makes the soil more porous, and eradicates the need for chemical fertilizers (as it itself acts like a vermin composting pit)

5. Project status at beginning of the Year:

It was a theoretical idea to begin

6. Interventions made:

- Funding support from NewGen IEDC
- Identification of vendors for procurement of components
- Fabrication support

7. Current status:

- Barrel farming done under the culture veritably improves water aeration, makes the soil more porous, and eradicates the need for chemical fertilizers
- Industrial Design Registered - 347073-001

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Electrochemically Deposited Magnetic Bio-Conjugate MOF for Biosensors

1. Project Title : Electrochemically Deposited Magnetic Bio-Conjugate MOF for Biosensors

2. Mentor Name : Dr. Meenakshi Dhiman

3. Student Team Names:

I. Baljinder Kaur

4. Project Description:

Biosensors technology has witnessed a slow rate of commercialization in recent years due to the high price of biosensors and demand emanating from the healthcare industry. Nowadays, the major interest in sensor research is the detection and quantification of several low-molecular weight organic compounds, as well as (bio) macromolecules, widely applied in daily life. Efforts during the past two decades focused on three aspects: establishment of new synthesis methods, construction of new MOF structures and exploration of their applications. These three aspects complement each other. Therefore, in present proposal we are synthesizing the magnetic iron oxide polyaniline based MOF using electrochemical deposition method.

5. Project status at beginning of the Year:

Idea Level: It was a well-researched topic by the team

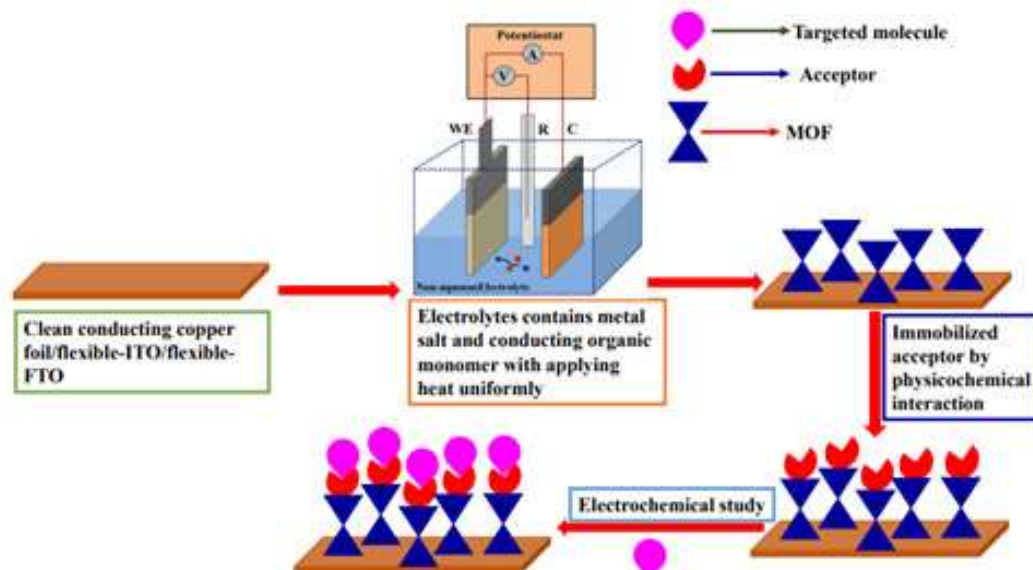
6. Interventions made:

- Provided grant from NewGen IEDC.
- Support in product design and identification of various components

7. Current status:

- Iron oxide based nano-magnetic materials are synthesized using sol-gel methods are used
- XRD analysis has been performed and good results have been obtained.
- Lab level prototype to be taken to MVP level
- Patent filed – 202111047993

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Counterfeit Detector

1. Project Title : Counterfeit Detector

2. Mentor Name : Dr. Ramkumar Ketti

3. Student Team Names:

- I. Mohit Chachra
- II. Ishika Garg
- III. Sujeet Yadav

4. Project Description:

Counterfeiting is the biggest problem for the business and enterprises in the world. Sale of pirated goods increase \$1.7 trillion per year, which is more than drugs and human trafficking. It is expected to grow to \$2.8 trillion, and cost 5.4 million jobs by 2022. As a consumer how can you differentiate between the original and the fake product? Think of a solution where in just a single click one can detect the bogus product through an app. We have built an app that will detect the counterfeit product by simply scanning the QR code. The QR code is to be placed on products, which is generated with an Algorithm and has a double layer of security. We are also providing the functionality in our website to scan the product's originality online before buying

5. Project status at beginning of the Year:

It was a well-researched idea supported by complete theoretical background

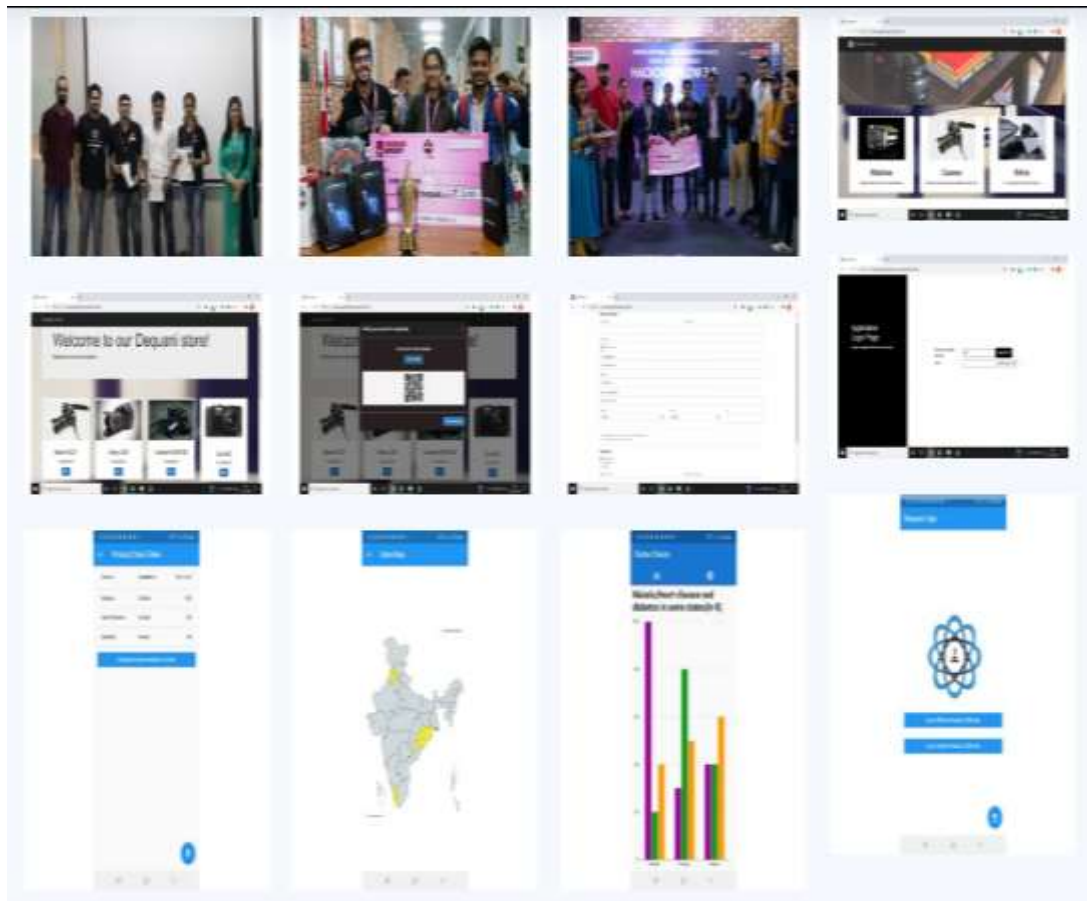
6. Interventions made:

- Provided grant from NewGen IEDC
- Supported in identifying vendors and procurement of the components

7. Current status:

- Project is completed. QR code is placed on each product, generated by an encrypted algorithm and has a double layer of security.
- Buyers can check the originality of the products, online before procuring them.
- Team has won several Hackathon in the region with this product
- Patent filed – 201711040525
- **Video and Photographs:** https://youtu.be/w_qbgsBm6zQ

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Homeotropic Alignment of LC Molecules Induced by Quantum Dot for Flexible Display and Device Applications

1. Project Title : Homeotropic Alignment of LC Molecules Induced by Quantum Dot for Flexible Display and Device Applications

2. Mentor Name : Dr. Vandana Sharma

3. Student Team Names:

I. Ankit Rai Dogra

4. Project Description:

Homeotropically aligned LC displays are widely used in televisions, monitors, and mobile devices. Consequently, these displays have developed into one of the most dominant devices in the international market. Thus with a view to develop high contrast display, the purpose of the research is to develop and analyze the homeotropically aligned LC display cell induced by quantum dot/nanoscale particles dispersed in LC host, specifically suitable for producing flexible plastic LC displays. The proposed method is the most suitable for producing flexible plastic LC displays requiring a low temperature process, and potentially contribute to the high performance as well as low power consumption display devices

5. Project status at beginning of the Year:

It was the idea inspired from similar product and research work on the product was completed.

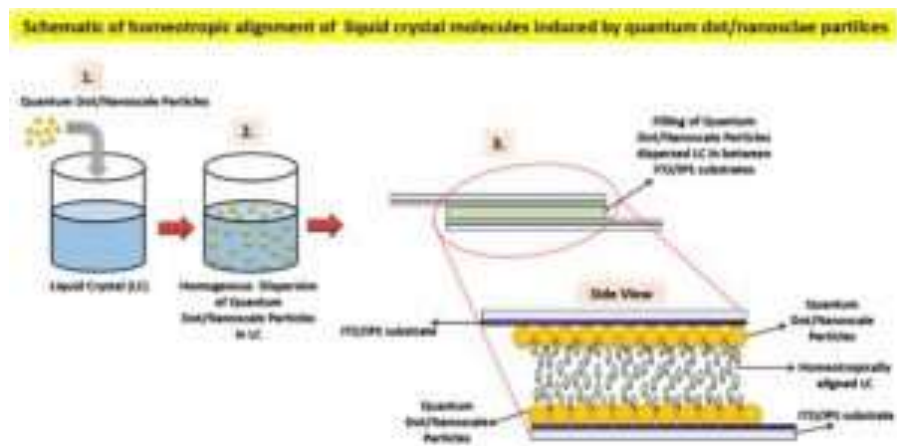
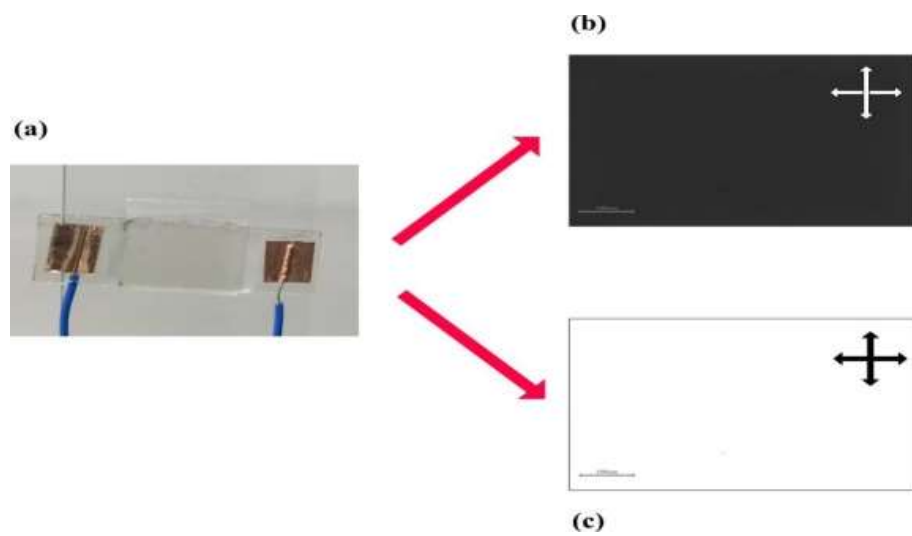
6. Interventions made:

- Provided grant from NewGen IEDC.
- Supporting them to identify vendors and procuring components

7. Current status:

- The prototype samples of flexible displays have been made in the lab and tested for performance
- The future plan is to build the display for a digital device and test it with a device

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Injector Driver Circuit for Diesel Engines

1. Project Title : Injector Driver Circuit for Diesel Engines

2. Mentor Name : Dr. Mamatha Sandhu and Dr. Gurjinder Singh

3. Student Team Names:

- I. Gopal Lal Jat
- II. Jeevan Singh Dosad

4. Project Description:

As global fuel consumption increases, the requirements for environmental protection act and policies are getting more rigid. Therefore, the fuel economy and emission performance of internal combustion engines need to be improved continuously. Traditional mechanical fuel injection systems in diesel engines have a long delay due to its mechanical inertia; hence it cannot meet emission requirements, such as flexible fuel injection timing inside the diesel engine. Thus, electronic control technologies were invented for diesel engines to overcome this shortcoming as they noticeably improve engines' performance and reduce total carbon emission. The fuel injection rate can also be controlled flexibly by Electronic Fuel Injection (EFI) system and the performance of the diesel engine can be adjusted conveniently to achieve certain vehicle emission targets. It is very important for the injector to have a flexible control driving circuit

5. Project status at beginning of the Year:

Theoretical research was done and had basic prototype ready

6. Interventions made:

- Funding support
- Procurement of the components

7. Current status:

- Complete simulation has been done and the industry is evaluating the results
- Industry partner – Meedhavi Automotive Research Centre, Punjab
- **Video and Photographs:** <https://youtu.be/h5b5oskNc2g>

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Liquid Filling and Sealing of Polymeric Capsules

1. Project Title : Liquid Filling and Sealing of Polymeric Capsules

2. Mentor Name : Dr. Vivek Puri and Dr. Nitin Verma

3. Student Team Names:

- I. Vanshika Chayal
- II. Mr. Navin Sharma

4. Project Description:

The pharmaceutical company is facing breakthrough ratcheted up the overall quality of the product. They require some modification in the product, achieving the desired quality with improved banded capsules. The pharmaceutical industry is incentivizing innovation in an effort to bring highly effective sealing and banding solutions, yet less expensive, banded capsule products to market in a quick and efficient manner. The proposed technical solution emphasizes the various techniques involved in the preparation of the polymeric sealing solution. Liquid filling and sealing of hard gelatin capsules with optimum banding solution concentration thus becomes a much more feasible option for the development of quality capsules

5. Project status at beginning of the Year:

It was well research idea and team had all the theoretical background needed for implementation

6. Interventions made:

- NewGen IEDC provided funding support.
- Supported in procurement of the components

7. Current status:

- The team is trying to achieve polymeric sealing solution for hard gelatin capsules
- Polymer has been identified. Work is going on for the development of the capsules (trial batches have been prepared)
- The project got Industry Partner – Sapiens Lab, Baddi

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Vidyut_AR

1. Project Title : Vidyut_AR

2. Mentor Name : Dr. Bhanu Sharma

3. Student Team Names:

I. Ashwani Singh

4. Project Description:

Learning through visualization has more impact than the theoretical learning. Students usually encounter difficulties when they first apply their theoretical knowledge to the practical problems. Therefore, it is important to introduce an effective, innovative and interactive method for teaching electronic circuits. To address this problem, we have initiated the learning of basic science fundamentals at an early stage in k-12 education by different modules. We designed the innovative and engaging activities for the young minds. Prototypes of these modules have been prepared. The modules target day to day science learning, and to solve the real world problems with the hands-on practice, by the students. The innovative step is that the kit includes transparent electronic modules, assistive sheet, Augmented Reality(AR) markers, Phone for 3D visualization of circuit, which enhance the student's interest in learning. Learning of electronic circuits at very young age is difficult. To solve this problem, we designed a kit based on Augmented Reality

5. Project status at beginning of the Year:

The project team was finalist in the Smart India Hackathon

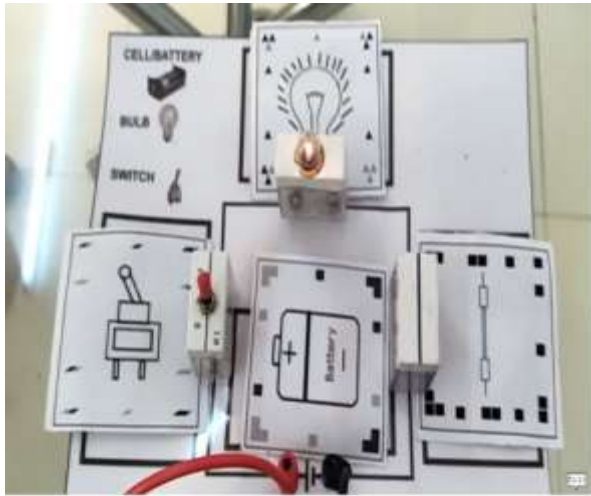
6. Interventions made:

- Provided grant from NewGen IEDC.
- Supported in procurement of all the components

7. Current status:

- The kit is being developed for K to 12 grades
- Using Unity 3D, Grade-1 and 2 markers developed and experiments conducted
- The advanced level AR modules are under development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Adsorbent Shoe Pads: Eliminates Sweat and Foul Odor

1. Project Title : Adsorbent Shoe Pads: Eliminates Sweat and Foul Odor

2. Mentor Name : Dr. Mohit Kapoor, Dr. K. R. Ramkumar &
Dr. Partha Khanra

3. Student Team Names:

- I. Tarandeep Kaur Bhatia
- II. Adhish Singh
- III. Ankit Rai Dogra

4. Project Description:

This proposal presents a waste-derived reusable adsorbent pad that you can wear on your feet to eliminate the sweaty odor. The proposed odor removal patch includes mainly two layers namely the moisture-absorbing layer, and malodor removing layer/ freshening layer, wherein the moisture-absorbing layer is made of waste-derived cellulose fibers and malodor removing/freshening layer made of carbonized rice husk and citrus (e.g., lemon, orange, etc.) rind. The two layers adhered together using a glue material. Further, the patch incorporates an adhesive layer that helps in attaching to the interior of user's shoe. Further, this adsorbent shoe pad consists of carbon-based Quantum Dots (QDs) which have surface functionalities and capable to kill bacteria and other microorganisms. The adsorbent pad will absorb the moisture, Volatile Organic Components (VOCs), microbes and eliminate skin infection. The use of natural flavonoids will provide refreshing natural essence to the feet. The proposed work will be developed into a prototype and tested for its adsorption-desorption cycle to ensure the reusability of the pads. This will help to contribute in sustainable economy and become a perfect product for smelly feet

5. Project status at beginning of the Year:

The idea was conceptualized and was ready to implement

6. Interventions made:

- Fabrication facility support
- Funding from NewGen IEDC
- Supported in identifying vendors and procurement of the components

7. Current status:

- Carbon-based adsorbent material developed, pore size distribution, and preliminary pock test for odor removal conducted.
- Fabrication and testing for recyclability and longevity pending
- Patent filed - 202011048390

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Energy Saving Based Smart Classroom: A System

1. Project Title : Energy Saving Based Smart Classroom: A System

2. Mentor Name : Dr. Harjeet Singh and Dr. Muthukumaran M.

3. Student Team Names:

I. Ms. Shivani Sood

4. Project Description:

The concept of smart classes is widely used in educational institutions for the better understanding of students. However, with the introduction of the smart classroom in the educational institutions, more electrical and electronic devices are being used. Sometimes the electrical devices are fully operational even if a number of students are less than the required capacity of classroom. This leads to a waste of electrical resources. In order to take care of such losses one has to keep track of everything in the classroom and electrical appliances need to be operated manually. This is very tedious and difficult for a person to always keep track of the strength of students/people in the classroom. There is a need of an automatic system for controlling ambient conditions of the smart classroom based on the number of students/people present in the classroom. Our primary objective is to develop a system/device, which is capable enough to take the decision to operate the electronics/ electrical appliances in real time environment (by capturing the movement of human being/objects) with the integration of machine learning based techniques.

5. Project status at beginning of the Year:

It was a theoretical idea, inspired from another similar product

6. Interventions made:

- NewGen IEDC gave financial support.
- Supporting them to identify vendors

7. Current status:

- A system is developed to automate the resources of the classrooms with the help of a powerful microprocessor
- The hardware components have been procured and Raspberry Pi is being used as a processor and AI/ML techniques are being applied in the system

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:

Project-20: Swayam Khaad

1. Project Title : Swayam Khaad

2. Mentor Name : Dr. Mohit Kapoor

3. Student Team Names:

I. Adhish Singh

4. Project Description:

The proposal presents a cost-effective design and strategy of a waste container for household and industrial purposes. This device is based on the heat-assisted catalytic transformation of food waste into soil matrix and liquid fertilizer in the duration of 10-18 hours. The system will be equipped with a stainless steel body, heating mantle, mixer and grinder, a stainless-steel filter, and a collection tray. The decomposed material both solid and liquid fertilizer, will have a shelf life of approx. 18 months without any noxious smell. The methodology includes: drying the food waste; pulverization; addition of adsorbent and catalyst; followed by catalytic transformation into final product. In the first step, organic waste is dried and pulverized to ensure increased exposed surface area. This step will be repeated a couple of times to make sure the waste is broken in uniform small size. Thereafter, a mixture of additives (catalyst + adsorbent) will be added to the mixture, to start the catalytic transformation of the particles obtained from the prior steps in the presence of optimal temperature and pressure. The key step of this process is the use the meticulously designed catalyst for the rapid decomposition of food waste into soil matrix and liquid fertilizer. As per our initial screening and hypothesis, the decomposition process will take 6-12 hours that is much faster than any other decomposition method available in the market. During the catalytic transformation, additional reagents might be required to improve the major elements (N, O, P, S) concentration in the decomposed waste. The property of the material as a soil fertilizer will be determined after biochemical and chemical transformations

5. Project status at beginning of the Year:

It was well thought idea and ready for implementation

6. Interventions made:

- NewGen IEDC provided grant to the project
- Identification of the vendors

7. Current status:

- Partial decomposition achieved under 12 hours and soil matrix obtained without any rotten smell
- Future plan is to integrate automation into the system using electronic sensors

NewGen IEDC: Mar Ephraem College of Engineering & Technology

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Mar Ephraem College of Engineering and Technology		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. A. Lenin Fred		
Name of NewGen IEDC Coordinator	Dr. A. Lenin Fred		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">• Mobile Number• e-Mail ID	9443483072 leninfred.a@gmail.com edc@marephraem.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen-IEDC/18-19/06 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

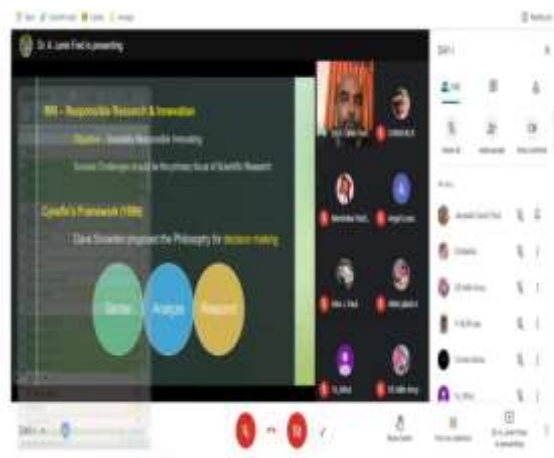
1. Seminar on “Opportunities for Students & Faculties - Early Stage Entrepreneurs”

- The students were able to recognize the opportunities promoted from TNEDII and MSME



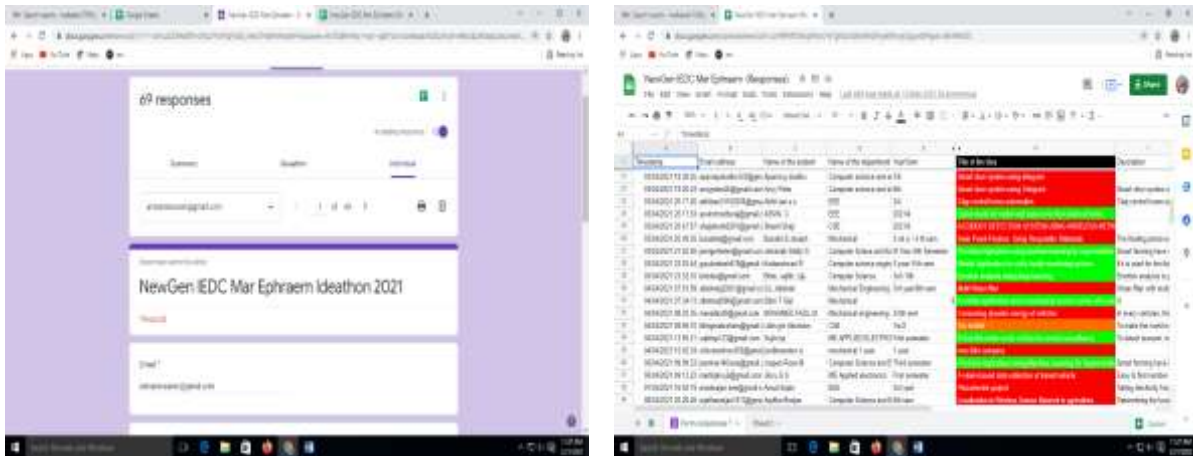
2. Webinar on “Innovation to Entrepreneurship”

- Students were able to understand the concepts of Innovation to Entrepreneurship



3. Ideathon – 2021

- Students were able to analyze the societal challenges and come up with innovative ideas with commercial value



4. Workshop on “Translational Research”

- The students were able to understand technology commercialization and business opportunities in different sectors.



5. Seminar on “Technology commercialization and Business opportunities in different sectors”

- The students were able to understand technology commercialization and business opportunities in different sectors.



6. Workshop on “Effective market research”



7. Startup visit in villages – 1

- The members of EDC visited the pottery manufacturing unit at Thalakulam and had discussion with them. As a result, they identified their problems which are in need of technical intervention



8. Startup visit in villages – 2

- The members of EDC visited the Eathamozhi coir cluster and had discussion with them. As a result, they identified their problems which are in need of technical intervention.



9. Challenge Identification Competition

- The students were able to identify the various challenges from industry and propose solutions for the same

10. Capacity building programmes

- Various activity based tasks for capacity building were done



[B] To identify, develop & commercialize students' innovative ideas

1. Workshop on “How to prepare the business plan”

- The students were able to prepare business plan



2. Webinar on “Change by Innovation”

- 107 students pitched their innovative ideas in the contest



3. Webinar on “Business Model Preparation”

- The students were able to prepare business plan



4. Talk Shows/ Discussions with alumni and other self-made entrepreneurs

- Students were motivated to create their own startups



5. Interaction with alumni entrepreneurs

- Students were motivated to create their own startups



[C] To enhance Industry-Academia interaction

1. Training on identifying intellectual property in projects & provisional patent filing

- Students were able to understand the need for patents, awareness about patent procedures and able to draft provisional patent application



2. Seminar on How to Identify a great Business IDEA

- The participants were able to identify potential business ideas and propose solutions for the same



3. Interaction with industrial partners and MSME Officials

- We visited the MSME officials from Tirunelveli and discussed the local problems faced by entrepreneurs



4. Industry Intraction Programme

- The industry people visited our campus and portrayed the problems faced by them in industry and brain stormed about the solutions



2. Deviation (shortfall) from the proposed action plan (with reasons), if any: NA

3. Other important highlights (new initiatives), if any:

- Campus Company-With the objective of incubating the new innovative ideas of the grassroot innovators and student innovators, a new initiative of Campus company was started. This will incubate their ideas with incubation space and mentor support for certain period and guide them to end up with new start up.
- Creative ideas were pitched in Ideathon competitions.
- Technical and research findings had been published in reputed journals, conferences.
- Students participated in the competitions on Tamilnadu Student Innovators conducted by EDII, TN at Anna University campus, Tirunelveli.
- Students/E-cell Members and faculties were attended various kind of webinars, seminars and Workshops conducted by external Agencies

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Electricca -Electric Bicycle

I. Project Title : Electricca -Electric Bicycle

II. Mentor Name : Mr. Jude Felix

III. Student team details

i. Mr. Jijin Raj S. S.

ii. Mr. Rejin S.

iii. Mr. Abidan J. Lal

iv. Mr. Jijin Gilbert J.

IV. Brief description of the student start-up

To design the most advanced electric cycle with unique features. To manufacture the electric cycle and battery packs of the various electric two wheelers. This electric cycle is differing from other electric cycle in the market. This electric cycle can be used as cycle, electric cycle, cargo electric cycle, solar self charging cycle. The design of the frame is unique and helps to carry and protect the electric components from the external factors, the solid cooling technology the first time using in electric cycle, which protect the battery from the sun light and the heating issue of the battery can be minimized, The inbuilt charging circuit system in the vehicle helps to unwanted carrying charger to every where. This can be charged by dc fast charging, ac charging and solar charging. This vehicle can go up to top speed of 25km/hr. The battery can range between 30 km to 200km based on requirements. The charging speed of 80 minutes for full charging using fast charger. The Load carrying capacity is 120kg. The Artificial sound system which helps to identify the vehicle. The battery we manufactured is possible to use other applications like emergency lamp, solar products, mini inverter etc

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

There are many limitations were available in the electric cycle currently available in the market, we solved the limitations and the challenges we faced during the project. We Farmers are facing a lot of difficulties because of animals in the Indian Agricultural land, among this monkey menace makes

more losses to the society. The monkey menace causes huge losses to the farmers and society. The monkeys are also becoming a threat for public health, crop and belongings. To reduce these problems, the short range monkey repeller device with announcer has been developed. It can repel monkeys from causing harm and return back them to safe distance by producing ultrasonic sounds

Ultrasonic sound wave generators and timers will operate at certain programmable delay times. It will produce ultrasonic sound waves of frequency which is only sensitive to monkeys. The monkeys have a hearing range of 8 KHz to 45 KHz. When they are disturbed by this sound they will go away from the specific range of the device. The device would be charged through solar energy system



VI. Contribution of NewGen IEDC in the same

- NewGen IEDC has provided necessary funding and resources to develop the prototype. Also a mentor was provided to guide us to developing idea, selecting the suitable components for our product etc. Various workshops and skill development programmes were attended .The lab facility were provided for our product development activities and travel expenses for the field testing and surveying

VII. Future plan

- After the completion of our degree we are planning to develop the product for commercialization. We will register in a government Scheme for start-ups. We are also planning to familiarise our product to the common public thereby increasing its demand. Bank loans can be arranged through NewGen IEDC and Mar Ephraem IEDC cell to do the business in large scale

Best Project-2: Coconut Leaf Midrib Extraction Machine

I. Project Title : Coconut Leaf Midrib Extraction Machine

II. Mentor Name : Dr. Anish John Paul

III. Student team details

- i. Mr. S. Ansal Sajan
- ii. Mr. T. Ajisha
- iii. Mr. M. R. Freedslin
- iv. Mr. Lio V. Abilash

IV. Brief description about the student Project

Coconut leaf's midrib is mostly left aside in the field. But it has a very high market value. Brooms and other products are made from this Coconut leaf's midrib. This product aims in developing a motorized machine that would remove the midrib from the coconut leaf and separates both. Multiple leaf can be extracted at the same time which is the additional benefit of the proposed product

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Coconut leaf's midrib is the leftover product from the coconut tree. In most occasions, the coconut leaf is left in the field. However, the Coconut leaf's midrib has a very high market value. After studying the market value, the team visited the field for field study where they identified that extracting the midrib from the leaf requires effort and manual intervention which sometimes results in blood shed of the user. Hence after several brain storming sessions, the batch proposed a motortized mechanism for removal of the midrib from the coconut leaf. They worked on the product and made the prototype of it



VI. Contribution of NewGen IEDC in the same

- NewGen IEDC has provided necessary funding and resources to develop the prototype. Also a mentor was provided to guide us to developing idea, selecting the suitable components for our product etc. Various workshops and skill development programmes were attended .The lab facility were provided for our product development activities and travel expenses for the field testing and surveying

VII. Future plan

- After the completion of the participant's degree they are planning to develop the product for commercialization. We will register in a government Scheme for start-ups. We are also planning to familiarise our product to the common public thereby increasing its demand. Bank loans can be arranged through NewGen IEDC and Mar Ephraem IEDC cell to do the business in large scale

Annexure-A Details of Student Projects

Project-01: D - Feed: A Smart timely Pet Feeder

1. **Project Title** : D - Feed: A Smart timely Pet Feeder

2. **Mentor Name** : Dr. R. Benschwartz

3. **Student Team Names:**

- I. Mr. Rexily Rijo R.
- II. Mr. Lijin V.
- III. Mr. Shiva Kumar

4. **Project Description:**

A smart IoT monitored pet feeder with a provision to load variety food a day while the caretaker is out of home. The pet would be monitored with a live IoT module

5. **Project status at beginning of the Year:**

- Idea

6. **Interventions made:**

- Programmed using Python and Developed the Module

7. **Current status:**

- Prototype completed
- Patent Filed

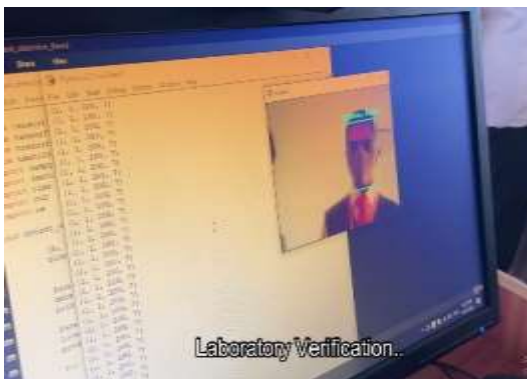
8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-02: Automatic Door Opening System Using Mask Detection and IR Sensor

- 1. Project Title** : Automatic Door Opening System Using Mask Detection And IR Sensor
- 2. Mentor Name** : Ms. Jonisha Miriyam
- 3. Student Team Names:**
 - I. Ms. Emerald S.
 - II. Ms. Lifla Mary L. K.
 - III. Ms. Abi Angel M.
- 4. Project Description:**

The Covid'19 Variants threat the world with its evolution. The spread of COVID'19 variants could be reduced using a Face Mask. Shopping Malls could deny the entry of the people without mask with our Product. It utilizes ML model to identify if the person is wearing mask.
- 5. Project status at beginning of the Year:**
 - Idea
- 6. Interventions made:**
 - Programmed using Python and Developed the Module
- 7. Current status:**
 - Prototype completed
 - Patent Filed
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-03: An AI based identification Assistance for visually challenged

1. Project Title : An AI based identification Assistance for visually Challenged

2. Mentor Name : Dr. Lalin L. Laudis

3. Student Team Names:

- I. Ms. Sakeena Begum
- II. Ms. Fershiya Ananth
- III. Ms. Jerlin Prabha

4. Project Description:

Our product helps in identifying the person nearby with advanced AI model and informs the visually challenged person via an integrated audio aid

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- Programmed using Python and Developed the Module

7. Current status:

- Prototype Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: DriveWaker: An AI based drowsiness detection module for long drive

1. Project Title : DriveWaker: An AI based drowsiness detection module for long drive

2. Mentor Name : Dr. V. Suresh

3. Student Team Names:

- I. Ms. Evanjalin Bherina E.H.
- II. Ms. Nayana P. Madhu
- III. Mr. Britto S.P

4. Project Description:

We developed an AI based Model that would adaptively identify the sleep in a driver. The product helps in detection of sleep while long drive. This uses adaptive threshold value as per the size of the eyes

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- Programmed using Python and Developed the Module

7. Current status:

- Prototype Completed
- Patent Filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Silk Cotton Threshing Machine

1. Project Title : Silk Cotton Threshing Machine

2. Mentor Name : Mr. R. Leo Bright Singh

3. Student Team Names:

- I. Mr. Christy Varghese
- II. Mr. Jebin Mohan
- III. Mr. Thomson Abraham

4. Project Description:

Silk Cotton Seed threshing machine consists of a Cylindrical drum which is kept stationary and a rotating spindle rotates at a predefined speed. Both the drum and spindle have specially designed blades. Spindle is rotated by a electric motor and proper speed reduction mechanism is used. The fed silk cotton gets separated from the seeds and the seeds are collected from the bottom and the cotton is collected at the outlet

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- A mechanical mechanism for separating cotton was designed and fabricated

7. Current status:

- Prototype Completed
- Patent Filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: POT Making Machine for Small Holders

1. Project Title : POT Making Machine for Small Holders

2. Mentor Name : Mr. Beschi Selvan S. L.

3. Student Team Names:

- I. Mr. Aravinth M V
- II. Mr. Ceyalin Behal G,
- III. Mr. Jerlin Jacob M
- IV. Mr. Dijolin Ashick Mano

4. Project Description:

Earthenware products finds an increasing demand. They are used for decorative products, for setting up gardens, in nurseries, as utensils, etc.

Profit is also less for the potter. Hence, they are seeking a modern engineering solution for this problem. Automation is the process of reducing human involvement with mechanical devices is the urgent need. We have proposed a simple and quick automatic machine for earthenware production.

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- The speed controlling mechanism in pot making was designed and fabricated as a prototype

7. Current status:

- Prototype Completed
- Patent Filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Field Master: An automated Field control unit for field fertigation

1. Project Title : Field Master: An automated Field control unit for field Fertigation

2. Mentor Name : Mr. Jalbin

3. Student Team Names:

- I. Ms. Abisha J M
- II. Ms. Delsy Mary W
- III. Ms. Gokul Krishna V S

4. Project Description:

A dedicated field controller which would take the data from the moisture sensor, NPK sensor and fertigates the multi crop farm based on the requirements

5. Project status at beginning of the Year:

- Literature review completed

6. Interventions made:

- Node MCU is programmed as field controller.
- Field controller will monitor the moisture sensor and NPK sensor data.
- Compare the received data with the field predefined data and controls the irrigation pump and NPK reservoir pump

7. Current status:

- Prototype completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: NutriTest: Spot Soil Nutrition Testing Module for Precision Agriculture

1. Project Title : NutriTest: Spot Soil Nutrition Testing Module for Precision Agriculture

2. Mentor Name : Mr. Babin T. Praise

3. Student Team Names:

- I. Ms. Bibisha
- II. Ms. Karthika Mohan
- III. Mr. Jesudhas Xavier

4. Project Description:

- A PHOTOMETRY based spot soil nutrition tester.
- The novel sensor unit comprises a RGB LED and LDR.
- The automatic stirring mechanism uses a powerful electromagnetic and PTFE coated magnet bar.
- Peristaltic pumps are used to load the reagents to the glass cuvette.
- Silicon tubes are used to carry the reagents.
- PTFE bottles are used to store the reagents ensuring the long lasting life of spot soil nutrition tester

5. Project status at beginning of the Year:

- Literature review completed

6. Interventions made:

- A photometric based NPK sensor is developed to examine the soil NPK nutrition content

7. Current status:

- Prototype Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Automated Black Soldier Fly (BSF)

1. Project Title : Automated Black Soldier Fly (BSF)

2. Mentor Name : Dr. Anand Rejilin

3. Student Team Names:

- I. Mr. Philby S Mathew
- II. Mr. Justin James
- III. Mr. Aswajith.S

4. Project Description:

- It is used to make nutritious and organic food for poultry farm. It is very economic and user friendly.
- Organic waste can be successfully managed by giving this organic waste to BSF larvae.
- The black soldier fly is ideally suited for food production due to its rapid production cycle and high concentration of protein.
- BSF larva contains 60% of protein and 40% fat which makes the BSF larva an ideal source of food for a wide variety of animals.
- Normally hens take 80 days for its full growth. If we give BSF larvae fed to the hens, it attains full growth in 60 days.
- The project aims to develop a unit that would produce BSF larvae in a continuous/ sustainable way so as to provide protein rich food for poultry/animals.
- The product would be marketed to farmers as target customers. With this product, the farmers can solve the problem of the requirement of protein rich food using organic vegetable waste.
- Moreover, Organic fertilizer will be obtained as by product which will further support the farmers.

5. Project status at beginning of the Year:

- In the beginning of the year, the problem of high feed cost for protein rich food for poultry/ animal was identified from a discussion with poultry/fish farmers.
- Existing units in the market were studied and the challenges faced by them were analyzed and solution for the problems were discussed.
- A theoretical idea of the project was evolved by referring many literature of various sources.
- A prototype was designed based on the concept.

6. Interventions made:

- Design and fabrication of worm container
- Implement Temperature maintaining system
- Implement Moisture maintaining system
- Fabrication of recirculation of leachet
- Fabrication of Egg harvesting mechanism of black soldier fly (BS)
- Fabrication of Harvesting mechanism of BSF worms

7. Current status:

- Prototype of harvesting mechanism of black soldier fly (BSF) is fabricated and in working condition

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Areca Leaf Craft Making Machine

1. Project Title : Areca Leaf Craft Making Machine

2. Mentor Name : Mrs. Dayana V. John

3. Student Team Names:

- I. Mr. Velbin Jijo V.
- II. Mr. Ajin Kilbert R. T.
- III. Mr. Abin T.
- IV. Mr. Godlin Stephy G. S.

4. Project Description:

Areca leaf crafts are made from the naturally shed leaf sheaths of Areca Nut Tree. The areca leaves are simply collected, pressure washed, scrubbed, sun dried and then with the application of heat and pressure formed into appropriate shapes. The Areca leaf plates and crafts are an alternative to plastic and paper plates. The products are natural, compostable and biodegradable yet look stylish. The demand is high within the country too. Areca leaf crafts are good replacement of thermocol plates, paper plates and plastic plates as they are eco-friendly.

5. Project status at beginning of the Year:

- Literature survey Done
- Field visited with Manuel Making

6. Interventions made:

- Designed and Developed the Prototype

7. Current status:

- Design of the proposed areca leaf craft making machine is done.
- Prototype of Machine is developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Traditional Portable Fruit Ripening Kit

1. Project Title : Traditional Portable Fruit Ripening Kit

2. Mentor Name : Bravin Ebanesh V

3. Student Team Names:

- I. Mr. Jibin John Bosco
- II. Mr. Benisho Y
- III. Mr. Rahul R G
- IV. Mr. Berlin N S

4. Project Description:

- A simple and harmless technique for ripening the fruit is done by using ethylene gas in a confined and controlled conditions. The combination of Etherel / Ethephon & sodium hydroxide (in pellet form) and water are added into ethylene gas generation unit.
- The Ethylene gas generated is dispersed within the entire chamber with the help of a fan setup attached to the exit pipe of the system. A temperature controller setup is installed to maintain the temperature of 32 degree within the chamber.
- The raw fruits are placed inside the chamber and the supply of ethylene gas continues for 24 hours. After that duration the gas supply will be stopped. After 24 hours the fruits starts to change in colour and starts to ripe. On 3rd day the fruits will be ripen

5. Project status at beginning of the Year:

- Idea

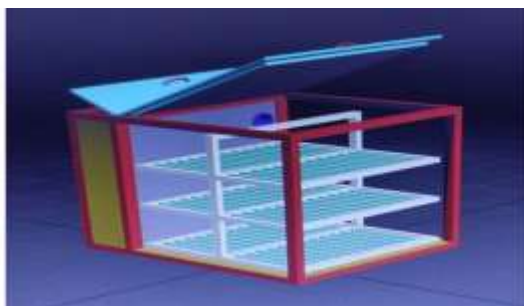
6. Interventions made:

- A fruit ripening box which uses ethylene gas was designed and fabricated

7. Current status:

- Prototype completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: A Hydraulic based Setup with casing for Buffing Wheel Making

1. Project Title : A Hydraulic based Setup with casing for Buffing Wheel Making

2. Mentor Name : Mr. C. Gigin Durai

3. Student Team Names:

- I. Mr. Dino
- II. Mr. Blessing
- III. Mr. Anmik Roshan
- IV. Mr. Anbu Rajan

4. Project Description:

As the outer casing is not included in the existing set up of buffing wheelmaking, the arrangement and pasting of the fibers on the wheel hub surface is the tough process. The load for the uniform arrangement of fiber on the buffing wheel hub is done manually

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- A mechanical mechanism for producing buffing wheel was designed and prototype was prepared

7. Current status:

- Prototype Completed
- Patent Filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Auto Feeder System for Defibering Machine

1. Project Title : Auto Feeder System for Defibering Machine

2. Mentor Name : Mr. I. Jackson Thanga Roy

3. Student Team Names:

- I. Mr Surya Kumar R.
- II. Mr. V. J. Kisholin Vijay
- III. Mr. Ragul.P
- IV. Mr. Kevin T. S.

4. Project Description:

- Defibering machines are used for scraping coconut coir dust and short fibers from coconut husk. The machine is assembled with two drums. The motor is directly connected with Drum with help of Pulley and “V” belts.
- Two wheels are rotated with help of gearbox and motor, in between two rollers, the coconut husk is fed manually. The wheels are holding the husk and combing process will done ,thus separating the clean bristle fibers as well as the spinnable coir fibers, for subsequent treatment and use

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- Model to be finalized
- Design optimization need to be done
- Fabrication need to be completed
- Assembly with existing defibering machine

7. Current status:

- Prototype Completed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Electricca Model-D

1. Project Title : Electricca Model-D

2. Mentor Name : Mr. Jude Felix

3. Student Team Names:

- I. Mr. Jijin Raj S.
- II. Mr. Abidan J. Ial
- III. Mr. Sheldon M.
- IV. Mr. Jijin Gilbert J.

4. Project Description:

To design and manufacturing of Electric cycle which can convert into cycle and cargo cycle. Which can travel at a speed of 25km/hr and can increase the range of 200km per charge

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- The Battery pack was designed, manufactured and tested in the lab.
- The frame of the cycle is tested in lab using Ansys Software

7. Current status:

- Prototype completed Design Patent Registered.
- Startup - "Electricca" is registered

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Coconut Leaf Midrib Extraction Machine

1. Project Title : Coconut Leaf Midrib Extraction Machine

2. Mentor Name : Dr. Anish John Paul

3. Student Team Names:

- I. Mr. S. Ansal Sajan
- II. Mr. T. Ajisha
- III. Mr. M. R. Freedslin
- IV. Mr. Lio V Abilash

4. Project Description:

- The manual process needs more man power and it consumes more amount of time.
- So, our new innovative machine can easily remove the midrib from the coconut leaf.
- By the usage of this machine, the speed of the removal process is 10 times more than the manual process.
- This method will help the farmers to reduce their work and also ease the risks.

5. Project status at beginning of the Year:

- Literature survey Done
- Field Visit

6. Interventions made:

- Designed and Developed the Prototype

7. Current status:

- Prototype of Machine is developed.
- Patent Filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Preprocessing Clay Unit for Earthen Pottery

1. Project Title : Preprocessing Clay Unit for Earthen Pottery

2. Mentor Name : Mr. D. Dani

3. Student Team Names:

- I. Mr. Nijo N
- II. Mr. Rehno Benin
- III. Mr. Sanju Antony A. S.

4. Project Description:

- Pottery is one of the oldest human inventions, originating before the Neolithic period.
- There are two traditional methods for processing clay: dry and wet method
- The wet processing method involves adding both water and soil to a bucket.
- The powdered Clay is rehydrated by using Spray nozzles. Unnecessary water particles will be taken of through the special filtering unit.
- Specially designed Blender will season the clay. Conveyer system is used to transfer the Processed clay to the throwing unit
- In this project, preprocessing unit is developed for conditioning process of pottery mud and production of pottery utensils.

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- A mechanical set up that would separate the impurities from the clay was designed and developed

7. Current status:

- Prototype of Machine is developed.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Smart Shoe Rack

1. Project Title : Smart Shoe Rack

2. Mentor Name : Dr. Manjusha M

3. Student Team Names:

- I. Mr. Aneesh John K Zacharia
- II. Mr. Sibin Reji Mathew
- III. Mr. Anto Jc
- IV. Mr. Rooben Mathew Varghees

4. Project Description:

- This machine help in reducing the difficulty of existing product available in the market at the same time enhance the cleanliness and to maintain hygiene of the floor in offices, institution etc as well as to increase self hygiene.
- The automatic shoe cleaning rack has been designed considering all the requirement and need of users
- It is adjustable which makes a person to customize as the user wants . Each and every person thinks that their shoe should be clean and shiny

5. Project status at beginning of the Year:

- Design Completed.
- Literature Survey completed

6. Interventions made:

- Fabrication done and Developed Prototype

7. Current status:

- Prototype of Machine is developed.
- Patent Filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Design & Development of Smart Window Setup

1. Project Title : Design & Development of Smart Window Setup

2. Mentor Name : Mr. John Pradeeb Y. S.

3. Student Team Names:

- I. Ms. Anisha S
- II. Mr. Bennet George G
- III. Mr. Ebinezer Tony G B
- IV. Mr. Jeno R Wilson

4. Project Description:

- Window is the most essential thing in the house/ building.
- In this century everything got advanced. So we are trying to make advanced window setup.
- Our climatic conditions are changing very fast it is possible to have a dust storm or a rain any day.
- Our smart window automatically senses rain, dust storms and other things and closes when needed.
- Different sensors are used to sense different climatic changes like Sand storm, Acid rain and Temperature changes.
- The signal produced by the input sensor is processed by a controller and the output is given to the motors.
- The Window and Window blinds are adjusted according to the conditions observed

5. Project status at beginning of the Year:

- Design Completed.
- Literature Survey completed

6. Interventions made:

- IOT monitoring Done and Developed Prototype

7. Current status:

- Prototype of Machine is developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Automatic Portable Vermicompost Plant

1. Project Title : Automatic Portable Vermicompost Plant

2. Mentor Name : P. John Thangam

3. Student Team Names:

- I. Mr. Alen S. George
- II. Mr. Alfin Shaji
- III. Mr. Tharun V. Rajan
- IV. Mr. Bharath Krishnan R.

4. Project Description:

The proposed system can be used by small house holders. They can use their daily waste such as fruits and vegetables, Vegetable and fruit peels and ends, Coffee grounds and filters, Tea bags, Grains such as bread, cracker and cereal, Eggshells, Leaves and grass clippings from outside of their home, Newspapers, Paper toweling etc. This system will have the sensor to monitor the temperature level, humidity; if it is not in the control the automatic system will react to maintain this

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- Household organic waste management. Need for good quality organic fertilizer

7. Current status:

- Prototype of Machine is developed.
- Patent Filed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Portable Plastic brick Manufacturing machine

1. Project Title : Portable Plastic brick Manufacturing machine

2. Mentor Name : Mr. Bright Bravin Winsley

3. Student Team Names:

- I. Mr. Samson Joy
- II. Mr. Gickson K Abraham
- III. Mr. Rithick R Gopal
- IV. Mr. Prilish Jacob Thomas

4. Project Description:

- The largest component of the plastic waste is polyethylene, polypropylene, etc.
- The Large volume of materials required for construction is potentially a major area for reuse of waste materials.
- Municipal Corporation is Planning to have Bio- Diesel Manufacturing Plant and a Paver Slab Manufacturing Plant in order to handle 800 tons of Plastics everyday. The main objective of this project is to reuse the plastic waste in a Paver Slab, the plastic paver Slab when compared to conventional paver Slab is more economical.
- Disposal of plastic waste in an environment is considered to be a problem due to its very low biodegradability and presence in large quantities.
- In recent time use of such industrial wastes from plastic bottles, pallets, carry bags were used as an alternative replacements of conventional aggregates of concrete.
- Plastic wastes can be mixed with the concrete mass in some quantity without affecting the strength of concrete

5. Project status at beginning of the Year:

- Idea

6. Interventions made:

- Plastics percentages of 5, 10, 15, 20, 25% has been added in the concrete by replacing the whole volume of concrete. Addition of Recycled plastic with various percentages along with the concrete mix gives maximum compressive strength and high workability.

- The concrete mix is more workable when 25% of shredded plastic is added as the slump values and compacting Factor values are high when compared to conventional mix.
- By doing so the construction industry shall start using the recycled plastic to full extent to reduce the impact on Environment.

7. Current status:

- Prototype Developed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Nehru Institute of Engineering & Technology

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

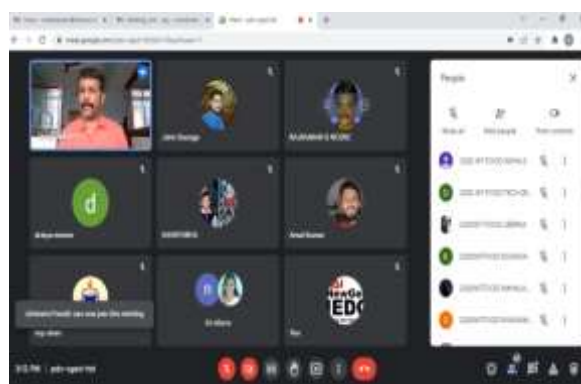
Name of the College/Institution hosting NewGen IEDC	Nehru Institute of Engineering & Technology		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. P. Krishnakumar Nehru Group of Institutions		
Name of NewGen IEDC Coordinator	Dr. T. Jayaprakash		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none"> Mobile Number e-Mail ID 	9843121361 coordinatornewgeniedc@nehrucolleges.com		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen-IEDC/18-19/07 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

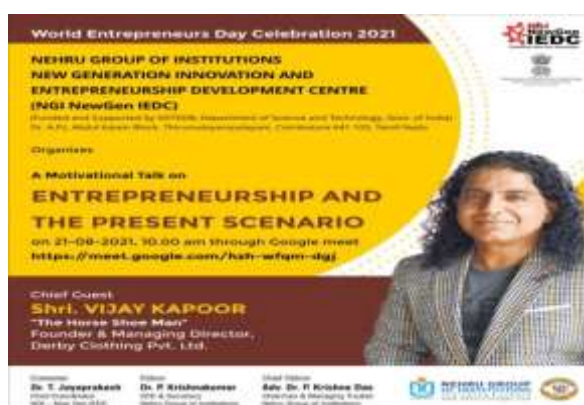
1. Orientation on New Gen IEDC Start-ups

- Outcome: Students of Nehru Group of Institutions were given Idea on Preparing New Gen IEDC Startups and how to attract the customers.



2. A Motivational Talk on "Entrepreneurship and the Present Scenario"

- Outcome: 135 Students from Nehru Institute of Engineering and Technology were participated and understood how to develop an entrepreneurial skill



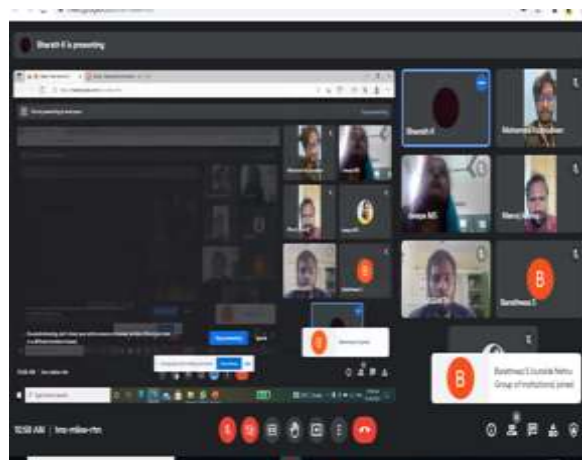
3. Awareness and Benefits of New Gen IEDC Startups

- Outcome: 105 Students from Nehru Institute of Technology were participated in the awareness programme



4. One Day Orientation Programme on NewGen IEDC

- Outcome: Many Higher Secondary Students and Diploma Holders were attended the programme and got benefitted



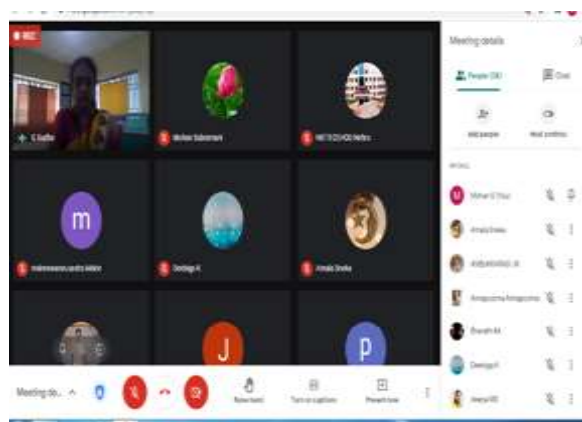
5. Three Days Awareness Programme on Entrepreneurship

- Outcome: 75 Students from Nehru Arts and Science college were participated in the 3 day camp



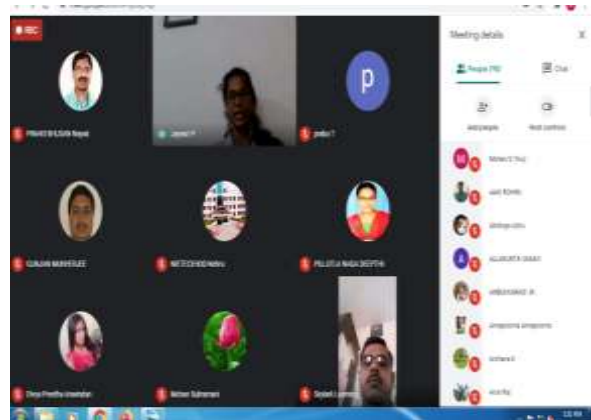
6. One Day Entrepreneurship Boot camp

- Outcome: Many startup students were participated and got benefitted



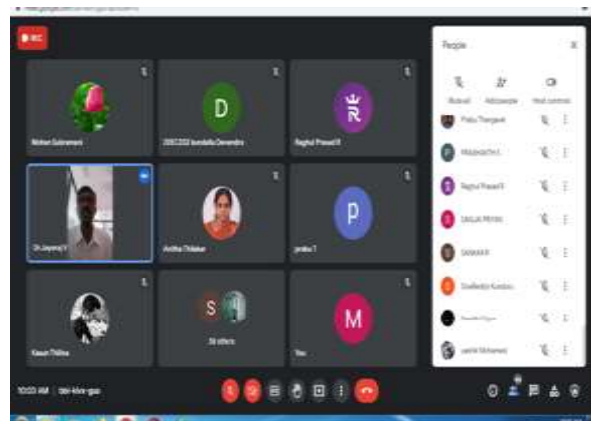
7. Two Days Interaction with Successful Technology Entrepreneurs

- Outcome: A webinar was arranged for the startup students to understand the development process of entrepreneurship



8. Two Days Entrepreneurship Day

- Outcome: Many startup students were participated and got benefitted



9. Three Days Seminar on Sources of Funding, Company Registration and Patent Registration

- Outcome: More than 100 students were participated and gain the knowledge about how to register a new company, how to file the patent & procedures to get grant and various sources of getting funds



10. One Day Induction Program on Innovation and Incubation

- Outcome: Many startup students were participated and understood the incubation process at NGI TBI.



[B] To identify, develop & commercialize students' innovative ideas

1. Five Days FDP on Rapid Prototyping and 3D Printing

- Outcome: A five days FDP was organized for 51 participants to acquire the technical concepts of 3D printing through Hands On Training with the help of Industry Experts



2. One Day Seminar on Technology Commercialization and Business Opportunities in different thrust areas

- Outcome: Many startup students were participated and got benefitted



3. Screening Committee Meeting

- 40 Startups were presented their Ideas into External Panel Members through online mode

4. Mentors Meeting

- Every Two weeks, regularly arranging Mentors – Students meet

5. Purchase Committee Meeting

- To identify the difficulty of purchasing the equipment, Purchase committee has been framed

6. Review Committee Meeting

- Regular Interactive Session has been arranged among the startup students

[C] To enhance Industry-Academia interaction

1. Implementation of Industry Institute Partnership Cell

- Institute Industry Cell is implemented in Nehru Institute of Engineering and Technology

2. Product development centre and Testing facility centre established at the Institute

- Work under progress

3. Staff training Programmes for the Industrial Enterprises

- Regularly organized the Programmes

4. Marketing Assistance & Technology Commercialization

- Through NGI – TBI, we have arranged the facility for the startup students

2. Deviation (shortfall) from the proposed action plan (with reasons), if any: Nil

3. Other important highlights (new initiatives), if any:

- iv. MoU's with accelerators for initiating projects into next level.
- v. Organizing Entrepreneurship programmes under DST – NIMAT scheme

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Development of A Natural Soft Drink Incorporated with Betel and Sarsaparilla Extracts

- I. Project Title** : Development of A Natural Soft Drink Incorporated with Betel and Sarsaparilla Extracts
- II. Mentor Name** : Prof. Shinduja V.
- III. Student team details**
 - i. Indhu S.
 - ii. Deepika A.
 - iii. Jeevitha S.
- IV. Brief description of the student start-up**

Nowadays food industry is well developed and emerging sector all over the world. as a food technology student it's our responsibility to develop a new product with nutritional and medicinal properties without any side effects. India is the second highest no of diabetic's world wide. even born babies are affected from diabetes. According to 2019 records India ranks 3rd in Global Obesity index. Most of the people are into junk foods, alcoholic beverages, foods with more fat content and in taking of undercooked foods. these are the main reasons for these issues and due to lack of time many of the people are not able to follow proper diet or proper routine to achieve a good healthy body. So we have developed a drink with nutritional and medicinal properties for all age groups to enjoy pleasant and blissful moments. Our drinks will a great choice for society to boost their immunity during this pandemic situation. Our drink possess Antidiabetic, anti-inflammatory, anti-carcinogenic, anti- microbial, anti-diuretic and indigestion preventive
- V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.**

A national survey report estimated that 72million adult population of India has diabetics. In a 2017 study of 15 states in India, 11.2% of Indian adults living in large urban centers were found to have diabetes. In 2016, 39% of adults aged 18 years and over [39% of men & 40% of women] were overweight. Type 1 diabetes is rare but only about one third of type 2 diabetes in India are overweight or obese. Lifestyle changes and daily dietary plan is the primary cause for obesity, type 2 diabetics and related ailments. Nowadays, soft drinks,

packed fruit juices, and milk-based beverages have an irreplaceable position in our day-to-day life. The majority of these drinks have negligible nutritional value, but it has a large amount of sugar incorporated in it. So there is an urgent need to replace these drinks with nutritional properties and zero-sugar yet tasty and refreshing drinks. Our project proposes a refreshing natural drink, a lemon based drink incorporated with Betel and Sarsaparilla root extracts and addition of stevia which is natural zero caloric sweetener. Piper betel L. belongs to the Piperaceae family, a traditional herbal medicinal plant and used for several health benefits in Asian countries. Demand for its products such as herbal drugs, medicines, and natural herbal formulations has increased. The beneficial effects of betel leaves and its products have been exploited to treat several diseases like diabetics, cancer, obesity, bad breath, cuts, injuries, inflammations, cold, cough, and indigestion. It is proven that the extract of betel juice has anti-diabetic properties. Due to its high beneficial effect, the betel leaf extract is recently incorporated in foods and beverages. Since the natural taste of the betel juice is herby-bitterness, it may not be acceptable to a broader range of consumers. To make it acceptable it should be sweetened with sweeteners. Indian sarsaparilla (*H. Indicus*) roots (nannari roots) are well-known drugs in the Ayurvedic system of Medicine. From ancient days it is widely used for its medicinal properties. A clinical study on diabetic induced Rats proves that *Hemidesmus indicus* extract stimulates the surviving functional b-cells for insulin release and Might also induce the regeneration of b-cells. Hence it is proposed that it may cure people with diabetes . The Terpenoids, flavonoids, coumarin lignans, aromatic aldehydes, saponins, and other compounds of *H. indicus* all Have antioxidant effects. Sarsaparilla have the good medicinal quality of providing relief from constipation and acidity. While also purifying blood. Apart from these sarsaparilla is effective for inflammations of liver And spleen, urinary disorder ,wheezing, anaemia and rheumatoid arthritis. Rebaudioside A is a steviol glycosides from the leaves of stevia rebaudiana that is 240 times sweeter than normal sugar. It is the sweetest and most stable steviol glycoside and is less bitter than stevioside. It is used in cooking and baking [baked goods, candy, chewing gum, desserts etc]. The Citrus limon which belongs to Rutaceae family has a great health effects. It is a great source of Vitamin.

Reduces risk of Heart disease & stroke. Reduces Total blood Cholesterol levels, helps in weight loss, prevent kidney stones etc. Although it possess lot of medicinal uses but these are not regularly consumed by most of the people. Our drink is refreshing natural drink instead of using sugar , it will be sweetened with rebaudioside A. It will be diabetic and obesity friendly. The addition of betel and sarsaparilla will make the drink have medicinal properties such as anti-diabetic, anti-carcinogenic, anti-inflammatory, anti-microbial, anti-diuretic, and indigestion preventive.

Problem Statement

In India, 72million adults population have been suffering from diabetics. Obesity is one of the major problem to everyone in recent years. Because of these problems most of the people are in depression, anxiety and insecure. Change in lifestyle and dietary plans plays a significant role in the cause of obesity & diabetics. Our project proposes a refreshing natural health drink with zero-sugar and medicinal properties. Since it will be incorporated with a natural zero caloric sweetener (Stevia), it will be diabetic and obesity friendly. The addition of betel and sarsaparilla will make the drink have medicinal properties such as anti-diabetic, anti-carcinogenic, anti-inflammatory, anti- microbial, anti-diuretic, and indigestion preventive.

Nectaria [Refreshing without Guilt]

Nectaria is a lemon-based drink incorporated with betel and sarsaparilla root extract. The betel which a traditional herbal medicinal plant, which is used for treating many health issues in ancient days. Hemidesmus indicus roots/Sarsaparilla roots have many therapeutic properties to treat diseases like diabetes, Cholesterol etc. It also show beneficiary effects on plasma insulin level. To utilize the benefits of betel and Sarsaparilla root extract to the fullness stevia is added as a sweetening agent. It will be a refreshing, post/pre-meal soft drink with a well-known and acceptable taste profile suitable for all age groups. Different types of diabetic care juices are available in the existing market, but they are not soft drinks it exists in syrup form. But our drink is a ready to drink soft drink. Also there is no soft drink exist in market like our product. There is no such product available in the current market. We hope that our product will make a difference in the society.

Objective of the project

- Aims to produce natural and health based products like soft drinks, Betel extract, Nannari Syrup, flavored health drinks.
- Planning to develop immunity boosting drinks in future. It will be a great product for society to boost their immunity during this pandemic situation.

Raw Material Used:

Betel Leaf

Betal is a vine plant from the family Piperaceae. Its leaves are consumed with Areca nut or "supari" as Paan in India and several other Asian regions. The Betel leaf scientific name is Piper Betel. a traditional herbal medicinal plant. The beneficial effects of Betel leaves and its Products have been used to treat several diseases like Diabetics, Cancer, Obesity, indigestion

Uses

- Betel leaves are rich in antioxidants that combat oxidative stress in diabetic patients.
- Heals injuries and wounds.
- Decreases bad cholesterol levels in the body.
- Prevents asthma attacks.
- Reduce Blood Glucose, Triglycerides, Total Cholesterol ,HDL, LDL,SGOT, SGPT.
- Helps in overcoming depression.
- Possess Antibacterial, Antimicrobial, anti-inflammatory and detoxifying properties.

Sarsaparilla Root

Indian Sarsaparilla root also known as Hemidesmus indicus root a medicinal plant used to treat many diseases. Sarsaparilla root known as Smilax Glabra Rhizome (SGR),and it belongs to the lily(Liliaceae) family. There is a variety of sarsaparilla species that are native to south America, central Asia and the Caribbean. The roots are woody and aromatic.

Uses

- It is a natural dietary supplement and widely used in flavouring's in food and beverages.
- The Indian sarsaparilla (*Hemidesmus indicus*) is a commonly used plant in Indian traditional medicine of Ayurveda for the preparation of various non-alcoholic beverages.
- Have the good medicinal quality of providing relief from constipation and acidity.
- Also purifies the blood.
- Apart from these sarsaparilla is effective for inflammations of liver and spleen, urinary disorder, wheezing, anaemia and rheumatoid arthritis.
- Uses in the preparation of cancer preventive drugs.

Rebaudioside A

Rebaudioside A is a highly purified form of stevia. It is a natural zero caloric sweetener. It is 200 times sweeter than normal sugar and most stable.

Uses

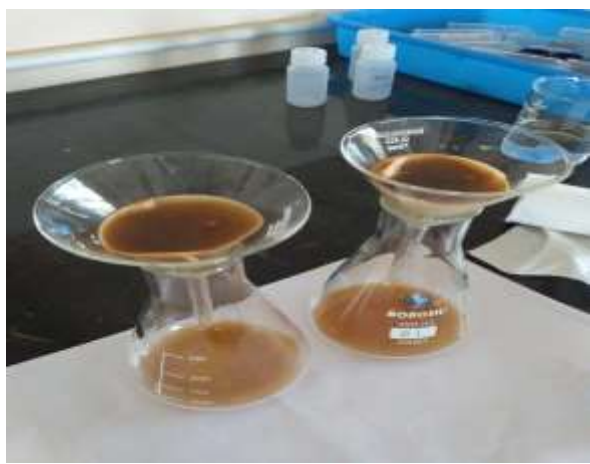
- Help Control Diabetes.
- Aid in Weight Loss.
- Regulate Blood Pressure.
- Lower Cholesterol Levels.
- Aid in Maintaining Oral Health and Prevent Osteoporosis.

Lemon

Lemon known as *Citrus limon* which belongs to Rutaceae family. Native to Asia, primarily Northeast India (Assam), Northern Myanmar or China. It is used for both culinary and non-culinary purposes throughout the world.

Uses

- Help Control Weight.
- Prevent Kidney Stones.
- Protect Against Anemia.
- Reduce Cancer Risk.
- Improve Digestive Health



VI. Contribution of NewGen IEDC in the same

- NGI - NewGen IEDC provide access to Computer & Prototyping facilities and facilitate networking with Professional Resources, Advisors, Consultants, Rich pool of Industry Practitioners and Mentors

VII. Future plan

- We have planned on producing mass production of soft drink with the help of NGI TBI. We also plan to collaborate with various companies in future and also with e-commerce websites to promote this innovation in India

Best Project-2: Pro-Comp Projector

I. Project Title : Pro-Comp Projector

II. Mentor Name : Dr. N. K. Sakthivel

III. Student team details

- i. Richard R
- ii. Bharath. A.
- iii. Chinnakotla Sreeharsha
- iv. Kamatam Krishna Kaanth

IV. Brief description about the student Project

The name of the proposed Product is PRO-COMP PROJECTOR. In recent days, the People are buying Projectors and Computers / Laptops for their Business Presentation. It leads cost and not portable also. To address this Customer Issues, we decided to give a solution by designing and launching PRO COMP PROJECTOR. It has a inbuilt Powerful CPU and LCD projection to make Presentation without Computers / Laptops. The Proposed PRO COMP PROJECTOR is designed to give dual performance, It has inbuilt WIFI and BLUETOOTH for Wireless Connection, It won't consume high electric current like desktop and projector, A mobile adapter is enough to power up this projector, It is light weighted we can carry this product anywhere

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Innovation:

- Existing Projectors do not have Computing Board Feature
- This proposed product Projecting Computer will be developed to improve the Projector more
- compact and portable
- This Product will Consume Less Power With High Display Quality
- This Projector can be used without the support of any Desktop Computers or Laptops
- Notable Innovation Of This Product Will Be
 - ✓ Handy and Portable
 - ✓ Low Power Consumption
 - ✓ Functioning without External Monitor
 - ✓ Possible to make connection with any output devices like Monitor or Android TV

Demand of the product

- ✓ It is being studied from the survey and understood that the current market currently need and there are high demands of this kind of Projecting Computer as it has additional features. i.e) it will work even without Laptops / Desktops
- ✓ The new projecting computer has additional features and more easy to use with better output quality.

Specifications:

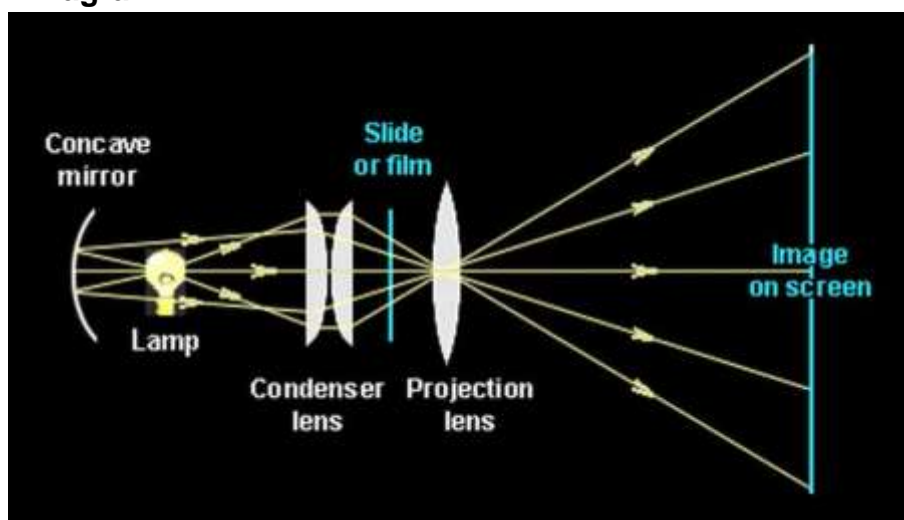
- Broadcom BCM2711, Quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
- 2GB, 4GB or 8GB LPDDR4-3200 SDRAM (depending on model)
- 2.4 GHz and 5.0 GHz IEEE 802.11ac wireless, Bluetooth 5.0, BLE
- Gigabit Ethernet
- 2 USB 3.0 ports; 2 USB 2.0 ports.
- Raspberry Pi standard 40 pin GPIO header (fully backwards compatible with previous boards)
- 2 × micro-HDMI ports (up to 4kp60 supported)
- 2-lane MIPI DSI display port
- 2-lane MIPI CSI camera port
- 4-pole stereo audio and composite video port
- H.265 (4kp60 decode), H264 (1080p60 decode, 1080p30 encode)
- Micro-SD card slot for loading operating system and data storage
- 5V DC via USB-C connector (minimum 3A*)
- 5V DC via GPIO header (minimum 3A*)
- Power over Ethernet (PoE) enabled (requires separate PoE HAT)
- Operating temperature: 0 – 50 degrees C ambient
- Projector Type: HD | Chipset: LED
- Maximum Projection Distance: 15 ft
- Lamp Life: 30000 hr
- Resolution: 1024 pixel
- Aspect Ratio: 16:9
- Maximum Brightness: 4000 lm
- Supported OS
- Raspberry Pi OS

- Twister OS
- Ubuntu Server
- Ubuntu Mate
- RetroPie
- OSMC
- Kali Linux
- Windows on Raspberry (WoR)

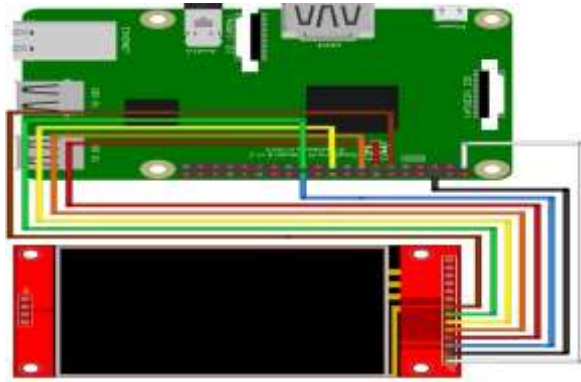
Applications:

- Faculty Members, Trainers, Managers and who needed to present their Business Ideas
- Effectively - "For on-the-go meeting!"
- Customers who need better presentation performance and light weighted to carry anywhere
- People who really needs better specification with reasonable price
- Our product has a wide range usability in Academic Institutions, Training Institutes and
- In Companies, Managers Business Presentations, Playing Video Games, Watching Movies
- It makes learning easier, creates an engaging communicative atmosphere

Projection Diagram



Display Slide Connection



VI. Contribution of NewGen IEDC in the same

- NGI - NewGen IEDC provide access to Computer & Prototyping facilities and facilitate networking with Professional Resources, Advisors, Consultants, Rich pool of Industry Practitioners and Mentors

VII. Future plan

- We have planned for mass production by applying seed fund through NGI TBI. We also plan to collaborate with various companies in future and also with e-commerce websites to promote this innovation in India

Annexure-A Details of Student Projects

Project-01: Water Purification System Using Nanomaterials

1. Project Title : Water Purification System Using Nanomaterials

2. Mentor Name : Mr. John George

3. Student Team Names:

- I. Mr. Niranjan Sahadev
- II. Mr. Vishnu Biju
- III. Mr. Don Martin V J

4. Project Description:

Our product is a compact water purifier which utilizes mainly graphene oxide membrane as the main filter unit. Graphene oxide can purify water upto the extents which the modern day purifiers cannot, be seawater, water with toxins and radioactive materials

5. Project status at beginning of the Year:

- Ideation and Market feasibility stage

6. Interventions made:

- Using nanomaterials for purification (graphene oxide).

7. Current status:

- Product developed and testing process ongoing
- Patent filed on 14.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Usefulness of Banana waste in manufacturing Value added Bio-products

1. Project Title : Usefulness of Banana waste in manufacturing Value Added Bio-products

2. Mentor Name : Dr. A. Anitha

3. Student Team Names:

- I. Ms. Likhitha
- II. Mr. Dharanishvar

4. Project Description:

Banana (*Musa paradisiaca*, family Musaceae) is a central fruit crop of the tropical and subtropical regions of the world grown on about 8.8 million hectares (Mohapatra et al., 2010). Apart from fruit, it generates huge quantity of biomass as waste in the form of pseudostem, leaves, suckers etc., of these, on an average about 60 to 80 T/ha is pseudostem alone.. At present, this biomass particularly pseudostem is absolute waste in most of the states of India and Gujarat is not an exception to this practice. Currently, millions of tons of banana pseudostem are dumped in most of the states of India as waste and most of the farmers are facing huge troubles in disposing the accumulated banana pseudostem. The baseline survey conducted in Coimbatore District covering 30 banana growers revealed that 40 per cent are either composting the pseudostem or chopping and incorporating it into soil while rest of the farmers are disposing it either on field bunds or in nallas. Therefore, an effective economic means of reducing this environmental problem by extraction of fibre and production of fertilizer, nutritional solutions, papers (plates, cups, board), bags etc. from banana waste (pseudostem) is proposed

5. Project status at beginning of the Year:

Ideation and Market feasibility stage

6. Interventions made:

- Sustainable utilization of natural resources.
- Wastes innovatively widen for revenue.
- Effective and economic means of reducing the environmental problem

7. Current status:

- Product developed
- Patent filed on 14.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Bioenzymatic Healthcare Products

1. Project Title : Bioenzymatic Healthcare Products

2. Mentor Name : Dr. N. Saranya

3. Student Team Names:

- I. Ms. Karthika S P
- II. Mr. Dixith K A
- III. Mr. Gokul S

4. Project Description:

Currently we produce the products which are the basic requirements for most of the people. The products are produced on our own. Lifestyle diseases like Heart attacks, Blood Pressure, Diabetes, Cancer are increasing in the Indian society. The major cause of this is the unhealthy diet we have and the toxic products we use apart from the lifestyle of an individual. Thus, people are more inclined towards natural products. Our Product features are Wet wipes, All-purpose cleaner, Pet wash and Terra care. It is a good organic product which is eco-friendly to nature.

It is fully organic and it will be a better product than other chemically produced products. The benefits of using our product are, it is completely chemical free and user friendly in nature. The other chemical products are harmful for the environment, and our product is eco-friendly and non-pollutant and it is a good disinfectant and makes our surroundings healthy

5. Project status at beginning of the Year:

Designing & Market study

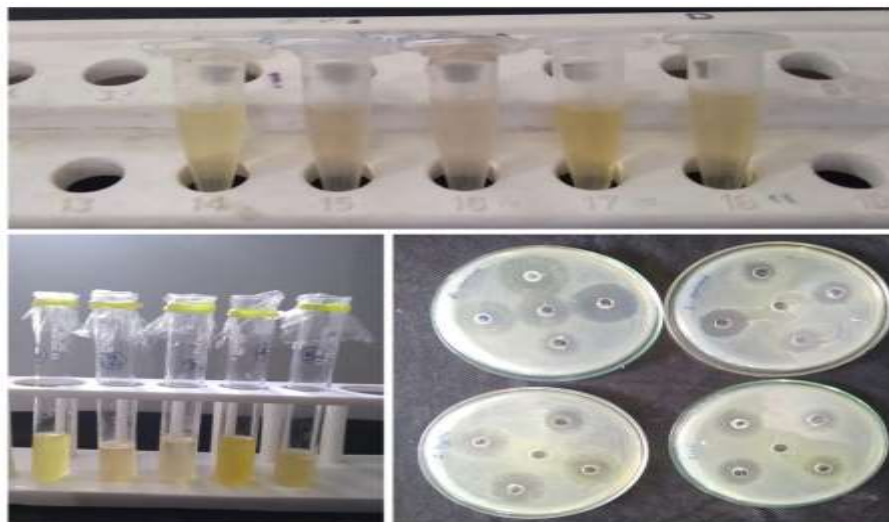
6. Interventions made:

- Bio Enzyme is a simple, inexpensive, natural healthy cleaning product produced from vegetables/fruit peels. Chemically, the Bio Enzymes are an amalgamation of complex organic substances such as proteins, salts and other materials that are by-products of the bacteria that we will use to make the Bio-enzyme
- These organic substances which are in the Bio Enzyme are capable of breaking down chemical and other organic waste thus helping us in removing stains, odor, getting rid of other harmful microbes, etc. They also greatly neutralize toxins and pollutants

7. Current status:

- Final stage and Testing Process is ongoing
- Patent filed on 13.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Bio-formulation of zinc Solubilising Bacterial Fertilizers

1. Project Title : Bio-formulation of zinc Solubilising Bacterial Fertilizers

2. Mentor Name : Dr. S. Esath Natheer

3. Student Team Names:

I. Ms. Varsha P. V.

II. Ms. Anjana A

4. Project Description:

This project is expected to isolate the efficient zinc solubilizing bacteria from the sugarcane plant and to produce the bio fertilizer with a suitable carrier material which could be used as alternate for the chemical fertilizers to increase the crop yield and to reduce the production cost. The samples were collected and process to isolate the *Gluconacetobacter diazotrophicus* by using LGI medium. After isolation, the isolates were tested for the production growth promoting characteristics viz., IAA production, siderophore production and acetylene reduction assay. Further all the isolates were tested for zinc solubilizing efficiency by in vitro method by well diffusion method and broth cultures were analyzed by using ICP-OES. The efficient isolate were mass multiplied and mixed with carrier materials viz., vermi compost, coir compost and peat soil. Then, the contents were kept for curing in dark condition for about 48 hours and packed for further validation and field studies

5. Project status at beginning of the Year:

Ideation Stage

6. Interventions made:

The product 'Znsolfert' which we propose are delicately innovative.

- The organisms are isolated from sugarcane plant being endophytic that can be isolated and use the same as biofertilizer to the sugarcane plants.
- Its eco-friendly and can minimize the environment pollution

7. Current status:

- Final Stage and Testing Process ongoing
- Market feasibility study
- Patent filed on 11.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Low cost technology for development of Organic Biopesticide

1. Project Title : Low cost technology for development of Organic Biopesticide

2. Mentor Name : Dr. Dinesh M. D.

3. Student Team Names:

- I. Ms. Arya A.
- II. Ms. Aparna C.

4. Project Description:

- *Bacillus thuringiensis* will produce endotoxin that effectively and specifically kills pests.
- The endotoxin will be purified and lyophilized.
- The purified endotoxin is our product which can be marketed in both liquid and solid form based on preferences of farmers
- Low cost technology also supports very less market price when compared to commercially available bio pesticides

5. Project status at beginning of the Year:

Ideation Stage

6. Interventions made:

- We attempt to develop low-cost effective medium based on raw material available as adequately as waste product from several industries. Raw materials (wheat bran, rabbit feed, cabbage leaves, potato tubercles, and cactus extracts as carbon and protein sources will be tested for the cultivation of *Bacillus thuringiensis*. In addition, some of the plant extracts are also used as mineral source. After successive media formulation, the Bt will be cultivated and harvested endotoxin from the media. Finally the purified endotoxin will be either lyophilized or dissolved it into suitable liquid

7. Current status:

- Testing Process ongoing
- Market feasibility study
- Patent filed on 11.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Enzyme Production for Degrading Plastic

1. Project Title : Enzyme Production for Degrading Plastic

2. Mentor Name : Dr. P. Vinoth Kumar

3. Student Team Names:

- I. Ms. Hiba
- II. Ms. Rasiya Sulthana A.
- III. Ms. Abhinandini J.

4. Project Description:

This project is based on the basis production of enzyme PETase extracted from the microorganism by the process of culturing and centrifugation to degrade the polythene to MHET that will later hydrolyzed into the monomers

5. Project status at beginning of the Year:

Market feasibility study

6. Interventions made:

- Recycling of polythene bags and plastic bottles are carried out to get the product. Very often it is thrown in the environment which leads to serious environmental pollution-Spoilage of soil, declaiming in beneficial organism, poor soil fertility, blockage of water resources. This is highly expensive. Degradation of recalcitrant pollutants in to a rare chemicals is economically viable and generates money and employability

7. Current status:

- Product Completed and Market feasibility study process ongoing
- Patent filed on 12.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Helical Windmill

1. Project Title : Helical Windmill

2. Mentor Name : Dr. Sobha Manakkal

3. Student Team Names:

I. Ms. Fowsiya P. A.

4. Project Description:

The project introduces structure and principle of the proposed vertical axis wind turbine for better utilization of wind energy

5. Project status at beginning of the Year:

- Ideation stage

6. Interventions made:

- In the turbine there is no friction and therefore it can work on low speed. Important point throughout the project that has been kept in thought is to minimize cost and to only use materials that local farmers can get hold of

7. Current status:

- Product developed and market feasibility ongoing
- Patent filed on 12.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Organic Facemask with Silver Nanoparticles

1. Project Title : Organic Facemask with Silver Nanoparticles

2. Mentor Name : Dr. T. Tamilselvan

3. Student Team Names:

I. Mr Akhil Ajay

II. Mr. Nafath M.

4. Project Description:

Reusable face masks are getting popular among the public due to economically affordable. But reusing of mask enhanced the chance of secondary infection other than expected. This occurs because of improper use of masks without cleaning. Silver is known as its own antibacterial activity, if the silver particle is impregnated with mask material, it may kill bacteria and prevent secondary infections. If it is impregnated by using nanotechnology, the effect will be faster and longer. So, with silver nanoparticle impregnation, the mask may be used for a longer period compared with the conventional masks with or without cleaning/ washing. Thereby we can reduce the chance of secondary and mask-related infections

5. Project status at beginning of the Year:

Ideation stage

6. Interventions made:

- Nanotechnology and organic fabric material come together; it may ecofriendly, economic and pollution free compared with artificial material

7. Current status:

- Product developed.
- Patent filed on 14.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Design and Fabrication of Tabletop Low Speed Wind Tunnel

1. Project Title : Design and Fabrication of Tabletop Low Speed Wind Tunnel

2. Mentor Name : Dr. P. Maniirasan & Mr. M. Kesavan

3. Student Team Names:

- I. Ms. V. Dhivyadharshini
- II. Mr. Shree Sachidhanandham P M R
- III. Mr. Balakarthikeyan

4. Project Description:

A subsonic wind tunnel was designed and fabricated to reduce the drag and lift forces. This product focuses on an open circuit wind tunnel which is more like a tube that is open at both ends, and it is cost efficient. The significance of this low speed table top wind tunnel design, is of low construction cost and it has a superior design for propulsion and smoke visualization. This table top low speed wind tunnel offers a complete system ready for aerodynamic experimentation

5. Project status at beginning of the Year:

Ideation and Design Stage

6. Interventions made:

- U -Tube Manometer Systems, Anemometer, Barometric Sensor Systems, BLDC Motor with regulator control system and LED Light systems. With these materials fabrication will be done and its unique

7. Current status:

- Product Completed.
- Market Feasibility study ongoing.
- Patent filed on 13.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: GADIFEM “The Women Safety Watches”

1. **Project Title** : GADIFEM “The Women Safety Watches”

2. **Mentor Name** : Mrs. Jenisha S.

3. **Student Team Names:**

- I. Ms. Gayathri L
- II. Ms. Divya Bharathi K.

4. **Project Description:**

This device is a security system, specially designed for women in distress. Using ARM controller, the hardware device is the most efficient and it consumes less power. We found an “ALL IN ONE” security device which has all the features in one click. The atrocities against the women can be brought to an end with help of our product “GADIFEM” this device is a security system, especially for women in troubles. The object of the project is to help everyone to save their life, by providing the fastest safety equipment on watches at affordable prices .All they need is a device that can be carried everywhere easily. This watch is specially made with camera, alarm, transmitters & defensive devices.

5. **Project status at beginning of the Year:**

Market Feasibility Study

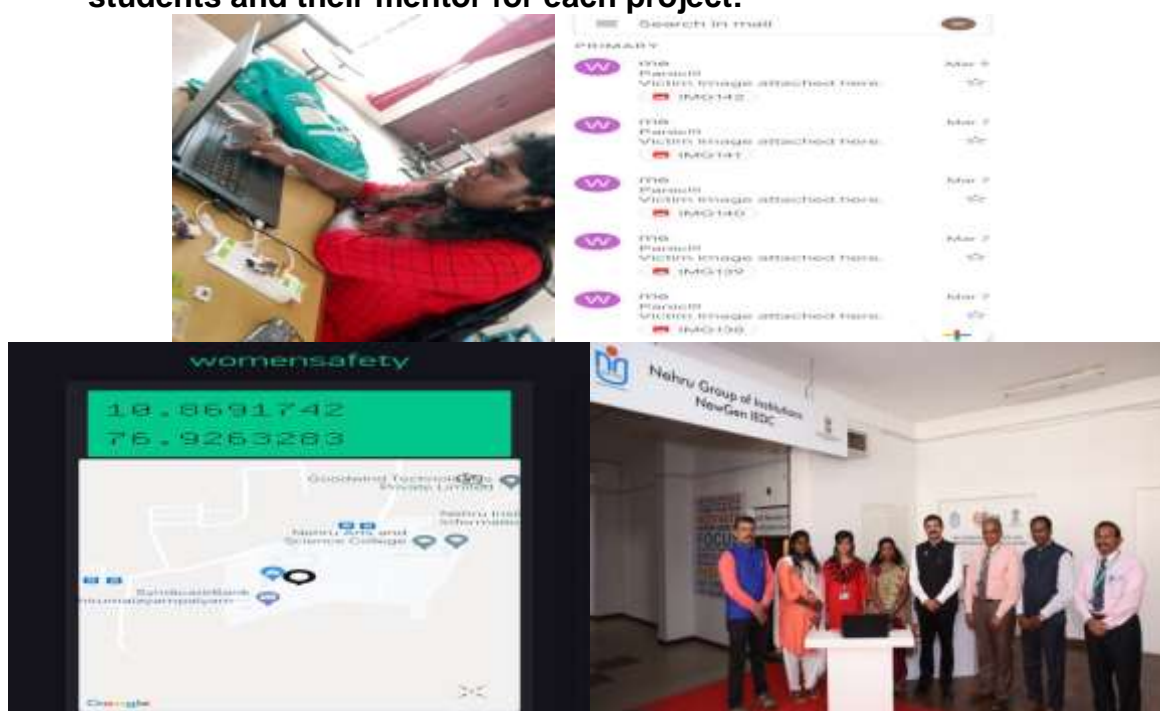
6. **Interventions made:**

- Low Cost of the Product. Need for safety device for women, This project mainly concerns in saving life of every female all over the world Other safety device helps in GPS and alarm but our product includes transmission of location, images

7. **Current status:**

- Product developed and market feasibility study
- Patent filed on 13.05.2022 and waiting for Grant approval

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-11: Automotive Black Box

1. Project Title : Automotive Black Box

2. Mentor Name : Mr. J. Karthikeyan

3. Student Team Names:

- I. Mr. Sanderson Paul M.
- II. Mr. Praveenkumar B.
- III. Mr. Sri Krishna .R.
- IV. Mr. Balaganesan M.

4. Project Description:

- Black box will record speed of two-wheeler fuel emission, turn rate, brake applied and navigation details.
- Portable size and will be fitted in rear section of two wheelers.
- With the help of various sensors, electronic circuit board and memory units, data will be recorded in SD Card.

5. Project status at beginning of the Year:

Market Feasibility Study

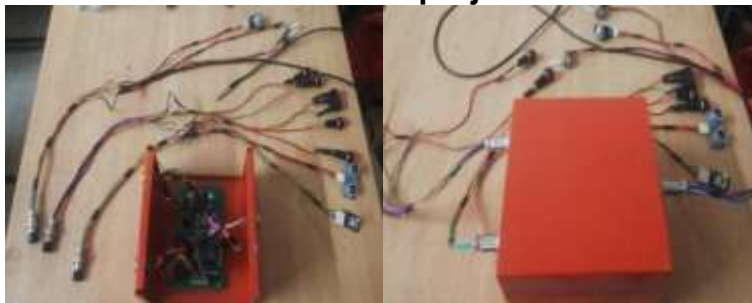
6. Interventions made:

- Automotive event data recorder for two wheelers.
- We use sensors and recording unit which help to store the event data of the two-wheeler

7. Current status:

- Product developed and testing process ongoing
- Patent filed on 12.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Smart and Self-reliant Two Wheelers

1. Project Title : Smart and Self-reliant Two Wheelers

2. Mentor Name : Dr. M. Maheswaran

3. Student Team Names:

I. Mr. Karthick M. S.

4. Project Description:

This product reduces the number of accidents and two wheeler theft using Internet of Things and Smart devices

5. Project status at beginning of the Year:

Ideation Stage

6. Interventions made:

- Biometric and voice controlled anti theft system and inbuilt accident retention and detection system in two wheelers

7. Current status:

- Product developed and testing process ongoing
- Patent filed on 14.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: Intelligent Body Temperature, Mask and Facial Recognition

- 1. Project Title** : Intelligent Body Temperature, Mask and Facial Recognition
- 2. Mentor Name** : Mr. S. Mohan
- 3. Student Team Names:**
 - I. Mr. Raghul Prasad R.
- 4. Project Description:**
 - Touchless Temperature Monitoring and Attendance Using Facial Recognition.
 - Central Database Upload of Temperature and Attendance.
 - A Complete Automated System Providing a Safe Environment
- 5. Project status at beginning of the Year:**

Ideation and Market Feasibility Stage
- 6. Interventions made:**
 - To create a substantially new or improved product service using jetson nano developer Kit with accurate and immediate results
- 7. Current status:**
 - Product developed and testing process ongoing
 - Patent filed on 17.05.2022
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-14: Pro-Comp Projector

1. Project Title : Pro-Comp Projector

2. Mentor Name : Dr. N. K. Sakthivel

3. Student Team Names:

- I. Mr. Richard R.
- II. Mr. Bharath A.
- III. Mr. Chinnakotla Sreeharsha
- IV. Mr. Kamatam Krishna

4. Project Description:

The name of the proposed Product is PRO-COMP PROJECTOR. In recent days, the People are buying Projectors and Computers / Laptops for their Business Presentation. It leads cost and not portable also. To address this Customer Issues, we decided to give a solution by designing and launching PRO COMP PROJECTOR. It has a inbuilt Powerful CPU and LCD projection to make Presentation without Computers / Laptops.

The Proposed PRO COMP PROJECTOR is designed to give dual performance, It has inbuilt WIFI and BLUETOOTH for Wireless Connection, It won't consume high electric current like desktop and projector, A mobile adapter is enough to power up this projector, It is light weighted we can carry this product anywhere

5. Project status at beginning of the Year:

Ideation Stage

6. Interventions made:

- Handy and Portable
- Low Power Consumption
- Functioning without External Monitor
- Possible to make connection with any output devices like Monitor or Android TV

7. Current status:

- Product Completed.
- Market Feasibility study ongoing.
- Patent filed on 13.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Incorporation of raw banana peel powder in the preparation of Healthy Millet Bar

1. Project Title : Incorporation of raw banana peel powder in the Preparation of Healthy Millet Bar

2. Mentor Name : Ms. Abhirami P.

3. Student Team Names:

- I. Ms. Mahalakshmi G.
- II. Ms. Kousiga A.
- III. Ms. Liberna B.
- IV. Ms. Sivasankari B.

4. Project Description:

Banana peels are rich source of antioxidants, polyphenols and have fiber content. So value addition can be done to this waste product. Through this project we utilize raw banana peel which is eliminated by chips industry for a new product development. Incorporation of dried raw banana peel powder can be done in the preparation of healthy millet bar in different composition

5. Project status at beginning of the Year:

Ideation Stage

6. Interventions made:

- Waste into wealth concept and value addition to the waste

7. Current status:

- Product Completed.
- Patent filed on 12.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: THE CONCH

- 1. Project Title** : THE CONCH
2. Mentor Name : Mr. A. S. Rajan

3. Student Team Names:

- I. Ms. B. Nivetha
- II. Mr. M Kumaraguru

4. Project Description:

We can incorporate the chunk mate for easy removal of conch from under water and it is very useful to receive the conch

5. Project status at beginning of the Year:

Ideation Stage

6. Interventions made:

- PVC frame for providing the cabinets to the various systems of the B. M. Chunk mate withstands 4 bar pressure and free from corrosion during the operation
- UV Sensors predicts and communicates the distance of 1m of the chunk mate with respect to the obstacle facing under the sea to the mobile phone through a user friendly application.
- High Definition Camera captures the clear images of 1084 x 1084 pixels of the conch and passes the images to the mobile phone through Wi-Fi technology that can be used in predicting the shape and size of the conch

7. Current status:

- Product Completed.
- Patent filed on 13.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Watermelon Seed Instant Soup Mix

1. Project Title : Watermelon Seed Instant Soup Mix

2. Mentor Name : Mrs. Gulja S. Nair

3. Student Team Names:

I. Ms. Denuja S.

4. Project Description:

Watermelon seed instant soup mix, specially made for soup lovers , childrens and for parents who are interested in serving their children both healthy and tasty food. This product will have cloth covering to support environment , # go green . We are going to pack one seed (any plant seed) per packet to make our customer plant. One plant per packet , # plant trees

5. Project status at beginning of the Year:

Ideation Stage

6. Interventions made:

- New product development and food waste utilization. Innovation is developing a soup product made from watermelon seeds which is rich in nutrients and health friendly .This is innovatively developed for utilizing water melon's waste (seeds) into a value added product

7. Current status:

- Product Completed.
- Patent filed on 11.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Smart Water Monitoring System

1. Project Title : Smart Water Monitoring System

2. Mentor Name : Mrs. Nithya L.

3. Student Team Names:

- I. Mr Ashik K. V.
- II. Mr. Athulya N.
- III. Mr. Harindranath G.
- IV. Mr. Praveen G. V.,

4. Project Description:

Smart Water Monitoring System(SWMS) is a cost effective and efficient system designed to monitor and manage quality and quantity of drinking water which makes use of Internet of Things (IoT) technology. The proposed system consists of several sensors to monitor various parameters of water such as Water level, pH, Oxygen level, Turbidity, Temperature, Humidity and... etc

5. Project status at beginning of the Year:

Ideation Stage and Market feasibility Study

6. Interventions made:

- This Smart Water Monitoring System (SWMS) is connected to internet using WiFi, so that it can be controlled by its user from anywhere in the world using mobile application or web application

7. Current status:

- Product Completed and Testing process ongoing
- Patent filed on 13.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Automated Money Counting Machine for Treasuries

1. Project Title : Automated Money Counting Machine for Treasuries

2. Mentor Name : Mr. A. C. Ramkumar

3. Student Team Names:

- I. Ms. Amala K. Roy
- II. Ms. Pavithra K.
- III. Mr. Aravind Perumal P.
- IV. Mr. Sushil P. S.

4. Project Description:

The donation boxes are primary source of income to the temples. However these huge sums of donations make it a tedious exercise for their office-bearers to count cash and hand it over to the bank. So we strive to produce A faster, automated and precise machine can therefore completely replace and smoothen the Counting Coins and Currency note, By using computer vision based technology along with image processing. The design was built on the Raspberry Pi platform with Open CV. This device utilizes image processing techniques to perform the coin classification and counting. The same method, in modified forms is used for currency notes. It uses colour and size of the Currency to segregate and counting. The sorting software's output result back to the hardware control, which handles the money collection

5. Project status at beginning of the Year:

Ideation Stage

6. Interventions made:

- The automated Money Counting Machine can reduce the work load of the officials in the temples
- It can also save time and can also provide a well documented detail of the transactions for future references.
- The objective of the project is to help everyone to save their time, by providing a faster and more efficient automated facility to count the money, and thereby helping the society

7. Current status:

- Product Completed and testing process ongoing
- Patent filed on 13.05.2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Development of a Natural Soft Drink Incorporated with Betel and Sarsaparilla Extracts

1. Project Title : Development of a Natural Soft Drink Incorporated with Betel and Sarsaparilla Extracts

2. Mentor Name : Mrs. Shindhuja V.

3. Student Team Names:

- I. Ms Indhu S.
- II. Ms Deepika A, B.Tech – Food Technology, NIT
- III. Ms Jeevitha S

4. Project Description:

Nowadays, soft drinks, packed fruit juices, and milk-based beverages have an irreplaceable position in our day-to-day life. The majority of these drinks have negligible nutritional value, but it has a large amount of sugar incorporated in it. So there is an urgent need to replace these drinks with nutritional properties and zero-sugar yet tasty and refreshing drinks. Our project proposes a refreshing natural health drink with zero-sugar and medicinal properties. Since it will be incorporated with a natural zero caloric sweetener (Stevia), it will be diabetic and obesity friendly. It will be a lemon-based drink incorporated with betel and sarsaparilla (Nannari) extract, which poses medicinal properties such as anti-diabetic, and it aids in weight loss and digestion. And also it will be a refreshing, post/pre-meal soft drink with a well-known and acceptable taste profile suitable for all age groups

5. Project status at beginning of the Year:

Ideation stage and Market Feasibility Study

6. Interventions made:

- The proposed technique utilizes widely available ingredients in a unique way that preserves its medicinal property to prepare a unique natural health beverage

7. Current status:

- Product Completed.
- Patent filed on 12.05.2022 and waiting for Grant approval

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: S. R. M. Institute of Science and Technology

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	S. R. M. Institute of Science and Technology		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. C. Muthamizhchelvan Vice-Chancellor		
Name of NewGen IEDC Coordinator	Dr. Shantanu Patil Associate Director- SRM Innovation, Incubation and Entrepreneurship Centre		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	7030142727 assocdirector.iiec@srmist.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen-IEDC/18-19/08 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Prototyping validation - converting into a start-up date on 31.05.2021

- Department of Electrical and Electronics Engineering organised this webinar and Mr. Karthik Krishna, Modelling & Simulation (DRDO), OPAL - RT Technologies was a resource person. The objective was to figure out how to verify a prototype and turn it into a viable startup. The resource person stressing the topic's importance for students wishing to start their own businesses and how they can use this session to convert the prototypes they can develop for their ideas and then further convert that idea into a startup and the prototype concept, the significance of validation, and the many stages of testing. Without adequate validation, you risk spending time, materials, and money developing a product that will never see the light of day. Building a prototype is a great approach to validate your product idea and the first step toward producing a product that users will appreciate

2. Innovation and Start up Eco System date on 23.06.2021

- Mr. Nikunj Panchal, Associate, StartupTN and Mr. Shabeer A J, Associate consultant, StartupTN were the Speakers for the session. Organised by the department of Mechatronics. During the webinar, Mr. Shabeer discussed the monetary value of innovation. Mr. Nikunj guided the participants down the path of innovation by discussing the startup phases, funding, technology readiness level, and India's global standing in this regard. Mr. Shabeer Vaidya reminded out that the majority of innovators will be discovered in institutions such as ours rather than IITs. He also discussed the MOE innovation cell's many programmes, which include information on funding, pitching, and networking opportunities. He briefly mentioned the Government of India's NISP and Kapila programmes.

3. Angel Investment / VC Funding Opportunity For Early Stage Entrepreneurs date on 26.06.21

- This session was organised by the department of Electronics & Instrumental Engineering and was addressed by Mr. Himanshu Pandey a Young professional in Atal Innovation Mission (AIM), Delhi Niti Aayog. The speaker went over several funding options for early-

stage entrepreneurs, such as government grants, incubator funding, angel investment, and venture capital funding, as well as how to scale up ideas, activities necessary, and TRL-based agencies and support agencies. What is the role of angle investors / venture capitalists, and when and how should they be approached?

4. Entrepreneurship as a Career Opportunity date on 29.11.2021

- Prof. Malini, IEDC Coordinator, Sri Sairam College of Engineering was the resource person for the event. She explained the significance of entrepreneurship as a career opportunity for the students. There is a dilemma among the students to join a job or to start their own venture. The resource person threw light on the funding opportunities which are easily accessible when students have a prototype for solving a real life problem in industry



5. Entrepreneurship Boot Camp (Edition 2) date on 21.11.2021

- Experiential Journey based program modelled of the Berkeley Method of Entrepreneurship
- 5 days of intense interactions with experienced trainers, Startup founders, Investors and Industry stalwarts
- Encourages participants to explore and experiment new startup ideas
- Introduces the teams to fundamentals of business plans, raising funding and pitching their startups



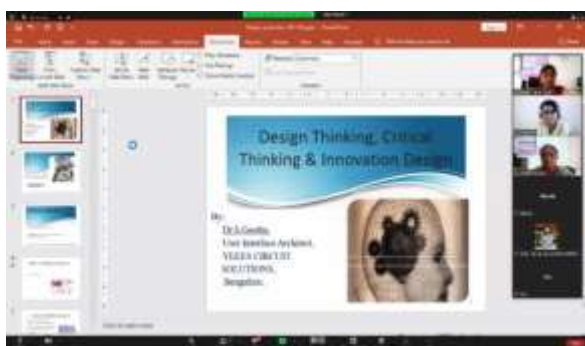
[B] To identify, develop & commercialize students' innovative ideas

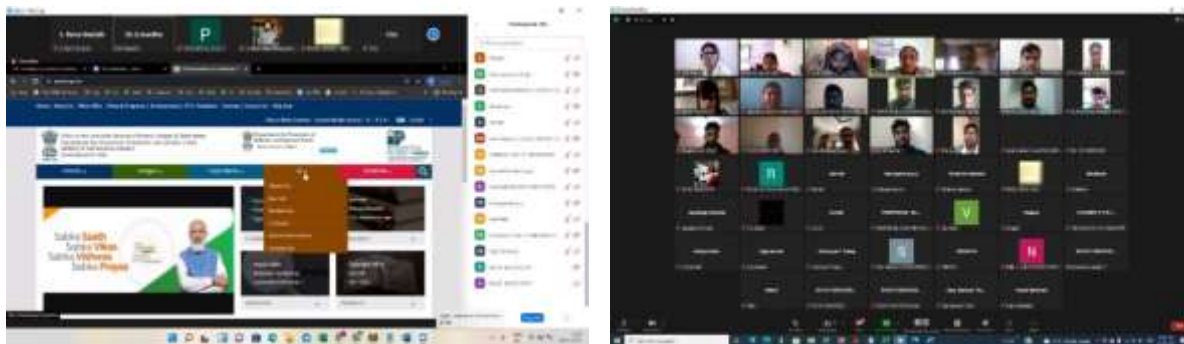
1. Expert talk on "Process of Innovation Development & Technology Readiness Level (TRL)" & "Commercialization of Lab Technologies date on 14.02.2022

- Dr. V. Rajkumar, Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Jammu is the resource person for the webinar. He explained the significance of the Technology readiness level and their relevance in innovation. It provides a blueprint for achieve the innovation targets set by the institutions. It helps in understanding the skills gaps to schedule the training for overcoming the shortfalls

2. Workshop on Entrepreneurship skill , Attitude and Behaviour Development date on 27.01.2022

- Dr. S. Geetha is working as a User Interface Architect in Yeeyes Circuit Solutions, Bangalore. The company is currently in the position to take on all kinds of Printed Circuit Board (PCB) layout / artwork, beginning with single side designs to complex multi-layer designs. She is one of the leading architect PCBs for Automotive, Telecommunication, Data communications, Medical, Consumer Electronics, Instrumentation, Semi-Conductor Industries using Analog, Digital, Mixed, Power, High Speed Digital Design .The objective of the session is to give the participants an awareness of how to protect their innovative ideas. The session deliberated the types of intellectual property and the need for trademarks and registration of design for the inventions. RF, Memory DDRx, QDR technologies. ESCS offers comprehensive PCB Design Services for Original Equipment Manufacturers in Medical, Aerospace and Telecom markets and Embedded Product Development Services from Low Cost Firmware to State-of-the-art Hardware





3. Workshop on Design Thinking , Critical Thinking and Innovation Design date on 25.02.2022

- Dr. Arunkumar was the resource person for the event explained the implication of design thinking in terms of product innovation. The session helped the student in selecting their project topic for the third semester and final year which tries to solve the problems in the stakeholder point needs

4. Prototyping and its testing insights date on 31-03-2021

- Dr. Saoni Banerji, Research Fellow, Microtechnology was a Resource person for the session. The objective of the webinar is to obtain insights into a design thinking process in order to carry out some type of prototyping and its testing insights. This entails creating an early, low-cost, scaled-down version of the product to show any flaws in the existing design. Prototyping allows designers to bring their ideas to test the viability of the existing design and maybe study how a sample of people think and feel about a product. Participants have gained greater information about prototyping and testing after completing the programme

[C] To enhance Industry-Academia interaction

1. Talk on Entrepreneurship Opportunity in Drone Industry date on 31.03.2021

- Mr. SID Venkat, Drones | Market Expansion | Urban Air Mobility Barcelona, Catalonia, Spain. Intended to raise awareness about the current state of UAV start-ups in our country, as well as the opportunities and challenges that lie ahead. The webinar provided an overview of drones and their societal applications. The discussion covered a wide range of drone-related themes, including business possibilities, obstacles, applications in various fields, employment opportunities, interdisciplinary elements, and so on.

2. Session on Achieving Problem Solution Fit & Product Market Fit date on 18.02.2022

- Ms. Chameli Kuduva, Founder, SAAS Insider was the resource person for the event. She explained the concept and need for the solution provided by the startup is satisfying the need of the customer. She also added the significance of Market Feasibility for the Product developed by the Entrepreneur

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:
Nil

3. Other important highlights (new initiatives), if any:
Nil

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Aerem

I. Project Title : Aerem

II. Mentor Name : Dr. Dhanalakshmi & Dr. Samuel Jacob

III. Student team details

- i. Inderan Kannan
- ii. Sukriti Pandey
- iii. Atul John Abraham
- iv. Aninda Ghosh
- v. Avinash Sinha
- vi. Shashank Shekhar

IV. Brief description of the student start-up

- Develop an air purifier with an unique carbon capture technology using microalgae to capture CO₂ directly from the atmosphere and convert it into oxygen.
- Integrate HEPA and activated carbon filters to filter out PM 2.5, VOCs and other gaseous pollutants.

- Develop sustainable products from the algal biomass like biofuels, bioplastics etc. subsequently.
- Produces oxygen equivalent to 2500 trees!

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

- We have supported this project not with just the funding but also with the industry connect

VII. Future plan

- Photoperiod for optimum light and dark cycles for the algal growth
- Carbon Capture solution efficiency in the Test Environment Setup

VIII. Other important highlights

- Winner in the National Innovation Competition held by Innovation council of AICTE

Best Project-2: BrainWaves

I. Project Title : BrainWaves

II. Mentor Name : Dr. Bhasi Sukumaran

III. Student team details

i. Anket Sahoo

IV. Brief description about the student Project

Application of Virtual Reality to Stroke Rehabilitation Incorporation of motion sensing using IMU, EMG and EEG Adopting principles of biofeedback and neuro-feedback Mirror neuron activation

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

More information about this project kindly visit the Link:

<https://drive.google.com/file/d/1wF4t1ztNA2fuJm3OI3V3MU3ujGtk7HHW/view>



VI. Contribution of NewGen IEDC in the same

- We have supported this project not with just the funding but also with the high end computer workstation. The medical college has been roped in to help with field testing of the modules created

VII. Future plan

- Development of prototype
- Complete Customer Discovery process
- Submit report to IITM IC regarding progress
- Complete patent application process

Annexure-A Details of Student Projects

Project-01: Predictive Smart Machine Authorizer

1. **Project Title** : Predictive Smart Machine Authorizer

2. **Mentor Name** : Mr. S. Nivash

3. **Student Team Names:**

- I. Mr. Eshaan Bhardwaj
- II. Mr. Syed Masood I.
- III. Mr. Yazid Marzuk K. P.
- IV. Mr. Santo Santhosh

4. **Project Description:**

The PSMA is a smart authorizer for easy access of the members of FABLAB. It uses a WiFi switch to control the machine access to the FABLAB machines. The PSMA is mounted near heavy machines and hand held machines. It has a mobile app that can be used to pre-book machines and use them at the scheduled time

5. **Project status at beginning of the Year:** Testing

6. **Interventions made:** Pre – booking machines

7. **Current status:** Prototype

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-02: Brainwaves

- 1. Project Title** : Brainwaves
- 2. Mentor Name** : Dr. Bhasi Sukumaran

3. Student Team Names:

- I. Mr. Anket Sahoo

4. Project Description:

We are in the process of developing a prototype incorporating Virtual Reality modulated by IMU, EMG and EEG feedback for rehabilitation of motor impairment in stroke survivors. We will create a VR scenario where the patient sees himself playing cricket/ herself dancing. Any small movement made by the patient will be reflected as a full range movement by the virtual reality avatar- the cricket player swings the bat to hit a six- the dancer executes a graceful movement of the hand. As treatment progresses, the patient will have to make progressively larger movements to elicit the same response from the VR avatar. IMU and EMG recording done while the movements are executed will be used to provide feedback in the first phase. This would be used for the home based application. In the second phase, for the hospital /clinic based application, EEG recordings of the sensori-motor waves will be used to provide feedback to modulate the movements of the VR avatar in the similar manner that IMU and EMG were used earlier

5. Project status at beginning of the Year:

- TRL 3- Prototype development

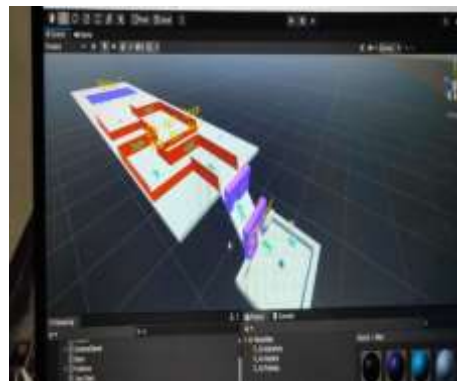
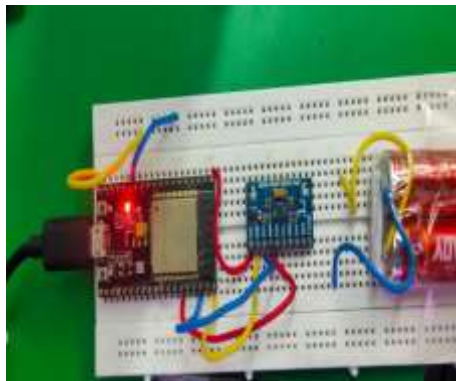
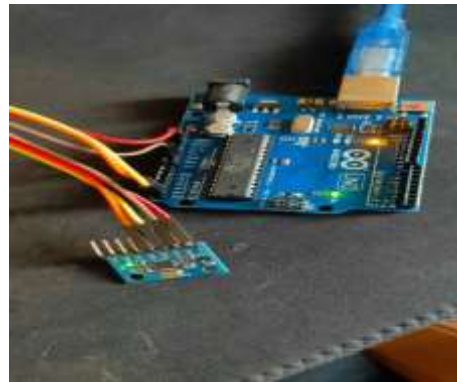
6. Interventions made:

- Skeletal VR software and skeletal IMU hardware connected

7. Current status:

- Incorporated as a Startup, funding through NIDHI-Prayaas

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Aerem

1. Project Title : Aerem

2. Mentor Name : Dr. S. Dhanalakshmi & Dr. B. Samuel Jacobs

3. Student Team Names:

- I. Mr. Inderan Kannan
- II. Mr. Atul John Abraham
- III. Mr. Sukriti Pandey
- IV. Mr. Manish Harwani

4. Project Description:

We have devised a method to solve the increasing air pollution using micro algae as a bio filter. The micro algae absorbs the excess CO₂ and other pollutants in air, thus cleaning the air and producing O₂ at the same time. We believe the perfect blend of technology and biology could together solve this deadly problem

5. Project status at beginning of the Year:

Prototyping

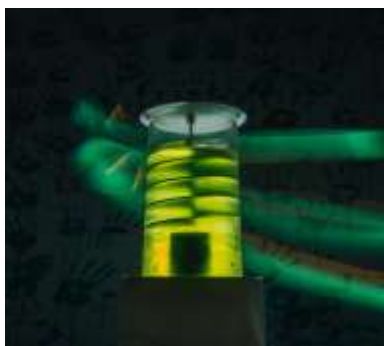
6. Interventions made:

- We were able to 3D print an air purifier which not only purified air but also generated oxygen and sequesters Carbon-DiOxide

7. Current status:

- Incorporated as a Startup

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Compressed Air Engine

1. Project Title : Compressed Air Engine

2. Mentor Name : Dr. S. Senthilaraja

3. Student Team Names:

- I. Mr. Chitrarasan
- II. Mr. Kaarthi
- III. Mr. Abhishek

4. Project Description:

That is reversing the process of reciprocating the compressor. And our main intention is to increase the efficiency by introducing value system and regeneration for compression air.

5. Project status at beginning of the Year:

Prototype

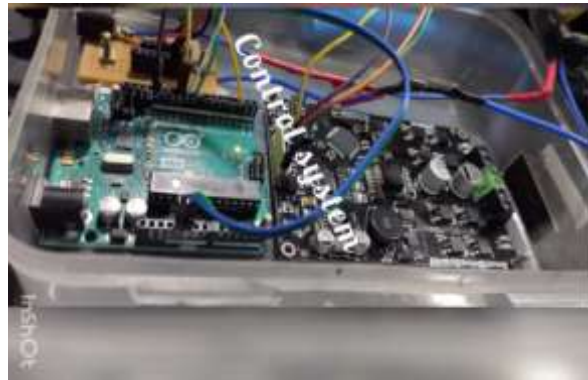
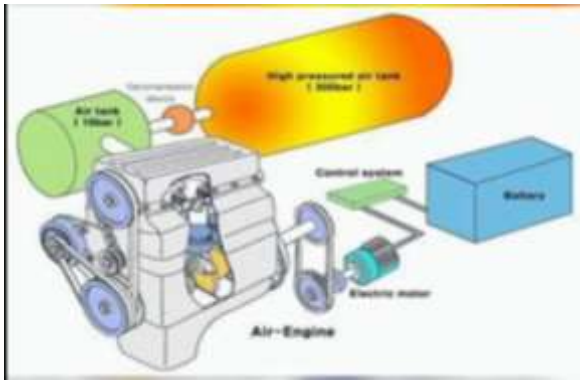
6. Interventions made:

- Regeneration for Compression Air

7. Current status:

- Currently they have developed the final products with all interactions

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Advanced Self Sanitizing Respirator

1. Project Title : Advanced Self Sanitizing Respirator

2. Mentor Name : Mrs. N. Deepa

3. Student Team Names:

- I. Prabhat Kumar
- II. Abhisekh Behera
- III. Sahil Sanil

4. Project Description:

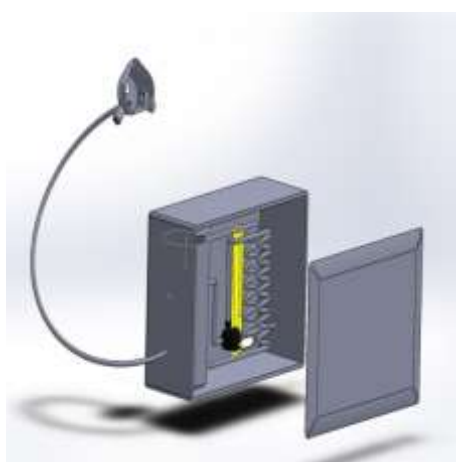
This project is about a medical provision that can be used to reduce the risk of transmission of communicable disease that mainly spread through air or droplets discharged from an infected person. This proposal mainly focuses on recent pandemic COVID-19 which is a highly communicable disease. This project aims to develop a respirator which includes a filtering and a sanitizing unit so that the contaminated air exhaled by the infected person cannot pass directly in the atmosphere, and so it will reduce the chance of spread of infection to its nearby environment. Apart from filtering and sanitizing the air this mechanism also makes the user feel comfortable during respiration by controlling the pressure inside the mask. The filtration is performed by the wet scrubbing method aiming to filter out small enough particles and the sanitizing part is done by exposure of ultraviolet-C radiation which is the most effective way to deal with virus

5. Project status at beginning of the Year: Testing

6. Interventions made: Healthcare Centers

7. Current status: Currently they have developed the final products with all interactions

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Robi 1.0

1. Project Title : Robi 1.0

2. Mentor Name : Dr. M. Arun Noyal Doss

3. Student Team Names:

- I. Rohit Kumar Singh
- II. Aman Sharma
- III. Harri Srinivasan
- IV. Priyanshu Rai

4. Project Description:

Robi is an assistant bot to work in closed environments like (but not limited to) a restaurant or a hospital

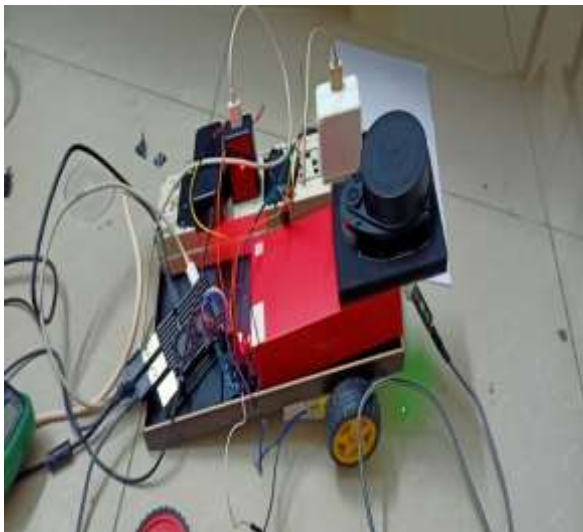
5. Project status at beginning of the Year: Hardware construction

6. Interventions made:

- Started hardware construction of the prototype Added lidar to the prototype

7. Current status: Testing Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: FlyLife

1. Project Title : FlyLife

2. Mentor Name : Dr. Priya Xavier

3. Student Team Names:

- I. Manas Tuteja
- II. Rishik Jhunjhunwala
- III. Rohit Singh
- IV. Abhinav Vishwakarma
- V. Athreya Ashok

4. Project Description:

FlyLife has put together a plan of action which is already in effect thanks to a \$1000 seed fund from The Ford Motor Company Fund. We are currently in an R&D phase and in the process of designing a VTOL Drone with payload delivery capabilities. We aim to have a prototype ready to launch operations by November, 2020. A comprehensive roadmap has been put forward by the technical team which allows us to make improvements to the design of the prototype and logistics of the operation alike in the R&D phase. Our short term goal is to assist SRM Hospital in providing medical supplies to both, other hospitals and frontline workers, from a central source. We will expand to delivery for e-commerce platforms in a hyperlocal area and move to larger urban centres by 2022. Our long term goal is to operate a fleet of drones for delivery of e-commerce goods, e-pharmaceuticals and online food orders to a large urban centre in Chennai. FlyLife is a project jointly carried out by Enactus SRM and Team SPARS of SRMIST, KTR

5. Project status at beginning of the Year:

- Fabrication stage

6. Interventions made:

- E-commerce platforms in a hyper local

7. Current status:

- The project has made major progress in getting the prototype ready. The base structure of our drone has been made. The drone will be test-ready within 1 month of restarting work

Project-08: Curae

1. Project Title : Curae

2. Mentor Name : Ms. Briskilal J.

3. Student Team Names:

- I. Utkarsh Shukla
- II. Aditya Mangla
- III. Anish Dutta
- IV. Varun Sangwan
- V. K. Chakravarthi viswanath

4. Project Description:

Medical centers work in isolation. Patient records are not digitized/transcribed and the data/record of the medical history of a patient is not readily available/accessible online or on-demand across various Hospitals. Our Idea is to provide an unruffled structure for the Medical Sector. We are providing the cloud structure for storing the data. This App will make the things easier and make the bridge between all the domain in medical department i.e (Doctors, Patients, Diagnostic Centre, Pharmacy and Government). The app will be of great boon to those, who need urgent medication. Most people die because they don't get the proper, required treatment, at the true time. This app will be of great help to those

5. Project status at beginning of the Year:

Testing stage

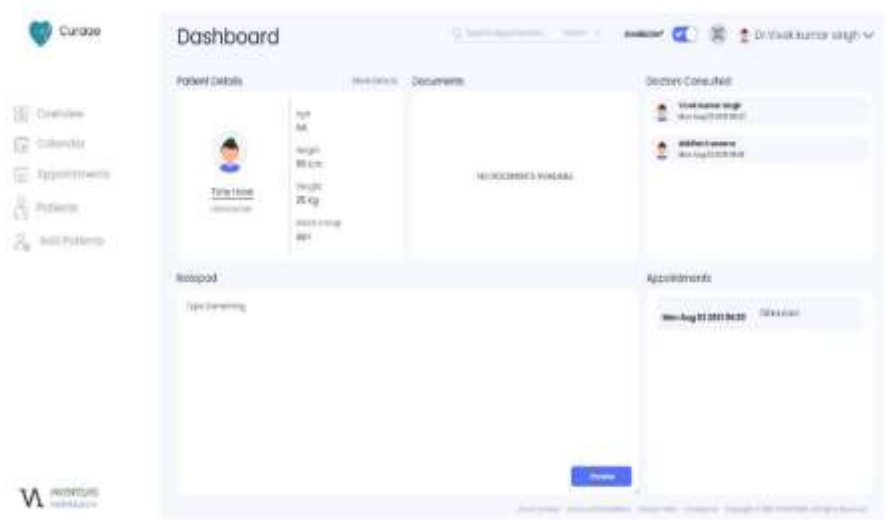
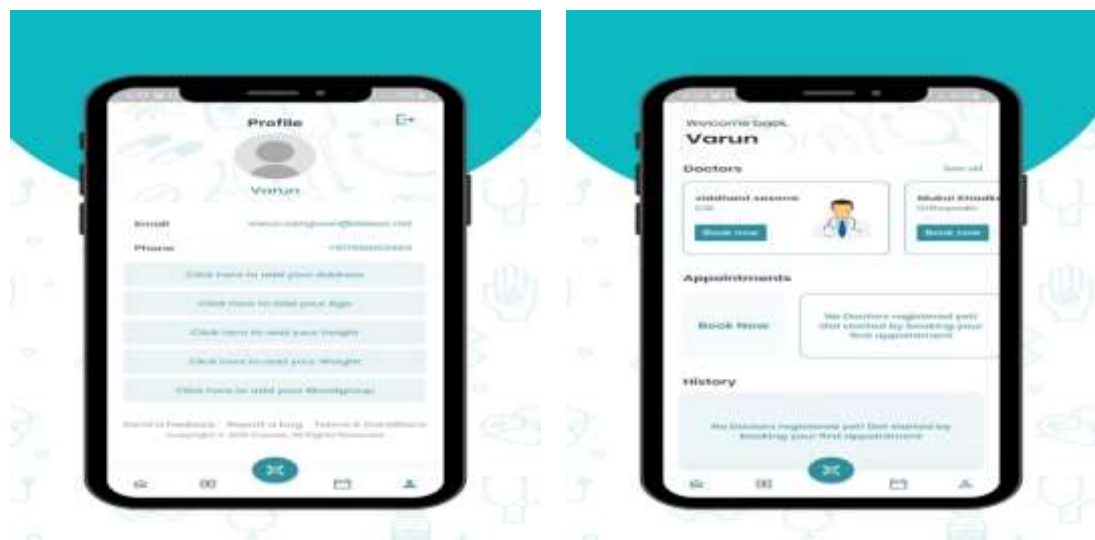
6. Interventions made:

- Medical Sector

7. Current status:

- Minimal Viable product

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: An Efficient Refreshable Braille Pad For Visually Impaired

1. Project Title : An Efficient Refreshable Braille Pad For Visually Impaired

2. Mentor Name : Dr. P. Eswaran

3. Student Team Names:

- I. Vamsi Krishna Varigonda
- II. Ajay Hudge
- III. Vignesh G.
- IV. Shantanu Mukhopadhyay

4. Project Description:

Any View an Efficient Refreshable Braille Pad For Visually Impaired. This project aims to tackle the age-old conventional method of embossed paper braille system which is expensive and has limited works of literature converted. Refreshable cells is an emerging technology, wherein users can read e-books, computer screens, and other electronic supports using refreshable braille displays. The pad which contains 8 cells is portable and gives unlimited access to literature at an affordable price

5. Project status at beginning of the Year:

Completed

6. Interventions made:

- Patent filed and published

7. Current status:

- Designs Ready for Testing

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: CCD based sensor to detect the change in biologically altered Fluorescence

1. Project Title : CCD based sensor to detect the change in biologically altered Fluorescence

2. Mentor Name : Dr. P. A. Sridhar

3. Student Team Names:

- I. Vaishnav Kumar S.
- II. Vikram T. R.
- III. Shriram M.
- IV. Mohamed Amsath Haseef H.

4. Project Description:

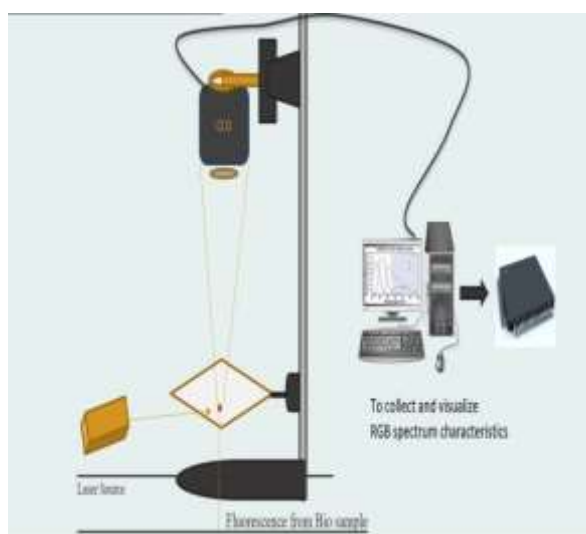
This project is about using an effective method to develop a CCD (Charge Coupled Device) based sensor which can identify the characteristics of bio molecules by detecting fluorescence alterations in them

5. Project status at beginning of the Year: Prototype stage

6. Interventions made: Testing

7. Current status: Prototype in Testing Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Concrete Casting Mould

1. **Project Title** : Concrete Casting Mould

2. **Mentor Name** : Mr. Pradeep S.

3. **Student Team Names:**

- I. Anuwar Husain S.
- II. Deepak Pugazhlendi
- III. Nagarjun Jeyachandran
- IV. Nirmal Kannan V. A.

4. **Project Description:**

Usually Cast iron moulds which uses bolt and nuts take much large time for assembling and disassembling. Our solution for this is moulds made of HDPE with toggle clamps, this reduces the time at a larger margin that the entire casting can be done within a short span of 15 minutes

5. **Project status at beginning of the Year:** Completed

6. **Interventions made:** Constructions

7. **Current status:** Prototype-1 is ready for material testing. Final Design is ready for manufacturing

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-12: Project Ephemeral

1. **Project Title** : Project Ephemeral

2. **Mentor Name** : Dr. Suchitra M.

3. **Student Team Names:**

I. Mr. Rushil Rai

II. Mihir Singh

4. **Project Description:**

User Interface layer that allows the User to check network configuration and job statistics. All the nodes on the network will be running a client based on Steve's library. Each node will be able to either submit a job or receive a job for carrying out. The nodes submitting the jobs are called **Employers**, and the nodes that receive and carry out a job are the **Employees**

5. **Project status at beginning of the Year:** Development of Prototype

6. **Interventions made:** Resource Sharing, P2P

7. **Current status:** Testing stage

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-13: Live GPS based tracking of Police Patrol

1. Project Title : Live GPS based tracking of Police Patrol

2. Mentor Name : Dr. Ananth Kumar

3. Student Team Names:

- I. Prakhar Kaushik
- II. Parth Pandey
- III. Yash Mudgil

4. Project Description:

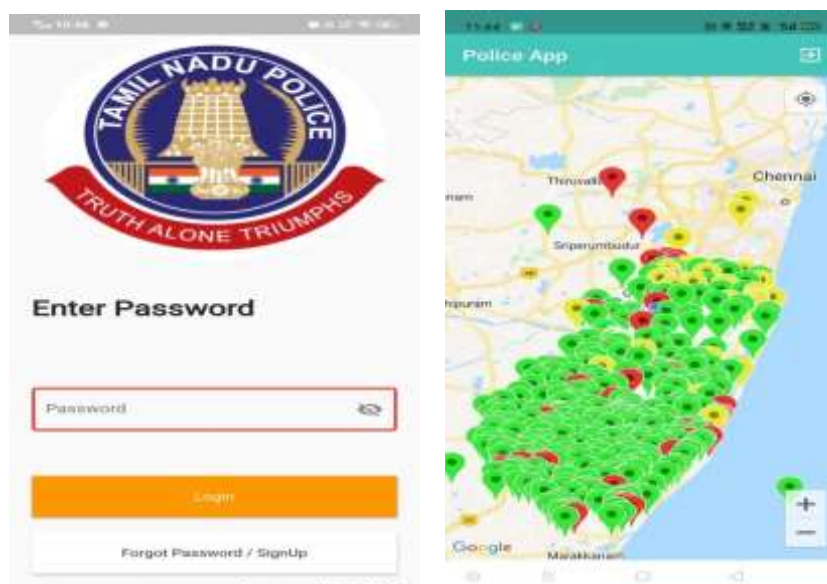
A mobile/web application to track the cops on patrol during the Assembly elections 2021 in the Chengalpattu district. This project was a requirement raised by Mr. Sundaravathanam IPS, District Police Superintendent Chengalpattu

5. Project status at beginning of the Year: Completed

6. Interventions made: Completed

7. Current status: Completed and successfully deployed

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Development of Compression Techniques to Transmit HD Images / Videos over Half-Duplex Very High Frequency (VHF) band

1. **Project Title** : Development of Compression Techniques to Transmit HD Images / Videos over Half-Duplex Very High Frequency (VHF) band

2. **Mentor Name** : Dr. Vani R.

3. **Student Team Names:**

- I. Mr. Benjamin George Samuel
- II. Deepak Shankar R.
- III. Krishna Teja B.
- IV. Vignesh S.
- V. Chandresh Muthukumaran
- VI. Kanvar Kailash T.

4. **Project Description:**

We are working out ways to innovate present Digital Image & Video Processing Techniques to achieve maximum quality well within the Compression Ratio range of 1:50. We will be simulating the whole algorithm and Processing Technique on MATLAB & Simulink. Which will be followed by designing of an Application Specific Integrated Circuit (ASIC) as a Digital Signal Processor, which will be coded by exporting the Simulink Model into a Verilog File and later will be synthesized using Intel Quartus Prime Design Suite. In the meantime, a hardware Printed Circuit Board (PCB) will be designed under IPC-A-610

5. **Project status at beginning of the Year:** Subject-Matter Expertise in VLSI

6. **Interventions made:** Intermediate

7. **Current status:** Testing stage

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-15: Surveillance System using Raspberry Pi

1. Project Title : Surveillance System using Raspberry Pi

2. Mentor Name : Dr. Parthiban N.

3. Student Team Names:

I. Ms. Kavyapriya R.

4. Project Description:

Security systems are inherently technology intensive and require substantial investment of time, money and resources. The motto of the project is to develop a self-powered surveillance system that is capable of identifying and classifying moving objects (both humans and vehicles) in long range with sophisticated alarm systems that notify at first sign of trouble, during the day or night. It can be implemented using a Raspberry Pi, surveillance device and alarm system. Implementation of additional modules such as object segmentation & detection and improving the quality of incoming video will be heedful add-ons to the system in real-time environments. The presence of such a system will serve as a deterrent to would be thieves and prevent undesirable happenings in the neighborhood

5. Project status at beginning of the Year: Prototype (finished)

6. Interventions made: Nil

7. Current status: Prototype (finished)

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Application Security

1. **Project Title** : Application Security

2. **Mentor Name** : Dr. V. Kavitha, Sornalakshmi K

3. **Student Team Names:**

I. Mr. Shamunesh P

4. **Project Description:**

User Interface layer that allows the User to check network configuration and job statistics. All the nodes on the network will be running a client based on Steve's library. Each node will be able to either submit a job or receive a job for carrying out. The nodes submitting the jobs are called **Employers**, and the nodes that receive and carry out a job are the **Employees**

5. **Project status at beginning of the Year:**

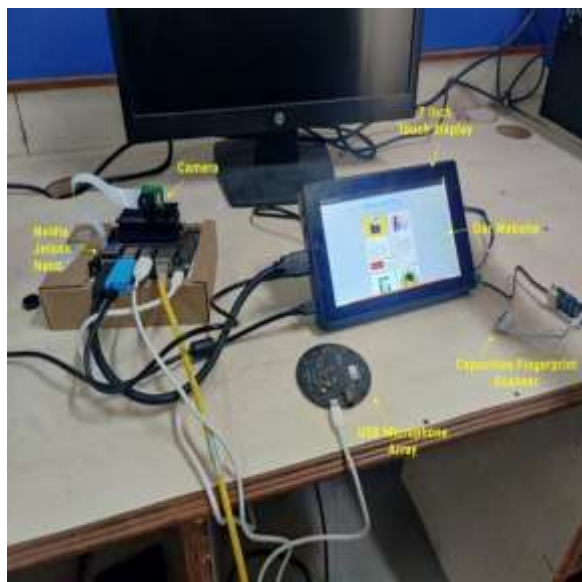
Our project has gained good number of milestones, and the level of idea we progressed is in good upward curve!

6. **Interventions made:**

- We haven't faced any big interventions in the progress of prototyping. Had few issues with the compatibility of the devices. We have added up our project in couple of conference papers, and one milestone in the process

7. **Current status:** Testing stage

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-17: Myopia Tracker

1. Project Title : Myopia Tracker

2. Mentor Name : Dr. S. P. Angeline Kirubha & Dr. Dharani

3. Student Team Names:

- I. Ms. Malavika S. Kamath
- II. Devanshi Tiwari
- III. Vani S.
- IV. Lavanya Reddy
- V. Tejashwini R.

4. Project Description:

Development of Smart spectacles to monitor and modify myopia related health behavior in children

5. Project status at beginning of the Year: Idea Level: Prototype Completed

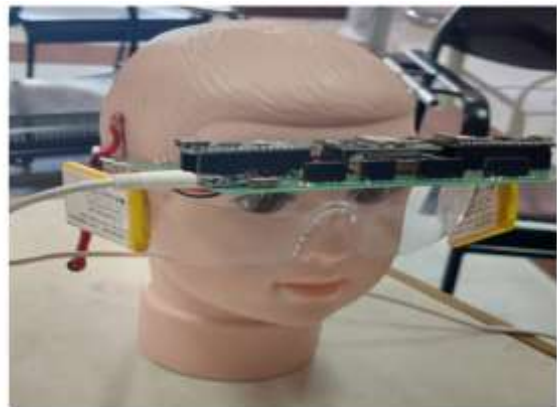
6. Interventions made: Nil

7. Current status: Testing stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



SPECTACLE MOUNTED MYOPIA TRACKER - PROTOTYPE



MYOPIA TRACKER - TESTING ON MANEQUIN

Project-18: Smart Waste Bin Capable of Automated Waste Separation with real time tracking and recycling of used food

1. Project Title : Smart Waste Bin Capable of Automated Waste Separation with real time tracking and recycling of used food

2. Mentor Name : Dr. Vivek Maik

3. Student Team Names:

- I. Tanishq Kesharwani
- II. Rishita Raj
- III. Shashwat Gupta
- IV. Deepanshu Singh
- V. Riya Jain

4. Project Description:

Smart bins are an intelligent form of waste disposal. By scanning waste materials defining bio-degradable / non-biodegradable, recyclable / non-recyclable waste materials, the smart bin can be used to complete the whole waste segregation process here. It will have different chambers for each waste segment and will segregate the equivalent waste into one. Finally, when the bin is filled and ready for emptying, notifications are automatically sent via e-mail or SMS

5. Project status at beginning of the Year: Idea Level: Prototype

6. Interventions made: Waste segregation process

7. Current status: Testing Stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: IOT based non-invasive blood parameter tracking system

- 1. Project Title** : IOT based non-invasive blood parameter tracking system
- 2. Mentor Name** : Mr. P. A. Sridhar
- 3. Student Team Names:**
 - I. Arush Pant
 - II. Rishabh Shukla
 - III. Abhay Chirania
- 4. Project Description:**

Through this project we aim to design and develop a system which is capable of tracking various blood Parameters like haemoglobin levels, insulin levels etc. with our primary focus on blood sugar level tracking. We aim to design a simple tool to reduce manual labour and eliminate the use of needles to procure blood samples and providing a painless and hygienic method to measure different parameters
- 5. Project status at beginning of the Year: Idea Level: Prototype**
- 6. Interventions made:** Healthcare
- 7. Current status:** Testing stage
- 8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-20: Tessellate

1. **Project Title** : Tessellate
2. **Mentor Name** : Dr. Shanthi Prince

3. **Student Team Names:**

- I. Shreyashri Biswas
- II. Rajeev Muttangi
- III. Harshil Patel

4. **Project Description:**

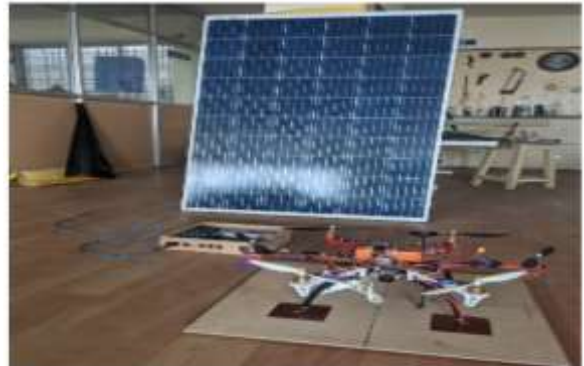
As the entire world is moving forward towards industry 4.0 and Internet of Things will be at the core of it. This had made accessible internet and connectivity with one another in all spaces cardinal and of the utmost importance. We want to bridge the gaps that the current network solutions hasn't covered and provide a system which will keep us in the network in every situation possible

5. **Project status at beginning of the Year: Idea Level: Prototype**

6. **Interventions made: Nil**

7. **Current status: Testing stage**

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-21: Oxygen Concentrator

1. Project Title : Oxygen Concentrator

2. Mentor Name : Dr. K. Anbalagan

3. Student Team Names:

I. Bhavya Ghorawat

4. Project Description:

We aim to build a portable oxygen concentrator prototype with built in IOT system that will help family members or doctors to monitor and adjust the oxygen level of the patients through. Another device without being physically present near them

5. Project status at beginning of the Year: Idea Level: Testing Level

6. Interventions made: Health Care

7. Current status: Testing stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-22: Smartisation of Anti Infiltration Obstacle System

1. Project Title : Smartisation of Anti Infiltration Obstacle System

2. Mentor Name : Dr. Annapoorani Paniyappan K.

3. Student Team Names:

- I. Anish Chaudhary
- II. Kumar Vaibhav
- III. Pratiksha Mohite
- IV. Uttez Pallapothu

4. Project Description:

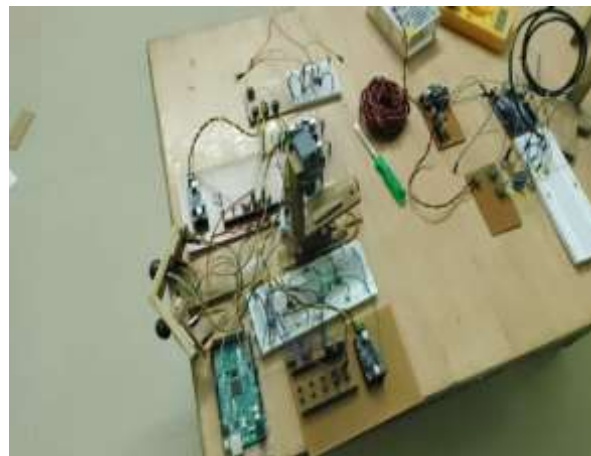
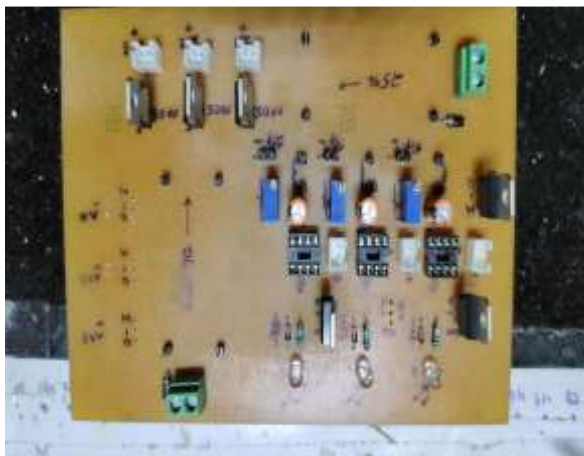
Border security forces are diligent in eradicating infiltration across borders to establish peace in the country. By introducing a smart system, we would lend them a hand in escalating peace across the country and ceasing infiltration of foes across borders. The need of the hour is to design an automated border surveillance system which can perform the surveillance task without requiring any human assistance

5. Project status at beginning of the Year: Idea Level: Prototype

6. Interventions made: Defense

7. Current status: Testing stage

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: C. V. R. College of Engineering

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	C. V. R. College of Engineering		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. K. Nayanathara		
Name of NewGen IEDC Coordinator	Prof. P. Viswanath		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	9440575769 panchagnulaviswanath@gmail.com		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen-IEDC/18-19/09 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. 6 students participated in SR Innovation Exchange, Warangal

- T. Srimanth won 2nd price worth Rs 15,000 and college Management also gave the team equal amount of Rs15,000



2. One Week Entrepreneurship Development Programme on “Bio-Design & Innovation” for 50 students of our college from 6-11-2021 to 14-11-2021

- Students have got deep insight into the scope of Innovation in Bio-Design and the required skills for Bio-Designing. They are able to recognize and assess opportunities in the environment



3. One Day Workshop on “Entrepreneurship and Innovation” held on 9 October 2021

- The students are able to recognize the innate entrepreneurial competences within them. They are able to recognize and assess opportunities in the environment. They understand the role that entrepreneur can play in enhancing their lives and lives of others



[B] To identify, develop & commercialize students' innovative ideas

1. Project expo TECHNOVA 2021 was the first ever inter college mega project expo fair of CVR College of Engineering on 8 December 2021

- The purpose of this event is to showcase the projects of all students from different colleges and different core fields. The Projects were critically evaluated by industry and academic experts giving positive feedback to improve quality project



2. Ideathon on 5-10-2021

- Ideathon was an intensive brainstorming event where an individual or a team from different backgrounds, skills and interests converged to diagnose predefined problems, identify the best opportunities, and ideate the most viable solution.



3. Coding Contest on 5-10-21

- Each contestant was allotted a system in our college lab where they got to participate in the contest. The coding contest consisted of 3 questions with varying difficulties (Easy, Medium, Hard) and lasted for 60 minutes. The majority of topics for the coding contest covered from
 - Data structures & Algorithms
 - Problem Solving

The students got to learn a lot from the contest and are now better versed with coding





[C] To enhance Industry-Academia interaction

1. Internship of 316 students in 30 companies like AMAZON-SDE FTE (ACMS), COMMVAULT, ClearTrip, Accolite, OpenText, Thomson Reuters etc
 - Students are able to get firsthand knowledge on the operations of a company, how a company works, how the company is trying to solve the problems etc. The students are able to work on problems real-time



2. Deviation (shortfall) from the proposed action plan (with reasons), if any: Nil

3. Other important highlights (new initiatives), if any: Nil

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: RADAR Cut off and 5G Cut-off Filters

I. Project Title : RADAR Cut off and 5G Cut-off Filters

II. Mentor Name : CH VRS Gopala Krishna

III. Student team details

- i. M. Sumanth Kumar
- ii. Bakka Susheel Kumar
- iii. M. Teja Vardhan Reddy

IV. Brief description of the student start-up

Filters are needed to suppress the unwanted presence of signals in any communication network. Satellite earth stations operating in C-band often receive signals from nearby RADARs operating in the same band. Similarly, 5G mobile networks also interfere with the Satellite communication network. To suppress these unwanted signals, the design, analysis, simulation, fabrication, and testing of RADAR cut-off and 5 G filters have been taken up. Both the filters have been designed, simulated, and analysed using CST software. The Mechanical Drawing has been prepared using AutoCAD. One number of each of these filters has been fabricated. The mechanical drawing has been prepared using AutoCAD tools and is no each of the filters have been fabricated in the CNC Centre of the Mechanical Engineering Department. For this necessary tools are also procured and CNC milling operation has been carried out. The filters have been fabricated in two sections for ease of fabrication. An Aluminium Block of suitable dimensions has been taken and machined to the required accuracy to provide less joint of waveguide flange. The items were taken to one of the local industries for testing and evaluation. The measured results are in close agreement with the simulation studies. The following photographs provide the overall view and dimensions of both filters. RADAR cut-off filters are currently imported and this developed product will be an import substitution. The 5G filter design caters to the emerging field of Technology in the Country

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

The technology will be passed on to the local industry for production in Quantities. Till the manufacturing process stabilizes, the institute will handhold the industry for the successful fruition of the component manufacturing



VI. Contribution of NewGen IEDC in the same

- NewGen funds of Rs. 1,90,000 has been provided towards development of the product

VII. Future plan

- The students will take it up as a start-up and college will support them in establishing the market

VIII. Important highlights:

- The Radar Cut off filter developed is import substitute with complete indigineous material.
- 5 G filter is for emerging technologies when to suppress the unwanted signals in the SATCOM networks

Best Project-2: Electric Vehicle Battery Management System

I. Project Title : Electric Vehicle Battery Management System

II. Mentor Name : Dr. Lakshmi Swaroopa

III. Student team details

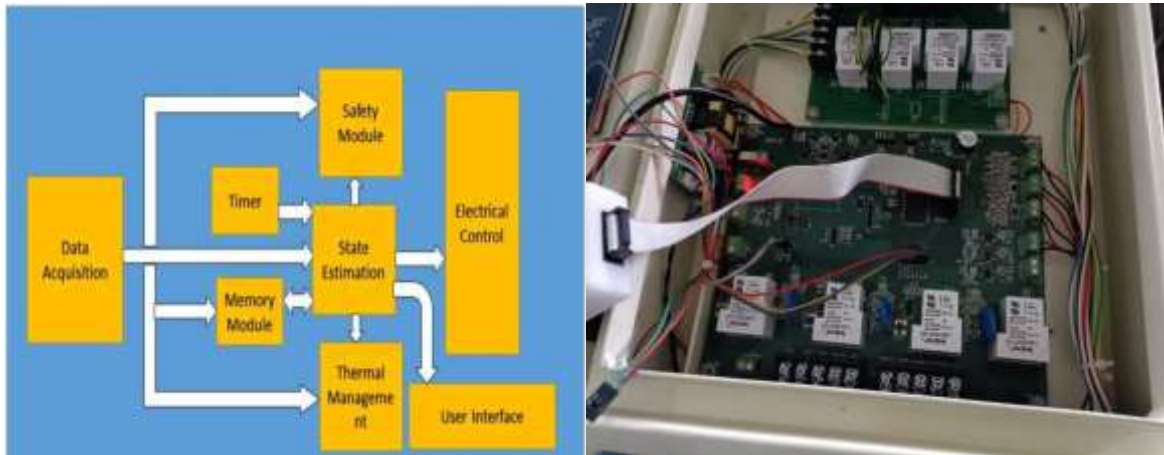
- i. K. Satya Deep
- ii. B. Rakesh Reddy
- iii. Uppu Rahul
- iv. S. Rupendra
- v. Y. Satvika
- vi. Sankoju Ushasri

IV. Brief description about the student Project

The primary purpose of the battery management system is to protect the battery from operating the battery outside its safe operating specifications. A typical BMS system continuously collects data from various sensors and ensures that the battery operates within the design specs. As a part of this project, we will built a BMS system prototype. The project involved selection of type of magnet, Design of winding of the motor, Motor sizing, Calculations of mutual inductance, Analysis of performance of the motor. A simulation was created in Matlab/Simulink to demonstrate the functioning of closed loop control of BLDC motor. This project involved using of electronics parts instead of mechanical parts for low-maintenance and long-lasting solution. A high-power brushless DC motor controller, IGBTs and GaN switches has been developed which can replace MOSFETs. Either integrated or discrete gate drivers can control the transistors. The drivers of a brushless motor controller schematic act as intermediaries between the switches and a microcontroller (MCU). In addition, the absence of brushes lead to minimum power loss and a low level of electromagnetic interference (EMI) and noise

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

The technology will be passed on to the local industry for production in Quantities. Till the manufacturing process stabilizes, the institute will handhold the industry for the successful fruition of the component manufacturing



VI. Contribution of NewGen IEDC in the same

- NewGen funds of Rs. 1,42,780 has been provided towards development of the product

VII. Future plan

- Future plan is to promote the EV sector's organic growth and enhance its popularity among the people with governmental media programmes, with the help of which a substantial cut in fossil-fuel run vehicular mobility can be made possible

VIII. Important highlights:

- Deliverable will be a real time working model with full quality testing for single user access

Annexure-A

Details of Student Projects

Project-01: Electric Vehicle Battery Management System

1. Project Title : Electric Vehicle Battery Management System

2. Mentor Name : Dr. M. Lakshmiswarupa

3. Student Team Names:

I. Keshamoni Satya Deep

II. Baddam Rakesh Reddy

4. Project Description:

BMS system prototype has been build. The primary purpose of the battery management system is to protect the battery from operating the battery outside its safe operating specifications. A typical BMS system continuously collects data from various sensors and ensures that the battery operates within the design specs

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 July, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Electric Vehicle Charging Station

1. Project Title : Electric Vehicle Charging Station

2. Mentor Name : Mr. K. S. V. Phani Kumar

3. Student Team Names:

- I. Meduri Harshavardhan
- II. Paripelli Anusha
- III. Jaini Harsha
- IV. Voriganti Manasa Laxmi

4. Project Description:

Compact EV charging solutions have been developed. Electric vehicles require compact EV charging solutions that ensure faster and on-demand charging and robust connectivity to support electric vehicles' current and future needs. EV Charging solution will also make it easy to install EV chargers for individual houses, housing societies, and residential buildings. Home chargers will be well integrated with proper safety features for people and electric vehicles. These chargers are compact, lightweight, have attached AC input cables and DC output cables, and provide flexibility to be used as portable chargers or to be wall-mounted. These chargers are more than 95% conversion efficiency, lowering the total cost of ownership of battery-powered vehicles

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 July, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Electric Vehicle Motor Drive Controller

1. Project Title : Electric Vehicle Motor Drive Controller

2. Mentor Name : Mr. P. Vinod Kumar

3. Student Team Names:

- I. Adavelli Praneeth
- II. Patil Sanjivane Nitin
- III. Kotha Varshini Reddy

4. Project Description:

BLDC motor controller circuit has been developed. BLDC motor controllers differ according to the method they use to detect the rotor's position. Measurements can be made with the help of position sensors or using a sensorless technique. Using electronics instead of mechanical parts that wear makes it a low-maintenance and long-lasting solution. In addition, the absence of brushes leads to minimum power loss and a low level of electromagnetic interference (EMI) and noise. Most brushless motors use two or three-phase power systems. So in a BLDC motor controller circuit diagram, this will look like two or three half-bridges (depending on the number of phases) with a pair of switches each

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 10 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Electric Vehicle Motor testing with drive controller

1. Project Title : Electric Vehicle Motor testing with drive controller

2. Mentor Name : Dr. Vishwanatha Siddhartha

3. Student Team Names:

- I. Uppu Rahul
- II. Chilukamari Saikrishna
- III. Komatireddy Rohith Reddy
- IV. Cheemalwar Sai Niveshith

4. Project Description:

A real time working model has been developed with full quality testing for single user access. Project involved selection of type of magnet, designing of winding of the motor, Motor sizing, Calculations of mutual inductance, and Analysis of performance of the motor

5. Project status at beginning of the Year: Idea Stage

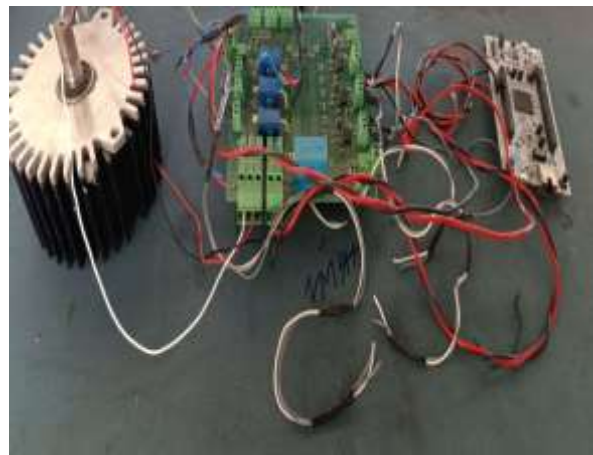
6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 July, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Generic Host Pi a wireless addon device for Printers

1. Project Title : Generic Host Pi a wireless addon device for Printers

2. Mentor Name : Mr. N. N. S. S. S. Adithya

3. Student Team Names:

- I. K. Rajiv Reddy
- II. K. Roopesh Kumar Reddy
- III. Pramod Reddy

4. Project Description:

GHOST-PI wireless printer add-on has been developed to make commonly used printers into wireless printers. The device takes already existing USB connection and connects it to wireless interfaces like Wi-Fi and Bluetooth. Users are no more in need of installing drivers and adding printer manually as all of them will be configured on our add-on device

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 July, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Smart Parking Organizer

1. Project Title : Smart Parking Organizer

2. Mentor Name : Dr. Humaira Nishat

3. Student Team Names:

- I. K. Suketh
- II. S. S. N. Surya Teja
- III. A. Pawan Kumar

4. Project Description:

The project involves use of ultrasonic waves (which can travel more distance) to detect the vehicles. Parking availability information will be sent to IoT cloud platform using Wi-Fi. User will easily know the parking availability using web application

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 July, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Smart Precision Interface For Conventional Agricultural Methods

1. Project Title : Smart Precision Interface for Conventional Agricultural Methods

2. Mentor Name : Dr. S. Praveen Chakravarthy

3. Student Team Names:

- I. Nikhilesh Anchuri
- II. G Nitin Reddy
- III. N. Phani Sri Harsha

4. Project Description:

LoRaWAN based Precision agricultural Solution has been developed to improve the plant yield by giving required quantity of water, Nutrition and maintain correct Soil PH and Temperature. This obviously reduces the expenses in terms of less usage of fertilizer, manpower and recurring cost for existing GSM Device. This LoRaWAN based solution can be used to monitor their land anywhere from the world and this can be applicable to any of the remote area where access public network is not possible. This makes automation of giving nutrition and watering crops by measuring soil nutrition, soil moisture and soil temperature

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 July, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Timer Flame Controller for conventional stoves

1. Project Title : Timer Flame Controller for conventional stoves

2. Mentor Name : Mr. N. N. S. S. S. Adithya

3. Student Team Names:

- I. Konidhala Nandan
- II. K. Roopesh Kumar Reddy
- III. J. Tankashala
- IV. N Bharath Nandhan

4. Project Description:

Project involves redesigning the current flame control with a modified timed flame control. Four designs are envisaged (a) separate timer latched to existing flame control (b) an integrated timer and flame control. (c) electronic control latched to existing flame control (d) an integrated electronic timer flame control. All the designs have been developed to retrofit the existing stoves as well as new stoves

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 202

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Bamboo Plastic Composites As An Alternative For Mobile Pouches

1. Project Title : Bamboo Plastic Composites As An Alternative For Mobile Pouches

2. Mentor Name : Mr. A. Suresh

3. Student Team Names:

- I. Thandu Ajay
- II. K Bharath kalyana Krishna
- III. B Sai Pranay Varma
- IV. K Venkata Sai Srujan
- V. B Sai Sravan

4. Project Description:

Project is about making composite material made up of bamboo and thermo plastic for mobile pouches. Usually the bamboo and plastic cannot join together because of dissimilar properties but here a coupling agent is used to join them firmly. The bamboo is made into fine powder using the chipping and pulverizing machine. Similarly, the thermo plastic granules are converted into liquid form by the heater. With two hoppers both bamboo powder (50%) and liquid form thermo plastic (50%) is sent to a blender where the coupling agent is added to it and then blended well. Compared to plastic pouches more reliable and robust mobile pouches can be made. The cell phone pouches of thickness 3mm to 6mm can be made. These are flexible, multi colour and light in weight. The aim of the project is to reduce the plastic consumption in the mobile phone pouches by 50% only

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Corn Cob Baker

1. Project Title : Corn Cob Baker

2. Mentor Name : Dr. Venkata Ramana

3. Student Team Names:

- I. G. Rahul
- II. K. Vinodkumar
- III. S. Karthik
- IV. K. Kalyan

4. Project Description:

Project involves developing corn cob baker which is a portable small oven that can be used by roadside vendors who make their livelihood by selling baked corn cobs

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 July, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Cuff Pressure Monitoring

1. Project Title : Cuff Pressure Monitoring

2. Mentor Name : Mr. N. N. S. S. S. Adithya

3. Student Team Names:

- I. Cherupally Kavya
- II. Makula Rithika
- III. V. Sreegandhavalli
- IV. ShifaKouser

4. Project Description:

Cuff pressure monitor has been developed for ventilated patients. Endotracheal intubation is routinely performed during general anesthesia and in veterinary medicine. When the cuff on the endotracheal tube (ETT) is inflated, it is crucial to maintain a proper cuff pressure because both excessively high (over-inflation) or low (under-inflation) cuff pressure can lead to serious adverse events

5. Project status at beginning of the Year: Idea Stage

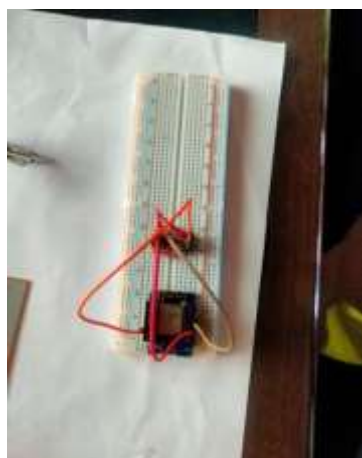
6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 July, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Synthesis, Characterization & Biological Activity of 3-amino coumarins

1. Project Title : Synthesis, Characterization & Biological Activity of 3-Amino coumarins

2. Mentor Name : Dr. M. Ashok

3. Student Team Names:

- I. R. Srija
- II. C. Srilikhita
- III. D. Saiteja
- IV. T. Srujana

4. Project Description:

A new series of ligands have been designed, synthesized and characterized using 3- aminocoumarin with carbonyl compounds which may behave as multidentate chelates towards transition metal ions like Co(II),Ni(II),Cu(II), Zn(II),&Pd(II) to promote greater stereo chemical flexibility and enhanced stability of the complexes

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: IoT Workbench with Conveyer and Industrial PLC for Automanual Inspection and Production Counting System

1. Project Title : IoT Workbench with Conveyer and Industrial PLC for Automanual Inspection and Production Counting System

2. Mentor Name : Ms. Prameela Devi

3. Student Team Names:

- I. Anyalapu Nandini
- II. KarangulaYeshmitha Reddy
- III. Pulagam Sai Nithin Reddy

4. Project Description:

The prototype developed is IoT Workbench with Conveyer and Industrial PLC which controls the process and quality control of manufactured products before marketing the product

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: Millimeter-Wave Horn Antenna

1. Project Title : Millimeter-Wave Horn Antenna

2. Mentor Name : Prof. Gopal Krishna

3. Student Team Names:

- I. Shaik Saleem
- II. Shaik Shirfan
- III. Boppishetty Tharun

4. Project Description:

The project involved developing of Horn antennas which are used for a variety of applications like standard gain horn, illuminating Reflectors, lenses and stand alone applications. While the horn design can be of E- plane sectoral, H-plane sectoral, pyramidal or conical versions, a pyramidal horn has been designed, fabricated operating in millimeter wave frequencies to explore the frequency bands other than normal S, C, X, Ku band frequencies. The advantages are high directivity, low loss, low standing wave ratio (SWR), broad bandwidth, and simple construction and adjustment. Aluminum material (HE 30) is being used for fabrication

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Solar Powered IoT Weather Station with Rain Gauge

1. Project Title : Solar Powered IoT Weather Station with Rain Gauge

2. Mentor Name : Dr. S. Praveen

3. Student Team Names:

- I. Phulijala Bharath Chandra
- II. Gopu Saikiran
- III. Dedekula Anwar Baasha

4. Project Description:

The prototype developed is Solar Powered IoT Weather Station With Rain Gauge. This smart weather station can be easily deployed for monitoring local atmospheric conditions and microclimates for weather forecasting and prediction. LoRa based weather station enables organizations and communities to develop smart environments

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: LuX Based Curtain Open/Close Control System

1. Project Title : LuX Based Curtain Open/Close Control System

2. Mentor Name : Ms. Prameela Devi

3. Student Team Names:

- I. N. Sai Varun Reddy
- II. B. Vinod
- III. B. Satvik Reddy

4. Project Description:

The prototype developed is LuX Based Curtain Open/Close Control System. When the light intensity is 271 - 1000 lux then the curtain goes up, then if the light intensity is 1001 lux the curtain will go down, and if the light intensity is 270 lux then the curtain stays down or closed

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Medium Density Fibre Boards from Banana Waste

1. Project Title : Medium Density Fibre Boards from Banana Waste

2. Mentor Name : Mr. Manjeeth Kharub and Dr. M. Venkata Ramana

3. Student Team Names:

- I. P. Rohit
- II. Sai Karthikeya
- III. G. Sheshank Reddy

4. Project Description:

The project involved developing fibre boards from banana waste. Low-cost housing is one of the important expectations from the Govt and the people at the bottom of pyramid. We notice that Medium-Density Fibreboards (MDFs) are suitable materials to build smart-offices, kiosks, low-cost furnishing, houses and are eco-friendly. In Banana plantation, after the crop is harvested, the rest of the plant(which is about 60% of the plant mass) is mostly discarded. Banana stem have a peculiar property that they contain fibres and lock air in the form of air-pockets, making them light-weight and yet strong. An ideal material to make Medium Density Fibre Boards. Conversion of waste to wealth

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Rover based Seeding Machine

1. Project Title : Rover based Seeding Machine

2. Mentor Name : Mr. Ahmed Shahebaaz

3. Student Team Names:

- I. S.S.V. Saravan
- II. Hiba Nisar
- III. G. Srinivasa Rithik
- IV. T. Sujith

4. Project Description:

The prototype developed is rover based seeding machine .This electric seeding machine works with little greater efficiency than the mechanical powered machines. Self-charging facility is also added with this machine. Manpower is reduced by using this type of machine. It can be operated by using RF control

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-19: Low-Cost PV Cell Testing Unit

1. Project Title : Low-Cost PV Cell Testing Unit

2. Mentor Name : Dr. B. Saidulu

3. Student Team Names:

- I. P. Sai Koushik
- II. DantalaYashaswi
- III. Sree Saayi Kowshik

4. Project Description:

The prototype developed is a novel low-cost microcontroller and stepper motor-based automation system to measure the IV characteristics of solar cells of various dimensions enabling quick and precise sorting of cells according to their IV characteristics. This will enable the manufacturers to have a greater number of units at the said cost vis-à-vis a conventional PV cell sorting machine. Also, we are making the system easy to maintain to keep MTBF at the lowest. This system follows the IEC standard test requirements as well

5. Project status at beginning of the Year: Idea Stage

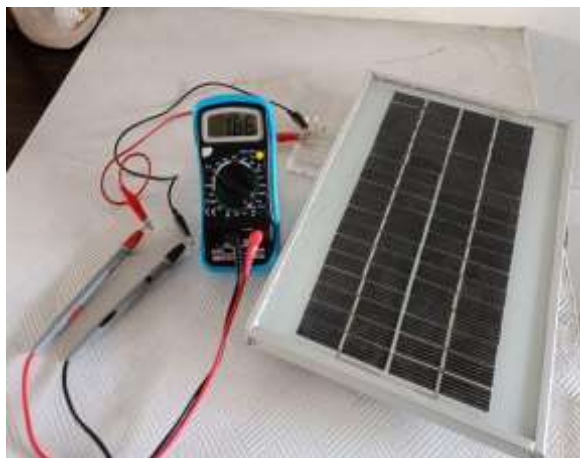
6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Fuel briquette manufacturing machine for waste foliage

1. Project Title : Fuel briquette manufacturing machine for waste foliage

2. Mentor Name : Mr. T. Manoj

3. Student Team Names:

- I. K. Yashaswi
- II. K. Bhavana
- III. G. Asmitha
- IV. K. Mokshada

4. Project Description:

The project involves developing Fuel briquette manufacturing machine for waste foliage. Agricultural waste, shredded leaves, twigs and similar foliage like dry weed plants are collected and dried to remove excess moisture. This aggregate is ground into a uniform consistency using a shredding mechanism. The processed aggregate is then subjected to pressure using a “propeller screw” mechanism to achieve high density blocks. This dense block is pushed through a heating die to achieve the desired briquette shape

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-21: PET bottle shredding equipment for plastic recycling and tiles manufacture

1. Project Title : PET bottle shredding equipment for plastic recycling
And tiles manufacture

2. Mentor Name : Mr. A. Suresh

3. Student Team Names:

- I. G. Sheshank Reddy
- II. Mekala Sai Vamshi Reddy
- III. Alapakam Nikhil

4. Project Description:

PET bottle shredding equipment has been developed for plastic recycling and tiles manufacturing. This machine shreds the collected PET bottles and convert the shreds into pavement tiles and roofing construction materials in a cost-effective manner. These shredders are hydraulically and pneumatically operated and are feasible if very high number of forces are required for shredding a material

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-22: Energy Conservation System Using Occupancy Detection

1. Project Title : Energy Conservation System Using Occupancy Detection

2. Mentor Name : Ms. Ch. Shravani

3. Student Team Names:

- I. Y. Cheena Keshava
- II. A.Keerthi
- III. K.M. Prahlad
- IV. V. Ravi Prasad

4. Project Description:

The project involved developing an energy conservation system using AI based low power occupancy detector which can switch off different types of loads based on the occupancy and thus conserve electric energy. This solution uses a CMOS sensor coupled with a PIR and Impedance sensor. The Pir and Impedance sensors turn on the CMOS sensor (on detection of motion) which captures images, and these images are used to run a CNN algorithm to detect presence of human occupants. Once the occupancy is detected in a certain area of say, a classroom, only electrical appliances of that area are enabled. Subsequently when there is vacancy, the system sends a cut-off signal to the Relay/SSR controller to turn off the devices in that area. When the system is idle it goes into a low – power mode to further conserve energy

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-23: X-Band Feed Septum Polarizer

1. Project Title : X-Band Feed Septum Polarizer

2. Mentor Name : Prof. Gopala Krishna

3. Student Team Names:

- I. M. Sumanth Kumar
- II. Bakka Susheel Kumar
- III. Maruri Teja Vardhan Reddy

4. Project Description:

Septum polariser is a precision microwave component forming part of the feed system in a earth station antenna. As part of data acquisition and tracking requirement for remote sensing satellites, this component converts linearly polarised signals into circular polarised signals and vice versa. Because of dual polarisation requirement the axial ratio becomes stringent. A square/ circular waveguide is loaded with a septum. It will split the electric field in two halves. One of the component of electric field will travel with the same phase. The other half will be propagates with 90 degree phase shift. At the output these split component of electric field will combine and the tip of the electric vector forms a loci of a circle there by yielding circular polarised signals

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-24: RADAR Cut off and 5G Cut-off Filters

1. Project Title : RADAR Cut off and 5G Cut-off Filters

2. Mentor Name : Prof. L. Nageswara Rao

3. Student Team Names:

- I. Batchu Srujan Kumar
- II. Marapalli Taral Anurag
- III. Kontham Dheeraj Reddy

4. Project Description:

RADAR Cut off and 5G Cut-off Filters has been developed. The waveguide cut-off filter is an important component in RADAR signal applications. The cut-off filter will suppress the higher frequency components and pass any signals which have frequencies lower than their cut-off frequency. Waveguides are hollow metal tubes inside which electromagnetic waves are propagated. The development involved Design, simulation, Manufacturing of the precision microwave component and testing

5. Project status at beginning of the Year: Idea Stage

6. Interventions made:

- Provided support in making prototype product
- Provided mentoring from faculty and industry experts.
- Provided support in field deployment of the product.
- Given a grant from NewGen IEDC

7. Current status:

- Under product prototype development stage. Prototype will be ready by 30 August, 2022

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Sumathi Reddy Institute of Technology for Women

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Sumathi Reddy Institute of Technology for Women		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Dr. I. Rajasri Reddy		
Name of NewGen IEDC Coordinator	Ranjith Kumar Marrikukkala		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	9949254506 ranjith1220@gmail.com		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen-IEDC/18-19/0 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Weekly Innovation Challenge

- Every week student teams developed a solution for a given problem statement



2. Project Expo

- Every student gets hands on experience on project development



3. Startup Awareness Drive

- Ten products are under process to establish their commercialization



[B] To identify, develop & commercialize students' innovative ideas

1. Tinker Camp

- Students from different disciplines will be chosen and work together to complete the project. Tinker camp helps different engineering students to know the role of other disciplines in completing a project. Campers will also know how engineering can change human living conditions. Tinker Camp is organized for engineering and management students every year



2. Ideation Fest

- 23 Ideas are shortlisted for NewGen IEDC Second Year projects



3. Innovision

- Students presented their ideas, and projected prototypes



4. Buildathon

- Students went through a 24 hours buildathon for converting their idea into a product



[C] To enhance Industry-Academia interaction

1. Industry Interaction Program (IoT Hackathon)

- Student teams participated in a 24hours hackathon to develop IoT based prototypes



2. Smart India Hackathon (Internal)

- 30 student teams are present their solutions in internal Hackathon



2. Deviation (shortfall) from the proposed action plan (with reasons), if any: NA

3. Other important highlights (new initiatives), if any: NA

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Paddy Planter

I. **Project Title** : Paddy Planter

II. **Mentor Name** : S. Shwetha

III. Student team details

- K. Siri
- B. Sai Manasa
- G. Sahithi Priya
- V. Manisha

IV. Brief description of the student start-up

Agriculture is most important sector of the Indian economy. It is most important source of employment for the majority of the work force in the country. Rice is primary and major crop cultivated in India. As the large workforce is engaged

in this sector. Traditional method is costly, time consuming and labour intensive work. To make this model several attempts have been made to design and fabricate this machine

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

- SRITW NewGen IEDC contributed 250000/- towards development

VII. Future plan

- Commercialized product with Startup registration and patent filing

Best Project-2: Multi-purpose weeding, fertilizer spray, and leafy vegetable cutting, bundling machine

I. Project Title : Multi-purpose weeding, fertilizer spray, and leafy Vegetable cutting, bundling machine

II. Mentor Name : K. Ranganath

III. Student team details

- M Tejasri
- V. Sainikitha
- Ch. Akanksha
- A. Ramya Sri

IV. Brief description about the student Project

Farm labourers are needed to weed the field, spray the fertilizer, cut the leaves and tie the bundles and send them to market. A farm labourer is very important for every farm work and the farmer has to pay a lot of money for it. To reduce staffing, students solve the problem of doing things with less effort

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.



VI. Contribution of NewGen IEDC in the same

- SRITW NewGen IEDC contributed 250000/- towards development

VII. Future plan

- Commercialized product with Startup registration and patent filing

Annexure-A Details of Student Projects

Project-01: Spring Assisted Bumper for Automobiles

1. **Project Title** : Spring Assisted Bumper for Automobiles

2. **Mentor Name** : Dr. E. Sudarshan

3. **Student Team Names:**

- I. Baina Supriya Shree
- II. Bhukya Kalarani
- III. Abhinaya Lingampelli
- IV. Agurla Amulya

4. **Project Description:**

When an obstacle hits the safety guard, the taper pin which is locked in locking holes breaks, spring coils initially which are in a compressed state inside the hollow cylinders expands which makes the shaft move forward (In-vehicle moving direction) to resist the applied load. The complete setup is placed at the usual bumper position of an automobile.

Case 1: If the applied load is at 15 N, then the taper pin breaks (shears) automatically spring moves in opposite direction.

Case 2: If the load is more than 15 N, then taper pin breaks similar to the case-1 here the spring coil undergoes some more deflection (more than case-1) then the shaft moves opposite direction.

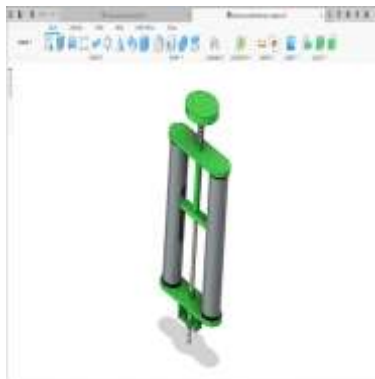
Finally, the fabricated bumper system resists the applied load with no or minimal damage.

5. **Project status at beginning of the Year:** Working model developed

6. **Interventions made:** Adopted by couple vehicle owners

7. **Current status:** In process to startup establishment

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



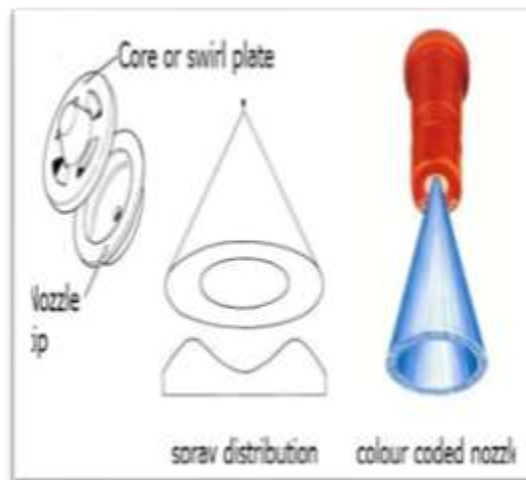
Project-02: Spraying Machine

1. **Project Title** : Spraying Machine
2. **Mentor Name** : Mendu Mruthyunjaya
3. **Student Team Names:**
 - I. Akhila Naraboina
 - II. Ankala Lahari
 - III. Dixit Vaishnavi Milind
 - IV. Bikkineni Shivani

4. Project Description:

There are many types of pesticides sprayer are available in India. But mostly used sprayer is backpack type sprayer which is used by farmers because it is cheaper, easy to use and main thing about it is less costly. With the help of this machine farmer spray pesticides in their farm, but it requires lot of time and thus high operational cost. Also, the farmer which is spraying pesticides is affected by it as it is harmful to human health and human also affect by the lumbar pain due to weight of equipment

5. **Project status at beginning of the Year:** Working model developed
6. **Interventions made:** Working model developed
7. **Current status:** In process to startup establishment
8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each**



Project-03: Paddy/Grass cutter

1. Project Title : Paddy/Grass cutter

2. Mentor Name : Mr. A. Mahesh

3. Student Team Names:

- I. Bikkineni Shivani
- II. Diggishetti Harshitha
- III. Avirineni Vasavi
- IV. Akula Kavya

4. Project Description:

For many years we have known that farmers are facing so many problems in reaping and harvesting. There are so many tools and machines that can cut the paddy but there are many existing solutions but farmers are not satisfied. With these solutions they are facing health issues like back pain as it has heavy weight and also causes injuries during operation. The main objective of our project is to innovate a paddy cutting machine that reduces manual work in reaping at low cost so that all kinds of farmers can easily handle and afford it

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Purchased by 2 companies for lawn maintains

7. Current status: In process to startup establishment

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Power Weeder/Cultivator

1. Project Title : Power Weeder/Cultivator

2. Mentor Name : Mr. Ravi Kiran K.

3. Student Team Names:

- I. Allam Varshitha
- II. Baina Laxmi Prasanna
- III. Gaddam Nikhitha
- IV. Bollam Sathya

4. Project Description:

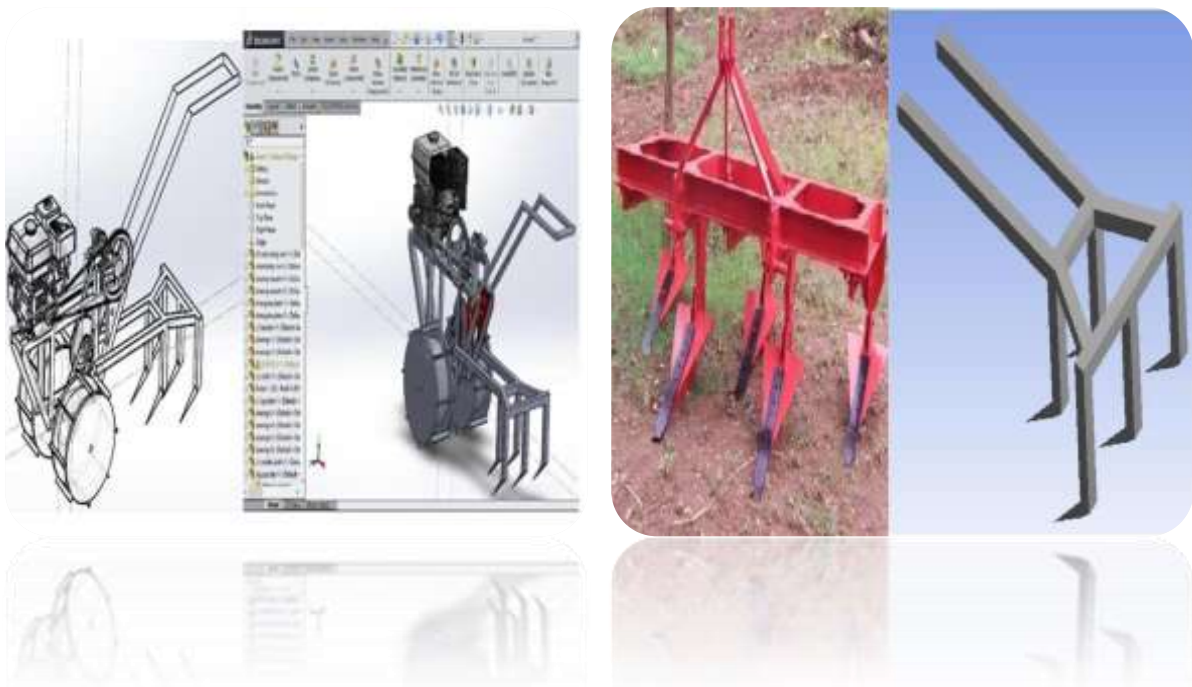
Earlier farmers were using Traditional farming method which is time consuming, hardworking and costly, hence we introduce new technology. Generally, the machines are used for the farming purpose in India which is of higher level. All machines were used in farms are costlier and not affordable to farmers, hence to overcome this problem students made this model. This working model is on trial on the farms and results are being successful

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Design modified for effective product

7. Current status: In development process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: Paddy Planter

1. Project Title : Paddy Planter

2. Mentor Name : Mrs. S. Swetha

3. Student Team Names:

- I. K. Siri
- II. B. Sai Manasa
- III. G. Sahithi
- IV. V. Manisha

4. Project Description:

Agriculture is most important sector of the Indian economy. It is most important source of employment for the majority of the work force in the country. Rice is primary and major crop cultivated in India. As the large workforce is engaged in this sector. Traditional method is costly, time consuming and labour intensive work. To make this model several attempts have been made to design and fabricate this machine

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Local farmer are using product

7. Current status: Establish startup to commercialize

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Multi-purpose weeding, fertilizer spray, and leafy vegetable cutting, bundling machine

1. Project Title : Multi-purpose weeding, fertilizer spray, and leafy Vegetable cutting, bundling machine

2. Mentor Name : Mr. K. Ranganath

3. Student Team Names:

- I. M. Tejasri
- II. V. Sainikitha
- III. Ch. Akanksha
- IV. A. Ramya Sri

4. Project Description:

Farm labourers are needed to weed the field, spray the fertilizer, cut the leaves and tie the bundles and send them to market. A farm labourer is very important for every farm work and the farmer has to pay a lot of money for it. To reduce staffing, students solve the problem of doing things with less effort

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Local farmer are using product

7. Current status: Establish startup to commercialize

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: Seeding Machine

1. Project Title : Seeding Machine

2. Mentor Name : Mr. M. Ranjith Kumar

3. Student Team Names:

- I. Ravula Lathasree
- II. Kandikonda Annapurna
- III. Bitla Roja
- IV. Attaluri Kovida

4. Project Description:

Sowing is the most important process in farming. It is a very tiring and time consuming process that requires a lot of human effort. Here we propose the design and fabrication of a fully automatic seed sowing robot that automates this task

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Local farmer are using product

7. Current status: Establish startup to commercialize

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Roti Maker

1. **Project Title** : Roti Maker

2. **Mentor Name** : Mr. G. Ranadheer Reddy

3. **Student Team Names:**

- I. Valadasu Bhavana
- II. Kandikonda Annapurna
- III. Boppa Akhila
- IV. Anchuri Sravya

4. **Project Description:**

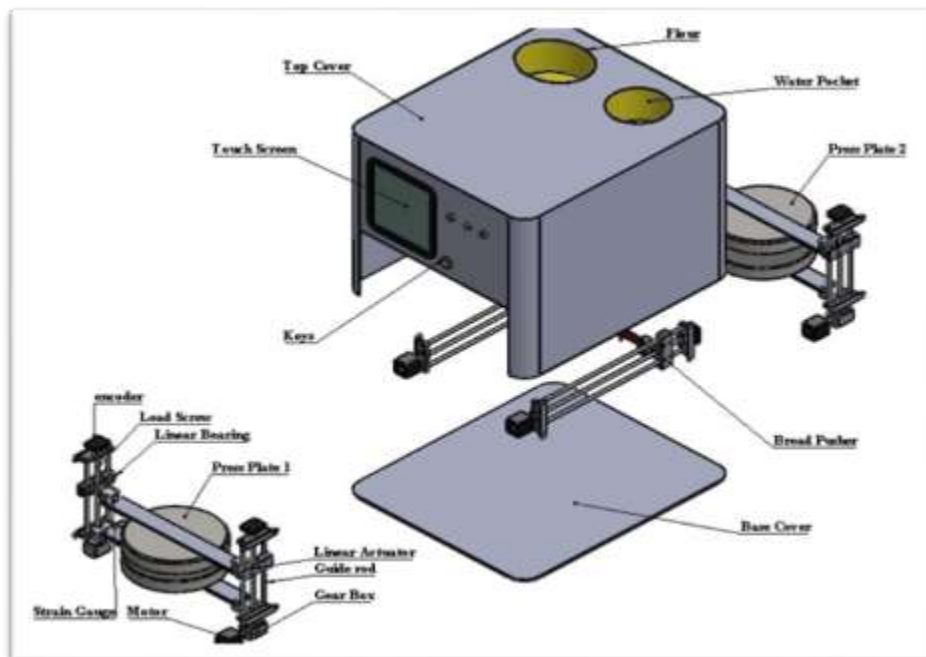
Market already has some solutions for automatic roti makers but there exists a gap for its size, affordability, level of automation and ergonomics. Given a product to fill these gaps, it has quite a potential to become the next home appliance for a large number of common people

5. **Project status at beginning of the Year:** Working model developed

6. **Interventions made:** Design modified for effective product

7. **Current status:** Implementing a product with updated design

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-09: Solar Based Smart Fishing Robot

1. Project Title : Solar Based Smart Fishing Robot

2. Mentor Name : Mr. B. Prashanth

3. Student Team Names:

- I. Manchikatla Keerthana
- II. Budhe Sangeetha
- III. Neerati Shiya Hasini
- IV. Bashika Ashwini

4. Project Description:

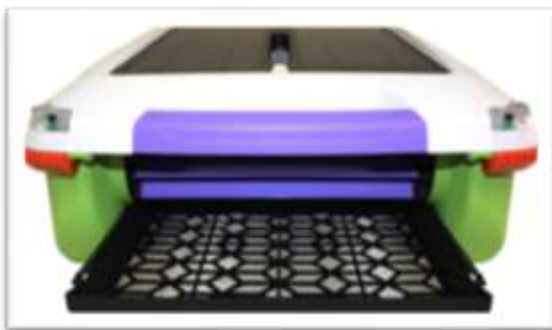
After visiting the homes of small fishermen who depend on fishing for their livelihood, there we see the common problem of fishing in ponds / small streams and rivers/reservoirs, for which they have to spend all day, sometimes they do not catch a single fish. Typically, they do fishing in stagnant or very low-moving waters but not on heavy water flow

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Design modified for effective product

7. Current status: Implementing a product with updated design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Solar Sea Water Desalination Machine With RO UV Purifier

1. Project Title : Solar sea water desalination machine with ro uv purifier

2. Mentor Name : Mr. E. Hari Krishna

3. Student Team Names:

- I. Bashika Ashwini
- II. Motapothula Niharika
- III. Burla Harika
- IV. Nomula Kavyasri

4. Project Description:

Only 3% of the water available on earth is fresh water. Two thirds of this fresh water is present in frozen glaciers. On an average over 1.1 billion people over the globe lack proper access to any fresh water reserves and over 2.7 billion people face scarcity of water at least once a month. But as we know 71% of earth's surface is water and 97% of that water is sea water

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Design modified for effective product

7. Current status: Implementing a product with updated design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Swachh Vaayu

1. **Project Title** : Swachh Vaayu

2. **Mentor Name** : Ms. V. Pranathi

3. **Student Team Names:**

- I. Pinninti Siri
- II. Chinthareddy Divya Sree
- III. Peddi Jhansi
- IV. Chilupuri Soumya

4. **Project Description:**

In today's modern world the most common environmental issue we are suffering with is 'POLLUTION' and more than 45% pollution caused is in the air that is 'AIR POLLUTION'. Maximum amount of air pollution is caused by AUTOMOBILES & INDUSTRIES. The oxides of carbon which are released from industries and automobiles are adversely affecting HUMAN HEALTH & OUR MOTHER EARTH

5. **Project status at beginning of the Year:** Working model developed

6. **Interventions made:** Design modified for effective product

7. **Current status:** Implementing a product with updated design

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-12: Uni-Cycle

1. **Project Title** : Uni-Cycle

2. **Mentor Name** : Mrs. S. Vishali

3. **Student Team Names:**

- I. Chirra Lavanya
- II. Paka Chandana
- III. Devathi Madhumitha
- IV. Bollena Divya

4. **Project Description:**

Monowheels are generally built and used for fun and entertainment purposes, but from 1860s to 1930s, they were proposed for transportation. In addition, saving energy in order to determine the problem of fuel depletion is becoming increasingly important. Even industries and manufacturing companies that spread over huge areas restrict the usage of means of transport by their employees within their area to avoid the risk of pollution due to emissions. To meet those needs, research on eco-friendly transportation has been increased. Electrical vehicle technology has a step towards fulfilling these goals. To fill the gap of low cost, self-balancing, need of less parking space, eco-friendliness, automatic electric uni-cycle is considered in comparison with the bicycle and other vehicles

5. **Project status at beginning of the Year:** Working model developed

6. **Interventions made:** Using in the college campus

7. **Current status:** Establishing startup to commercialize

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-13: Fork Lifter

1. **Project Title** : Fork Lifter

2. **Mentor Name** : Mrs. T. Sravanthi

3. **Student Team Names:**

- I. Bommana Anjali
- II. Bala Raja Laxmi
- III. Masu Jhansi Rani
- IV. Adepu Manichandana

4. **Project Description:**

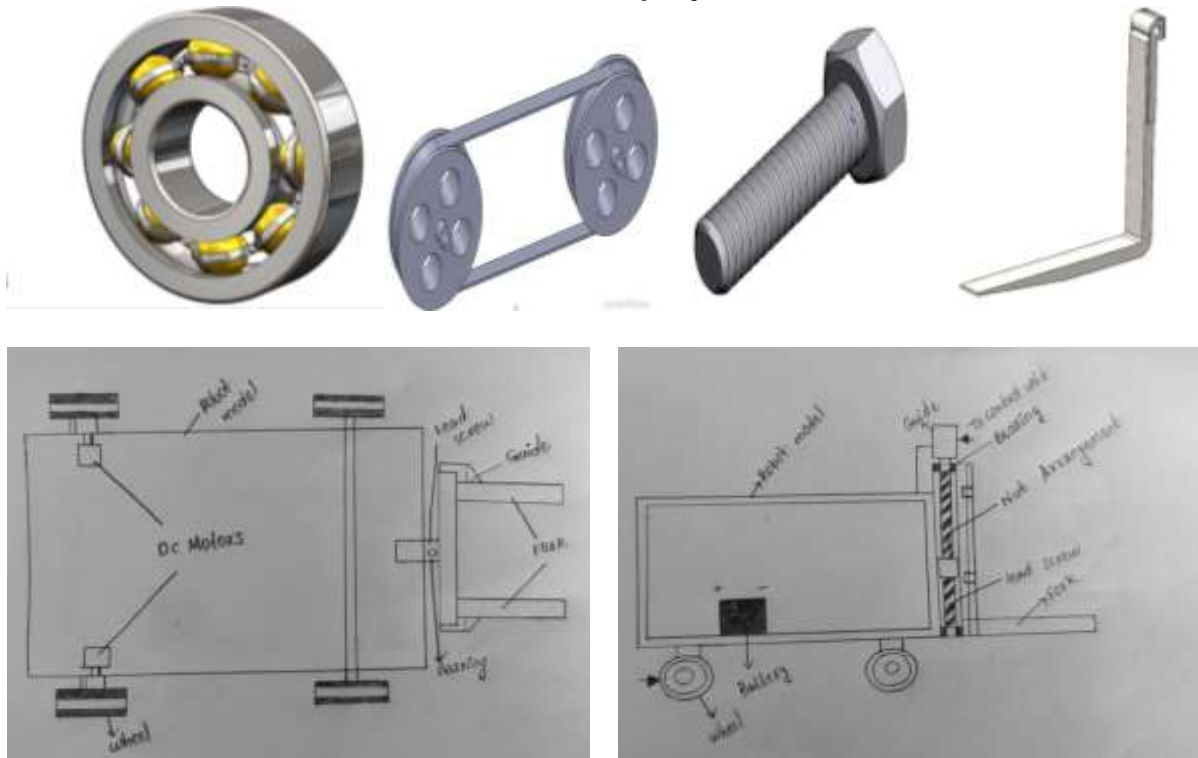
Transporting Loads is a very stressful and time consuming work . Currently in warehouse storage systems are mainly done by traditional human operator to pickup and drop particular good at specified locations. Here we propose the design and fabrication of a remote controlled mini fork lift . The mini fork lift using for lifting weights as well as placement using pulley based mechanism. Our system allows for efficient implementation of this concept and increases the ease of handling heavy loads without any difficulty

5. **Project status at beginning of the Year: Working model developed**

6. **Interventions made: Using in the college campus**

7. **Current status: Establishing startup to commerisialize**

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-14: Grain Collector and Bagging System

1. Project Title : Grain Collector and Bagging System

2. Mentor Name : Mr. G. Mahesh

3. Student Team Names:

- I. Akinapelly Navyasri
- II. Motapotula Niharika
- III. Bala Rajalaxmi
- IV. Chatla Jyothsna

4. Project Description:

In India, after the crop yield the farmers are working very hard to clean and collect the grains from the field/floor to bag them. Its tedious process, time consuming and man power required. The wages are also increasing. To overcome this, the Grain collector and bagging machine is to be developed.

5. Project status at beginning of the Year: Working model developed

6. Interventions made: In design modification

7. Current status: Developing a product with updated design

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Potato Slicer and Cutter

1. Project Title : Potato Slicer and Cutter

2. Mentor Name : Mrs. M. Anitha

3. Student Team Names:

- I. Burkha Anusha
- II. Hafsa Anwar
- III. Bala Rajalaxmi
- IV. Anabathula Sathvika

4. Project Description:

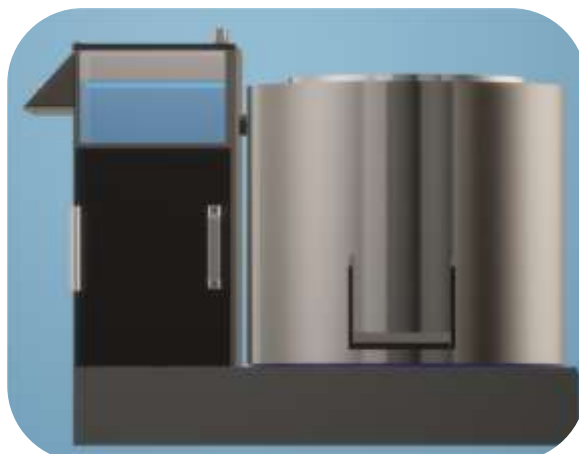
Potato is the most widely eaten vegetable used across the globe. There are numerous recipes that make use of potatoes, the most common ones being French fries and potato chips. Well preparing any potato recipe involves a potato peeling process before the potato can be used. Peeling is a very time consuming and tiring process. So we here automate and speed up the peeling process using a fully automated potato peeling machine

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Using college hostel kitchen

7. Current status: Establishing startup to commercialize

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Women safety Patrolling Robot

1. **Project Title** : Women safety Patrolling Robot

2. **Mentor Name** : Mrs. G. Jhansi Rani

3. **Student Team Names:**

- I. Sidra Maheen
- II. Donthula Prasanna
- III. Kusuma Preethika
- IV. Errabelli Poojitha

4. **Project Description:**

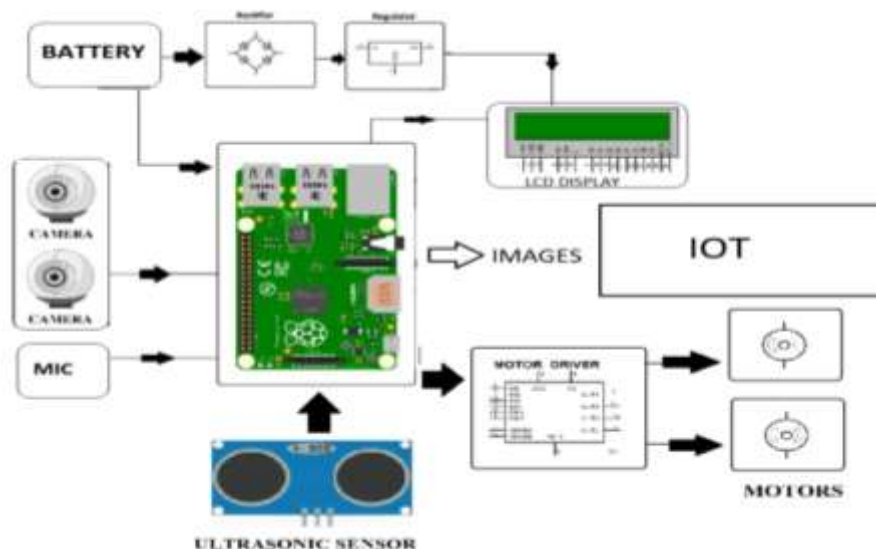
Nowadays Women Safety is the biggest concern in many parts of the world. There is still a fear in alone areas for women as well as men. So here we propose a security patrolling robot using Raspberry PI. The system uses cameras and mics mounted on robotic vehicle for securing any premises. The robotic vehicle moves at particular path and is equipped with camera and sound sensors

5. **Project status at beginning of the Year:** Working model developed

6. **Interventions made:** Change in design for betterment

7. **Current status:** Developing product with updated design

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-17: Smart Heart Monitor

1. **Project Title** : Smart Heart Monitor

2. **Mentor Name** : Dr. M. Gopal

3. **Student Team Names:**

- I. Banda Bhargavi
- II. Vengala Pooja
- III. Koyyada Keerthana
- IV. Gangula Shivani

4. **Project Description:**

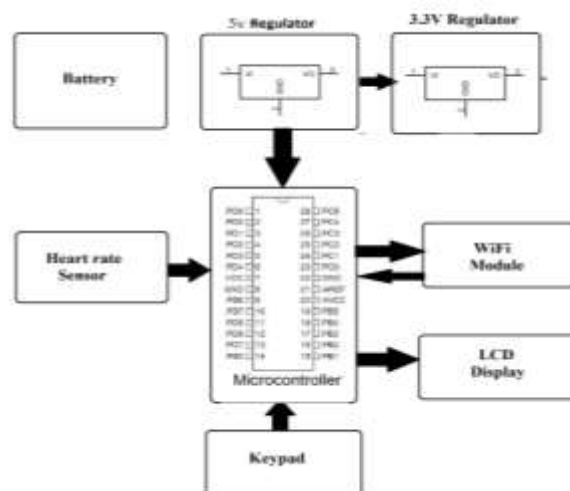
These days we have an increased number of heart diseases including increased risk of heart attacks. Our proposed system uses sensors that allow to detect heart rate of a person using heartbeat sensing even if the person is at home. The sensor is then interfaced to a microcontroller that allows checking heart rate readings and transmitting them over internet. The user may set the high as well as low levels of heart beat limit. After setting these limits, the system starts monitoring

5. **Project status at beginning of the Year:** Working model developed

6. **Interventions made:** Change in design for betterment

7. **Current status:** Developing product with updated design

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-18: Chef Granny

1. **Project Title** : Chef Granny

2. **Mentor Name** : Mr. V. Srinivas

3. **Student Team Names:**

- I. Bokkala Abhinaya
- II. Cherukupally Keerthana
- III. Peddi Jhansi
- IV. Tejavath Chandini Nayak

4. **Project Description:**

After visiting several nuclear family houses we found a real-time problem where parents were busy with duties for them cooking food was the biggest problem. So that the curries points were running successfully in major cities. If the parents are in the office and/or the dependents are absolutely waiting for them to get fresh food at the specified time, we have a solution for it that is called **Chef Granny** to solve the problem

5. **Project status at beginning of the Year:** Working model developed

6. **Interventions made:** Using college hostel kitchen

7. **Current status:** Establishing startup to commercialize

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-19: Design and Fabrication of Electric Monocycle

1. Project Title : Design and Fabrication of Electric Monocycle

2. Mentor Name : Dr. I. Rajasri Reddy

3. Student Team Names:

- I. Vadlakonda Sriya
- II. Vanga Vyshnavi
- III. Gunda Anuhya
- IV. Gurram Meghana

4. Project Description:

A unicycle is a vehicle that touches the ground with only one wheel. The most common variation has a frame with a saddle and has a pedal-driven direct drive. The driver is supposed to sit on the saddle with understanding balancing technique to drive the unicycle manually. The main problem of unicycle is balancing and braking system. In this project we are trying to eliminate the problems of conventional fuel driven vehicles. Based on the concept of the traditional unicycle here in this project we are going to make a self-balancing unicycle that works by the microcontroller, gyro sensor, and accelerometer. It has a sensor-based braking system. It senses the obstacles and brakes will apply automatically. It is an electric-powered unicycle that runs on batteries

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Using in the college campus

7. Current status: Establishing startup to commercialize

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: Lifting supporter for Bedridden Patients

1. Project Title : Lifting supporter for Bedridden Patients

2. Mentor Name : Dr. K. Mahendar

3. Student Team Names:

- I. Suram Keerthi
- II. Akkalla Chandhana
- III. Gajjala Shrenitha
- IV. Gande Sravya

4. Project Description:

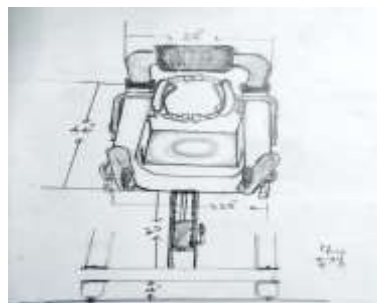
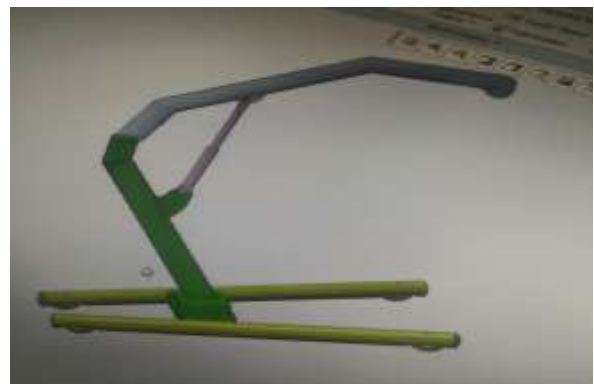
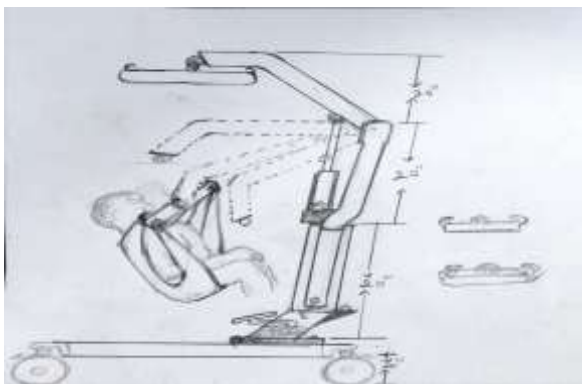
This device helps para medical staff to handle better way and patients also feel comfortable. Earlier para medical staff holds patients with their hands for lifting from bed to wheelchair/ any diagnostics purpose. This device will help alot in many ways for patients, it can be converted as Walker or wheel chair as well.

5. Project status at beginning of the Year: Working model developed

6. Interventions made: Under Progress

7. Current status: Under development

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: I. T. S. Engineering College, Greater Noida

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	I. T. S. Engineering College, Greater Noida		
Year of starting NewGen IEDC	2018 -19		
Name of the Head/Principal of the Institution/College	Dr. Mayank Garg		
Name of NewGen IEDC Coordinator	Mr. Manvendra Yadav		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">Mobile Numbere-Mail ID	9891295755 manvendrayadav@its.edu.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen IEDC/18-19/11 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,00,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year :

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Entrepreneurship Awareness Camp - ITS Engineering College:

- Camp was to make aware the students about the different areas of skills where they can establish themselves as Entrepreneur and create a job for others. Event Date: 25-27 Oct 2021



2. Entrepreneurship Awareness Camp - REC Ambedkar Nagar:

- Camp was to make aware the students about the different areas of skills where they can establish themselves as Entrepreneur and create a job for others. Event Date: 15-17 Nov 2021



3. Entrepreneurship Awareness Camp - Chatrapatti Sahuji Maharaj Polytechnic College, Ambedkar Nagar:

- Camp was to make aware the students about the different areas of skills where they can establish themselves as Entrepreneur and create a job for others. Event Date: 16-18 Nov 2021



4. Workshop on “Entrepreneurship and Innovation as Career Opportunity date on 26-02-2022”:

- To understand the basics of Entrepreneurship and its significance in today's world Skill set needed to become an entrepreneur and how to convert simple idea into an innovation. Key performance indicator of a graduate likely to become an entrepreneur



5. My Story-Motivational Session by Successful Innovators date: 28.12.21:

It provided a good platform for successful innovator. The founder of a startup will begin market validation by problem interview, solution interview, and building a minimum viable product (MVP), i.e. a prototype, to develop and validate their business models.



6. My Story-Motivational Session by Successful Entrepreneur/Start-up founder:

- It provided a good platform for successful entrepreneur. The founder of a startup will begin market validation by problem interview, solution interview, and building a minimum viable product, i.e. a prototype, to develop and validate their business models. Event Date: 28-12-2021



7. Session on Problem Solving and Ideation Workshop:

- It provided a good platform for successful entrepreneur. The founder of a startup will begin market validation by problem interview, solution interview, and building a minimum viable product (MVP), i.e. a prototype, to develop and validate their business models. Event Date: 25-02-2022



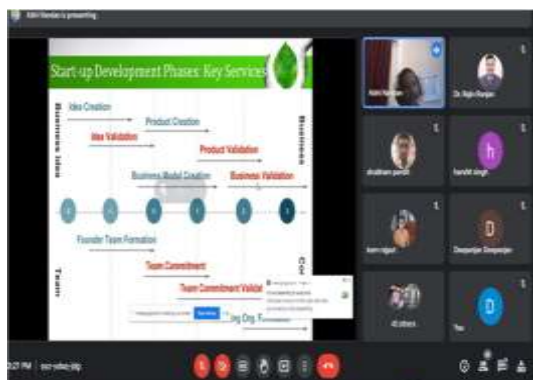
8. Exposure and field visit for problem identification:

- To solve the issues of villagers regarding basic amenities and infrastructure with the creative thoughts and feasible solutions by our students. Event Date: 23-02-2022



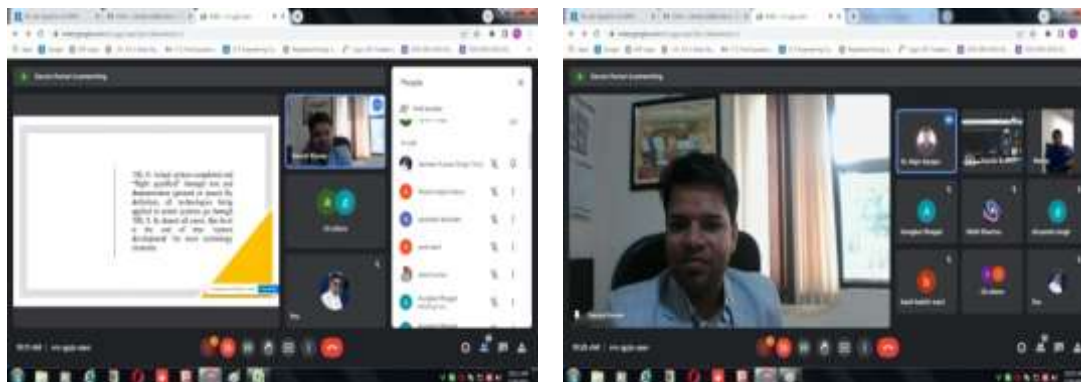
9. Workshop on Design Thinking, Critical thinking and Innovation Design:

- To provide information about entrepreneurship and innovation. To inform about critical thinking and design thinking and its importance in innovation. To make students aware of start-up lifecycle and start-up needs. Event Date: 28-02-2022



10. Expert talk on "Process of Innovation Development & Technology Readiness Level (TRL)" & "Commercialisation of Lab Technologies & Tech-Transfer":

- Understanding how students can develop right set of skills, attitude and behavior in budding innovators. Knowing about the basics of Entrepreneurship and its significance in today's world. Understanding how students can commercialise various Lab technologies into commercial ideas. Event Date: 26-02-2022



11. Workshop on Entrepreneurship Skill, Attitude and Behaviour Development

- Understanding how students can develop right set of skills, attitude and behavior in budding innovators. Knowing about the basics of Entrepreneurship and its significance in today's world. Understanding how students can commercialize various Lab technologies into commercial ideas. Event Date: 28-01-2022



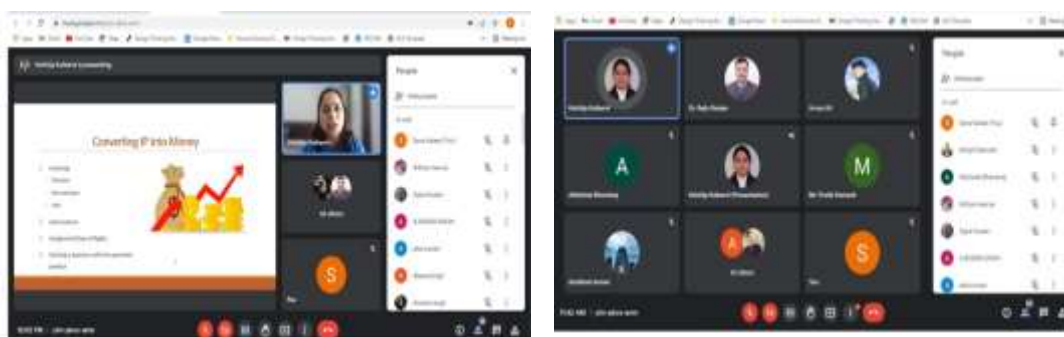
12. Session on Achieving Problem-Solution Fit & Product-Market Fit:

- To provide information about the Pyrolysis process. To inform about the bio-coal process and how problems can be resolved using this process. To encourage students for innovation. Date: 09-02-2022



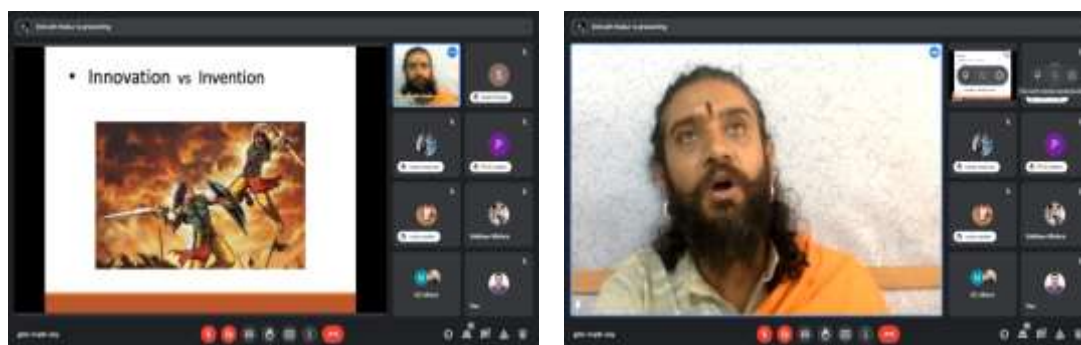
13. Workshop on Intellectual Property Rights (IPRs) and IP management for startup:

- To enlightened the differences and comparisons among copyright Vs. Trademarks and Patents Vs. Designs. To give more ideas to institutes towards the patents managing process. To explained the entire patent filing and grating process. Event Date: 15-03-2022



14. Session on “How to plan for Start-up and legal & Ethical Steps”:

- The event helped in gaining greater awareness about how to launch a start-up. The event helped in gaining understanding about all the issues that are related to starting a new business in the country. It also helped in understanding copyright, legal and ethical issues. Event Date: 28-04-2022



15. Session/ Workshop on Business Model Canvas (BMC):

- A workshop was organized on Business Model Canvas on 23rd May 2022 based on "Business Model Canvas (BMC)", via online mode. Students learned about Business Model Canvas as a strategic tool for business. Resource Person was Mr. Vaibhav Anant Founder, Bambrew Plant Fiber Technology Private Limited. Bengaluru. Event Date: 23-05-2022



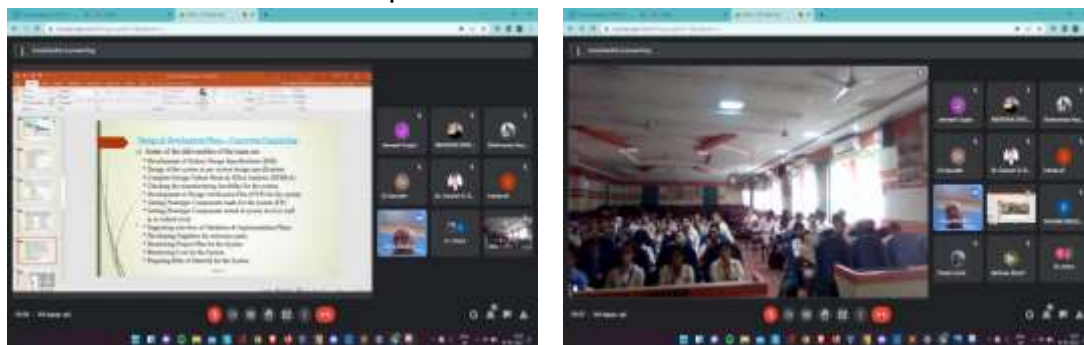
16. World Intellectual Property Day

- Giving idea about process/useful steps for getting IPR approval for any start-up with useful links or information. Event Date: 26-04-2022



17. Workshop on Prototype/Process Design and Development - Prototyping

- NewGen IEDC organized a workshop on Wednesday, 18th May 2022 based on "Prototype/Process Design and Development- Prototyping", via online mode. Resource Person: Mr. Jjivraj Singh Sandhu General Manager, Engineering Research Centre- Commercial Vehicles, Tata Motors- Jamshedpur.



18. Expert talk on Digital Marketing

- An Expert Talk on Digital Marketing on 26th May 2022 at Naidu Hall. Students and faculty members participated in the talk.
- The key resource person was Mr. Sumit Xalxo, Digital Marketing Trainer, and Internet Marketing School who had a detailed discussion on digital marketing i.e. marketing of products or services using digital technologies. He discussed various concepts such as Website planning and creation, SEO, Google Analytics, Content marketing, creating internet marketing strategy, etc with live examples.
- Overall session was highly informative as students gained knowledge on how to create their own website easily and how to earn money online via Ad sense and blogging.



[B] To identify, develop & commercialize students' innovative ideas

1. Pitching Event for PoCs developed & linkage with Innovation Ambassadors for mentorship support. Event Date: 22-02-2022

- It aided in the creation of a rich learning environment for newcomers to this field. Every day, we receive a positive response. As a result, our team is working hard to enhance the number of creative projects for the benefit of our students and in consideration of their future.



2. Pitching Event for Ideas Scouted & linkage with Innovation Ambassadors for mentorship support.

- In this event Devraj Singh present automated sanitizer dispenser. So with quarantine being lifted off my country I noticed alcohol dispensers in an attempt to stop the spread of the virus but these alcohol dispensers required to be touched making it a possible route for being infected with the virus. Event Date: 12-04-2022



[C] To enhance Industry-Academia interaction

1. Industrial Visit at TAEHWA: Visit Date: 22/12/2021

- Students observed the manufacturing processes on hydraulic presses of different capacities and wide range of Motor Assembly Lines. Students understood the spot welding process in detail.



2. National Technology Day:

- Importance of Renewable energy as compared to conventional energy resources. Achievements of India in the area of renewable energy generation. Solar plants in India. Event Date: 11/05/2022



3. Expert talk on Opportunities from campus to industry in era of Industry 4.0 :

- Mr. Ravindra Sah , Chief engineer at Tata Technologies was visited our NewGen IEDC and given an expert talk on campus to industry in the era of Industry 4.0. During his talk he discussed the about the innovation requirement in the Industry. Event Date: 25 April 2022



2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Programmes have been conducted on basic themes of innovation and entrepreneurship as proposed in the action plan. However some changes made in programme titles mode of conduct due to resource person availabilities.

3. Other important highlights (new initiatives), if any:

- NewGen IEDC I.T.S Engineering College has initiated an outreach programme on Entrepreneurial Awareness to Diploma level students.
- Facilities developed for AI based innovation.

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: Mid-day meal automated reporting and Management system

- I. Project Title** : Mid-day meal automated reporting and Management system
- II. Mentor Name** : Mr. Manvendra Yadav
- III. Student team details**
 - i. Devraj Singh
 - ii. Shubham Kumar
- IV. Brief description of the student start-up**

This system is designed for reducing the corruption and black marketing of the food grains that is provided by the government in government schools for mid-day meal. The children in the government school get free of cost both food as well as education as per the government scheme. However, if there is any kind of corruption or malpractices being conducted by any member of the government staff then government can easily be aware of it and can take necessary actions against it.

This is a complete product designed for Automated Reporting and Management System of Mid-Day meal. This is designed basically to keep in record of the food provided to children in government schools. This system will capture the image of the child and capture the image of food using USB webcams. Further, this system will also take the height of the child. This system will also take the records of the Hb, calcium, Vitamins, Protein of each and every child. This system will also measure the Heart rate of each and every child. All the data captured and recorded by the system will automatically go on the web server so that government officials can take record of the data of each and every child of every government schools.

The system is mechanical structure with some sensors and display meters as well as screens mounted over it. The System also contains some Wi-Fi modules like NODE MCU. The system contains two cameras mounted on it. First camera is mounted to capture the image of child who comes and stand on the system panel. The second camera will capture the image of the food that will be provided to the child by school.

Two loadcells, one loadcell will measure the weight of the child and the second load cell will measure the weight of the food that will be given to the child. An ultrasonic sensor is mounted somewhere in mid of the panel to measure the height of the child and there is one display screen that will display the image of the child along with the weight if the child and the height of the child. NODE MCU is placed inside the system so that all the data that are recorded by the system can be sent to the government portal via cloud and for that this NODE MCU will prove to be fruitful.

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

- Support provided for detailed scope of the project.
- Provided the CAD modelling and fabrication support.
- Provided the programming and electronic items required.
- Patent drafting and filing support.

VII. Future plan

- Preparation of detailed business plan and target customers.
- Proposal letter and product catalogue preparation for marketing of the product.
- Bulk manufacturing of the product to supply the customers

VIII. Important highlights

- Food quality and quantity of the mid meal provided to the school students will be monitored.
- Children physical growth will be also monitored.
- Data captured from the system will record on cloud and can be access through mobile or computer systems.
- Govt. of Andhra Pradesh is also seeking such type of device for Mid-Day Meal monitoring. (Source: News Paper)



Best Project-2: AI based system to evade stray Livestock's

I. **Project Title** : AI based system to evade stray Livestock's

II. **Mentors Name** : Mr. Manvendra Yadav

III. Student team details

- i. Shashwat Pandey
- ii. Divya Verma

IV. Brief description of the student start-up

This system is designed for reducing the corruption and black marketing of the The innovation is relating to the field of Artificial Intelligence (Deep Learning). As in current scenario a lot of livestock roaming around on main roads or highways. The project is based on monitoring system for avoiding obstruction or to avoid fatal accidents by Livestock on Indian Roads. We use client- server architecture, raspberry-pi/ NVIDA jetson Nano being the client and graphic integrated system as a server. An alert to concerned administrative authorities to do the needful action about the livestocks. The system will act only when the object detected by the camera will matched with trained object. In the picture given below, this system only detects the animal presence not the object in the surrounding i.e vehicles etc.

Working of the device is illustrated below with help of flow chart.



V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.



VI. Contribution of NewGen IEDC in the same

- Support provided for detailed scope of the project.
- Support provided for algorithms development and programming.
- Support provided for GPU and Machine Learning
- Patent drafting and filing support.

VII. Future plan

- Preparation of detailed business plan and target customers.
- Proposal letter and product catalogue preparation for marketing of the product.
- Bulk manufacturing of the product to supply the customers.

VIII. Important highlights

- Cattle problems in farms and highways will be managed.
- Can be used in identification of specific objects.
- Can use in forests to watch on special animals.

Annexure-A

Details of Student Projects

Project-01: Mid-day meal automated reporting and Management system

- 1. Project Title** : Mid-day meal automated reporting and Management system
- 2. Mentor Name** : Md. Ayub Khan & Mr. Manvendra Yadav
- 3. Student Team Names:**
 - I. Devraj Singh
 - II. Shubham Kumar

4. Project Description:

This is a complete product designed for Automated Reporting and Management System of Mid-Day meal. This is designed basically to keep in record of the food provided to children in government schools. This system will capture the image of the child and capture the image of food using USB webcams. Further, this system will also take the height of the child. This system will also take the records of the Hb, calcium, Vitamins, Protein of each and every child. This system will also measure the Heart rate of each and every child. All the data captured and recorded by the system will automatically go on the web server so that government officials can take record of the data of each and every child of every government schools.



5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Provided the CAD modelling and fabrication support.
- Provided the programming and electronic items required.

7. Current status:

- Prototype is done and moving in to commercialization stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-02: Method for making biodegradable shellac and synthetic resin based moulded products and PCB base

1. Project Title : Method for making biodegradable shellac and synthetic resin based moulded products and PCB base

2. Mentor Name : Dr. Praveen Chandra Jha

3. Student Team Names:

I. Mayank Senger

II. Manish Pandey

4. Project Description:

Shellac is biodegradable and have high electrical insulation property. Shellac is brittle in nature so moulded articles and PCB board cannot be directly made out of shellac. In this project the shellac is blended with some synthetic resins so that its good electrical insulation and biodegradability property is retained and non breakable moulded articulated can be made. These PCB boards and moulded electrical and electronic component made by this process will be biodegradable and will contribute to tackle the problem of e-waste generation.



Shellac



E-Waste

5. Project status at beginning of the Year:

Idea Level:

- Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Provided fabrication support.

7. Current status:

- Prototype is done and moving in to commercialization stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



PCB made of shellac modified resins



Project-03: Development of electrically insulating biodegradable shellac based fibers

1. Project Title : Development of electrically insulating biodegradable shellac based fibers

2. Mentor Name : Dr. Praveen Chandra Jha

3. Student Team Names:

I. Nitish Kumar Jha

II. Yash Kumar

4. Project Description:

Shellac the only commercial resin of animal origin and indigenous product of India. Shellac is biodegradable and have high electrical insulation property. Shellac is brittle in nature so fibers cannot be made using shellac. In this project the shellac is modified using some synthetic resins so that its good electrical insulation and biodegradability property is retained and flexibility is obtained in the fibers made out of it. These Fibers will be used to manufacture good electrical insulating biodegradable clothes.



Shellac

5. Project status at beginning of the Year:

Idea Level:

- Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Provided the fabrication support.

7. Current status:

- Prototype is done and moving in to commercialization stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-04: Rice Threshing Cum Chaff Cutting Machine

1. Project Title : Rice Threshing Cum Chaff Cutting Machine

2. Mentor Name : Mr. Manvendra Yadav

3. Student Team Names:

I. Suraj Vishwakarma

II. Alok Kumar

III. Ashutosh Yadav

4. Project Description:

Threshing is the process of separating the grain from the straw. It can be either done by hand, by using a treadle thresher or mechanized. The common method for manual threshing is hand beating against an object, treading, or by holding the crop against a rotating drum with spikes or rasp bars. The use of small stationary machine threshers commonly replaces manual threshing given the high labor requirements of manual threshing. In available threshing machines the straws are damaged and converted in to the waste. In manual threshing is preferred by farmers due to quality threshing and save the straws in natural condition. The straws are further used as animal feed. The objective of development of this machine to make such kind of machine which can give threshing as in manual threshing process and save the straws in natural condition. Another objective to make a such machine which can be used in other application too. In the developed machine combo model has developed. Unique design for efficient Rice Threshing Operation and cutter provided for to make same machine for chaff cutting. The two in future of the machine is for value addition and farmers can use round the year thus Threshing and Cutting Combo System for all season uses. Flexible Nylon Brushes are used for quality threshing operation. Two threshing stations are designed for value addition. Detachable Brushes and Cutter for easy maintenance and replacement. Safer in threshing as flexible nylon brushes are used in the developed machine.



5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD and mechanical design and synthesis.
- Support provided for fabrication of the machine.

7. Current status:

- Prototype is done and moving in to commercialization stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-05: AI based system to evade stray Livestock's

1. **Project Title** : AI based system to evade stray Livestock's

2. **Mentor Name** : Mr. Agha Asim Husain

3. **Student Team Names:**

I. Shashwat Pandey

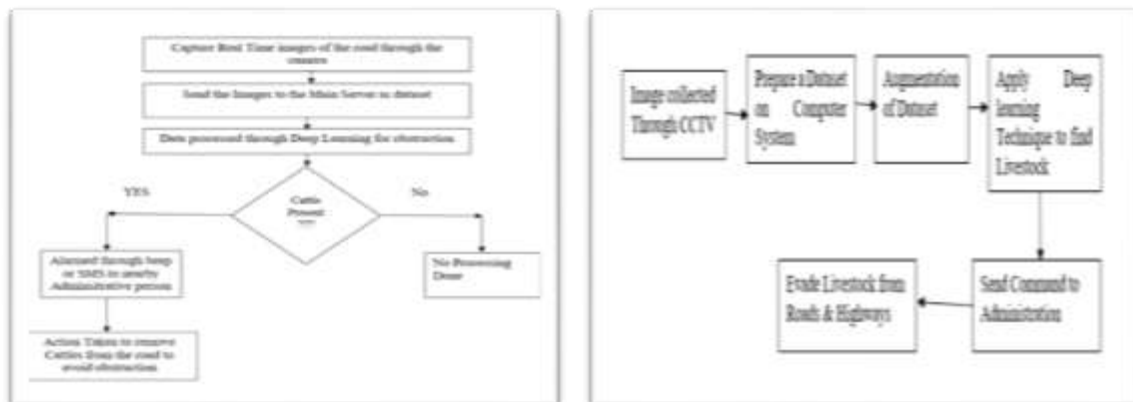
II. Divya Verma

4. **Project Description:**

The innovation is relating to the field of Artificial Intelligence (Deep Learning). As in current scenario a lot of livestock roaming around on main roads or highways. The project is based on monitoring system for avoiding obstruction or to avoid fatal accidents by Livestock on Indian Roads. We use client-server architecture, raspberry-pi/ NVIDIA jetson Nano being the client and graphic integrated system as a server. An alert to concerned administrative authorities to do the needful action about the livestock. The system will act only when the object detected by the camera will matched with trained object. In the picture given below, this system only detects the animal presence not the object in the surrounding i.e vehicles etc.



Working of the device is illustrated below with help of flow chart.



5. **Project status at beginning of the Year:**

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for algorithms development and programming.
- Support provided for fabrication of the system.

7. Current status:

- Prototype is done and moving in to commercialization stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: Solid Fertilizer Spreading Machine

1. Project Title : Solid Fertilizer Spreading Machine

2. Mentor Name : Mr. Manvendra Yadav

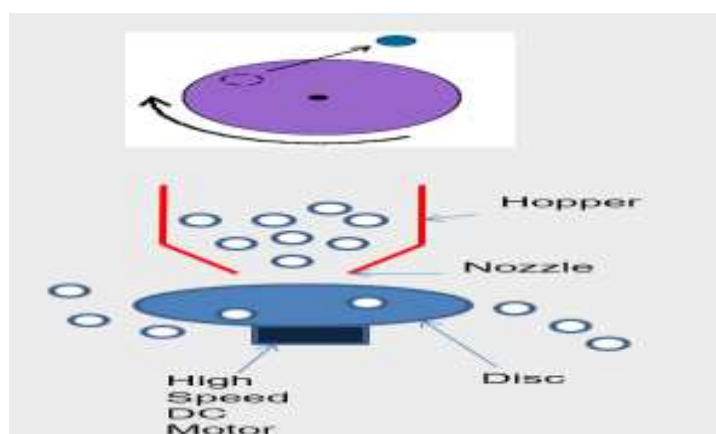
3. Student Team Names:

I. Shivendra Kumar Singh

II. Prasoon Singh

4. Project Description:

Fertilizers are used for growing all crops. There are two types of fertilizers, Solid & Liquid. In the market spray machines are available in which liquid fertilizers are used. No machine is available for solid fertilizer spreading purpose. Spreading solid fertilizers in large area manually is very difficult task and results in human fatigue. No machine can move in farms during growing stage of the crops & it becomes need to develop a portable solid fertilizer spreader like liquid spray machine. The main is objective to develop a portable/ handy solid fertilizer spreading machine which can be carry by farmer on his back easily. The working of this machine is very simple and based on basic sciences. By developing a centrifugal force through a high-speed rotating disc, solid fertilizers can be spread around in farms. A hopper is used to carry stock of fertilizer and nozzle are fitted to control the amounts of striking fertilizers on the disc. A high-speed DC motor is used to achieve required centrifugal force. Specially designed disc (3D printed) is used for uniform distribution in the desired direction of fertilizer spreading. Amount of required fertilizer is controlled by nozzles and particle spreading distance in filed is controlled by motor speed.



5. Project status at beginning of the Yr:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD and mechanical design and synthesis.
- Support provided for fabrication of the machine.

7. Current status:

- Prototype is done and moving in to commercialization stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-07: QR Code and Packing List Inspection System

1. Project Title : QR Code and Packing List Inspection System

2. Mentor Name : Mr. Suraj Singh

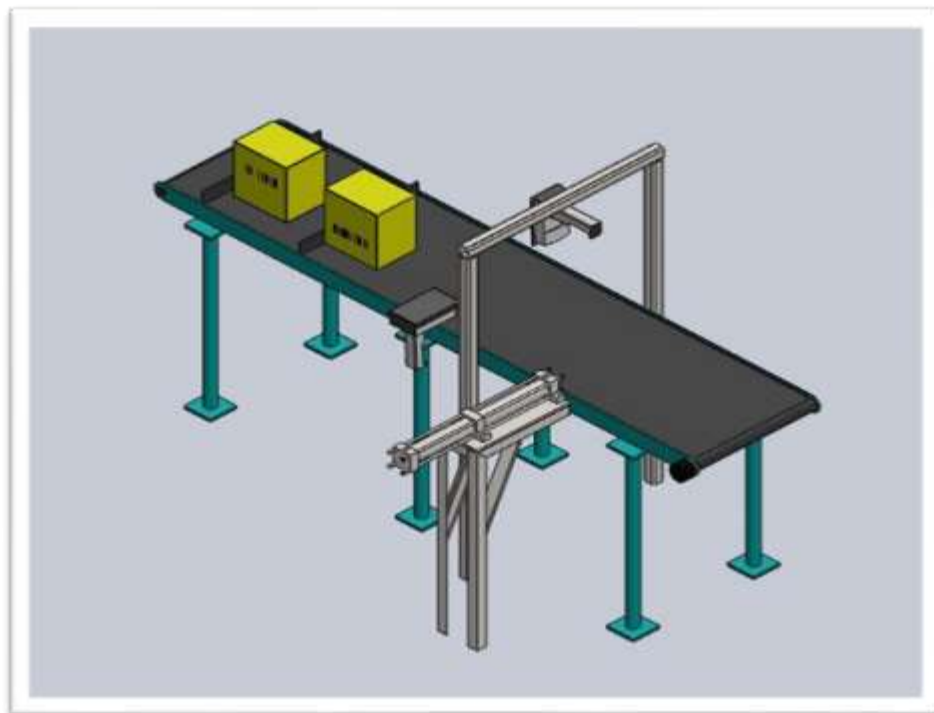
3. Student Team Names:

I. Harsh kumar Prajapati

II. Vaibhav Siroha

4. Project Description:

This is an inspection-based product and it is designed for the production industry wherein they are required to test the QR Code and Packing List. This product is developed for the inspection system of QR code and packing list inspection on the cartoon box. This has huge requirement in the production industry because they require inspection of each and every product using it's QR Code. Through this inspection they can easily know if the product is getting repeated or if it is duplicate. In this project a global shutter area scan camera is used for the inspection. A conveyor system is used where placing the QR Code and packing list on the moving conveyor and we will perform the inspection. A customized software has been developed so that it can be used and understood by any customer easily. The software is designed in labview.



5. Project status at beginning of the Year:

Idea Level:

- Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD, mechanical design and conveyor system.
- Support provided for fabrication of the machine.
- Support provided for algorithm & software development.

7. Current status:

- Prototype is done and moving in to commercialization stage.

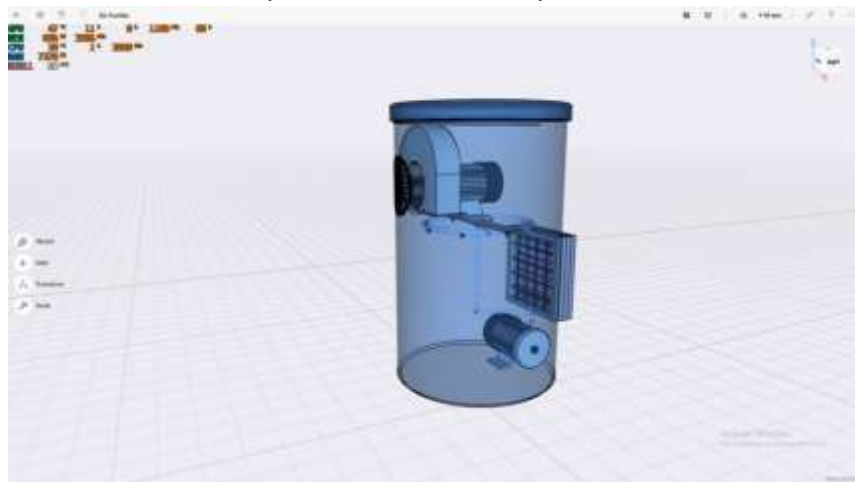
8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-08: Natural air purifier

1. **Project Title** : Natural air purifier
2. **Mentor Name** : Mr. Surendra Pal Sharma
3. **Student Team Names:**
 - I. Raj Kumar Shukla
 - II. Vinit Yadav
4. **Project Description:**

The air purifier is based on natural water washing and filtration for good health, especially suited for asthmatic patients who feel discomfort due to dust and other allergens available in surrounding air. In currently available air purifiers works on ESP (electrostatic precipitator for removal of particulate matter. In general, big cities in the world are having highly polluted air. In India Delhi/ NCR is in full glare for very severe polluted air. The small children, old people and the asthmatic people have very tough time surviving in the open air. Even there is warning not to venture out for morning walks in winter season due to high air pollution levels. We find clean air levels during rainy season as the natural rain dissolves all pollution creating particles such as TVOC (total volatile organic compounds), PM (particulate matter) and CHO (formaldehydes) etc. so there is a need to develop a device to clean air inside house and outside atmosphere. This innovation relates to a natural air purifier comprising of an air fan for circulating pressurized air from the room and leaving the clean air to the room in opposite direction; a water pump which is configured to spray fine particles of water at a suitable pressure to wash the circulating air and dissolving the air polluting matters; an indicator for water level to alert user to add water in case of low level for proper operation of the purifier. Further, the invention includes a filter element which is configured to filter remaining pollutants of air; and an air quality monitoring device which indicates the present level of air pollutants.



5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD, mechanical design.
- Support provided for fabrication of the machine.

7. Current status:

- Prototype is done and moving in to commercialization stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Hybrid Vehicle Washing System

1. Project Title : Hybrid Vehicle Washing System

2. Mentor Name : Mr. Brijesh Kumar

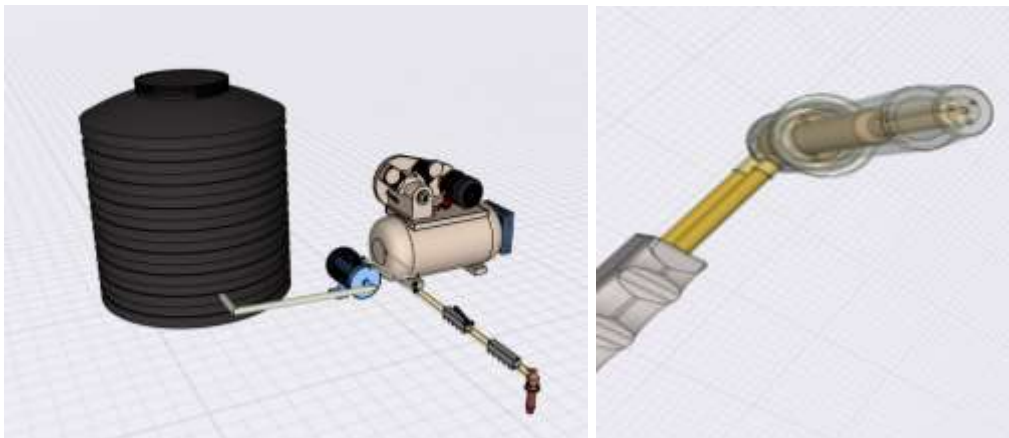
3. Student Team Names:

I. Rakesh Kumar Chauhan

II. Suraj Kumar

4. Project Description:

This project is related to the field of Waste Management and more particularly wastage of water during vehicle washing. The main objective of hybrid vehicle washing system is to reduce the wastage of water during washing that will be helpful in controlling the water scarcity in India. In comparison to the traditional washing systems, the hybrid vehicle washing system will reduce the wastage of water to a large extent. A traditional vehicle washing system works on the principle of impact of jet and uses a “jet of pure water only” to wash the vehicles and results in huge wastage of fresh water. In this hybrid vehicle washing system a jet of compressed air along with very fine jet of water is used for surface clening purposes.



5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD and mechanical design.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring commercialization sample fabrication.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-10: Modular brushless direct current (BLDC) electric motor

1. Project Title : Modular brushless direct current (BLDC) electric motor

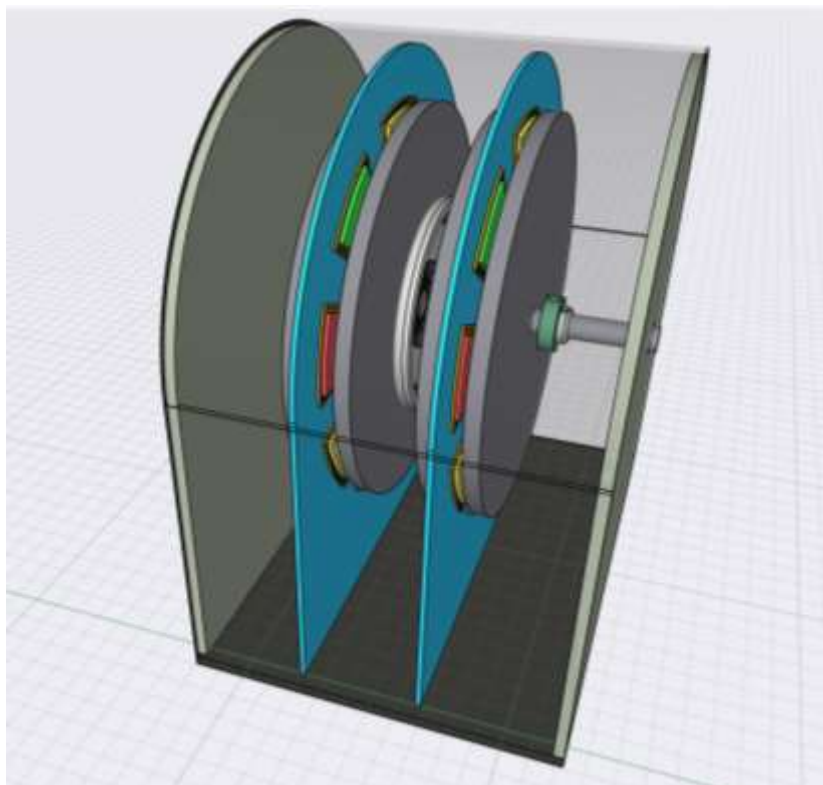
2. Mentor Name : Harshit Kumar Singh

3. Student Team Names:

I. Nidhi Sharma

4. Project Description:

Modular BLDC motor is based on axial flux topology which has more power density compared to its counter part that is radial flux topology this difference in power density is achieved due to the length that magnetic field line has to travel to complete its loop is less in axial flux moreover the active conductor used in modular BLDC motor is more and overhang length is lesser. Further the modular BLDC motor gives us the added advantage of stacking more number of rotors such that the overall torque distribution can be increased which results in increased power density. Therefore for 2-wheeler one motor can be used for 3-wheeler, two motors can be stacked together to be used and lastly in four-wheeler 4 motors can be stacked together. Moreover, the parts used and power electronics used in this is generic that is parts are manufactured in India itself therefore reduces dependence on China and can be repaired easily as it is modular in nature. This motor can be developed on 3D printers.



5. Project status at beginning of the Year:

Idea Level:

- Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD and 3D printing.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring commercialization sample fabrication.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: High Power Density Modular BLDC Motor Controller

1. Project Title : High Power Density Modular BLDC Motor Controller

2. Mentor Name : Harshit Kumar Singh

3. Student Team Names:

I. Nidhi Sharma

4. Project Description:

BLDC motor controller has a major issue of thermal runaway due to improper monitoring of current being fed into the controller. Due to which BLDC controller tends to fail a lot moreover these controllers are manufactured in China and MOSFETS used in these controllers are not generic therefore repairing these are not feasible. This invention is designed a controller which has proper temperature control with liquid cooling and power monitoring system which makes the overall system more robust in its working. Moreover, the parts used and power electronics used in this is generic that is parts are manufactured in India itself therefore reduces dependence on China and can be repaired easily as it is modular in nature.

5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD and electronic development.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring commercialization sample fabrication.

Project-12: Endurance Tester for Geyser

1. Project Title : Endurance Tester for Geyser

2. Mentor Name : Md. Ayub Khan

3. Student Team Names:

I. Md Samiruddin Ansari

II. Vishal Kumar

4. Project Description:

The project is designed for Industrial solution. The innovation relates to automatic safety test panel for geyser under Indian Standard (IS 302). In this invention used in home appliances, especially Geyser manufacturing industry applications. Further, the invention is designed in such a way that it requires no human intervention and completely automatic. The convention test for geyser have many drawbacks like: test process relies on testing staffs manually work on duty Industry needs to observe and debug for a long time, manually adjusts the voltage of water system working method and power supply system, and needs artificial logical It crosses electrical parameter measuring instrument to read operating voltage, read measured point temperature by temperature rise recorder, test process need to expend detection people Member's plenty of time and energy, heavy workload, detection cycle is long, and is easy to appear error, leads to retest. The automatic safety test panel for geyser comprising of a power supply system for supplying the geyser such that the geyser is tested for current leakage in a leakage test of the geyser. The power supply of 500 DC voltages is to the geyser and measuring a value of the current at its body of geyser. Followed by, the geyser is tested for voltage value using a high voltage test. In this test the value of voltage at the body of geyser. The range of the supply measuring voltage is 1500 volt – 5000 volts. Further, the geyser is tested for earth contact test such that the geyser is set the current at 25 Ampere, and measuring the voltage by using the earth contact test. The geyser is to measure the total resistance between any two points separated by electrical insulation by using an insulation resistance (IR) test. Therefore, determining the test how effective the dielectric (insulation) is in resisting the flow of electrical current. Hence, the safety test panel is designed mainly for ensuring the safety of the panel. The all the tests are conducted under four parts and it

requires no human interventions and hence there is no extra cost required for performing its tests. Therefore, the geyser is very accurate and its accuracy is up to 99.5%, and is very reliable and can benefit the country on long scale.

5. Project status at beginning of the Year:

Idea Level:

- Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for various testing technologies.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and moving in to commercialization stage.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-13: E-Tractor with variable Power

1. Project Title : E-Tractor with variable Power

2. Mentor Name : Mr. Hemant Raja

3. Student Team Names:

- I. Shubham Kumar
- II. Md Samiruddin Ansari

4. Project Description:

The project is designed for farming use. In response to new and environmentally beneficial technologies that use non-fossil fuel as a source of energy, the development of an e-Tractor for agricultural operations will be undertaken. An electric powered farm vehicle platform with modular top for use as a tractor or trailer combined with rear attachment for additional equipment or range enhancement. In combination with IOT it's a complete solution for modern farming. At the present, e tractor is having trouble achieving improved torque and mileage. In order to attain faster acceleration and torque, most elite class electric E-Tractor manufacturers have used large motors. Using large motors reduces E-Tractor mileage because the minimum current required to operate the E-Tractor increases. It can be controlled manually, remotely or autonomous. The best solution for the present E-Tractor problem is a variable power enhancer. It provides the power when high torque is needed and provides maximum mileage. The combination of three motors produces huge

torque, and conditional motor activation ensures maximum mileage. We supply a way point autonomous drive in this e tractor that ploughs the field automatically. It will have an IoT- based technology that performs multiple functions at the same time. Enter changeable rear assembly for tractor- Currently, tractors are only used on farms since they are too dangerous to drive on the road. To offer stability while driving on the road, the proposed solution is to provide a rear component that can be detached and reattached. The large wheels that were utilized for farming were replaced with a roadworthy rear attachment. When the tractor returns to the farm, the large wheel assembly can be reattached on demand. A special motor is used in this project to achieve the maximum torque requirements.

5. Project status at beginning of the Year:

Idea Level:

- Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for vehicle design and electrical solutions.
- Support provided for import of special motor.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring the commercializing scope.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-14: A device to charge EV Battery in running condition of Vehicle

1. Project Title : A device to charge EV Battery in running condition of Vehicle

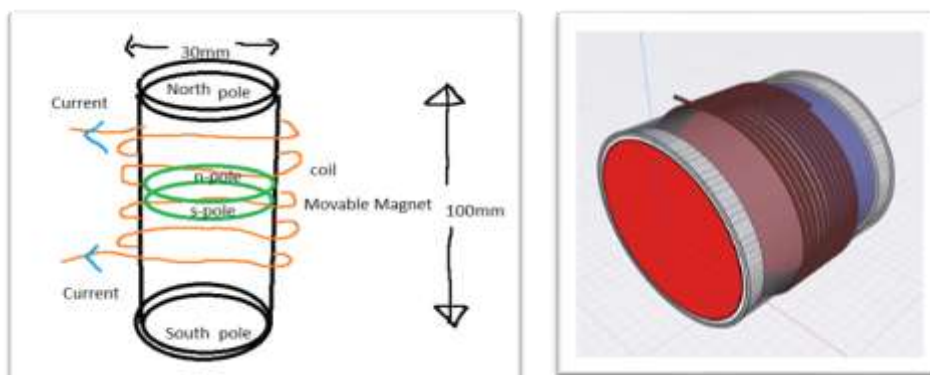
2. Mentor Name : Dr. Mohit Saxena

3. Student Team Names:

- I. Vipul Maurya
- II. Vedant Sharma

4. Project Description:

The project is designed for electricity generation using shock produced in running vehicle while moving on the roads. In E -Ricksha's shock absorber system is not very effective to low-cost manufacturing objectives of the E-Ricksha's. It has been observed that sufficient shock is produced in E-Ricksha's which can be used to electricity generation and further can be used for battery charging itself. Using simple physics and specific engineering approach, a unique device can be developed for electricity generation. In this project, magnetic energy production for charging the battery in ELECTRIC VEHICLE. The conventional theory of conversion of magnetic energy to electric energy is applied to address this issue. The magnets will be installed in nearly all four side of tyre (nearby suspensions) of vehicle so that while running the mechanism oscillates on vertical axis to generate the current. While oscillating magnetic field would be created and the transformation of magnetic energy to electric energy would take place. This electric energy will be extracted through the coil and will charge the battery while moving.



5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for magnetic theories and electrical solutions.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring the commercializing scope.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Automatic Dairy Animal Feeder

- 1. Project Title** : Automatic Dairy Animal Feeder
- 2. Mentor Name** : Mr. Manvendra Yadav/ Md. Ayub Khan
- 3. Student Team Names:**
 - I. Piyush Sokhi
 - II. Lovely Gupta

4. Project Description:

The project is designed for dairy automation. Dairy activities are an essential pillar of the rural Indian economy, forming a vital source of income and employment for a large Indian population. The dairy sector in India has become an essential tool for socio-economic development. Automatic feeding systems for dairy cows and other milk animals is important to reduce labour time and workload. Automation is becoming increasingly important on modern dairy farms to allow for efficient and profitable milk production. In particular, the ability to feed several times per day has a positive impact on the feed conversion ratio. Various research shows that a higher feed conversion ratio is the basis for improved overall condition and health of the cattle, resulting in a higher milk yield, better fertility and animal health. Therefore, animal feeding in appropriate quantity and on fixed routine is very important. In general observation, animals feeding time is very specific and feeding person has to follow very sincere routine. In this project PLC based automatic systems has been developed. In view of low cost and batch type of automation a special hopper has been designed which is controlled through PLC and feeding mechanisms are actuated via servo-controlled motor. The hopper can be customized as per the customers requirement. The feeder will open for the feeding of animals as per the schedule fixed in programmed. Feeding quantity can be also controlled but due to cost effectiveness and for batch type automation the feeding quantity will initially fixed by the users. This product will allow the flexibility to the manpower involved for the feeding task and also take care the health of milk animals.

5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for algorithm development, PLC programming and dairy activities.
- Mechanical system design and synthesis.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring the commercializing scope.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-16: Converting Desert Cooler to Air conditioner using refrigerator

1. Project Title : Converting Desert Cooler to Air conditioner using Refrigerator

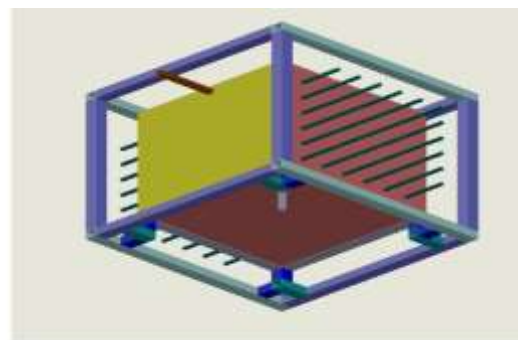
2. Mentor Name : Dr. Akant Kumar Singh

3. Student Team Names:

- I. Ashirvad Pal
- II. Jaibeer

4. Project Description:

This innovation relates to the field of thermal engineering and more particularly, to desert air-cooler cum air conditioner. Further, the invention relates to heat transfer and refrigeration-based system for providing air with controlled temperature and humidity for human beings. Save Energy as consumption of power in Refrigeration units are lesser than AC units. The project comprises a heat exchanger that is configured to transfer the heat from one medium to another. Further, the desert air-cooler cum air conditioner includes a water cooler which is configured to ensure the constant supply of cold water to the heat exchanger; and a temperature sensor attached with the water cooler to regulate the temperature of the water. This innovation will provide a low-cost cooling system to the peoples. Modified desert air cooler will give sufficient amount of cold air at very low cost as compared to air conditioners.



5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD design and refrigeration system development.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring the commercializing scope.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: Micro hydro power water wheel with Compressed air energy storage system

1. Project Title : Micro hydro power water wheel with Compressed air Energy storage system

2. Mentor Name : Surendra Pal Sharma

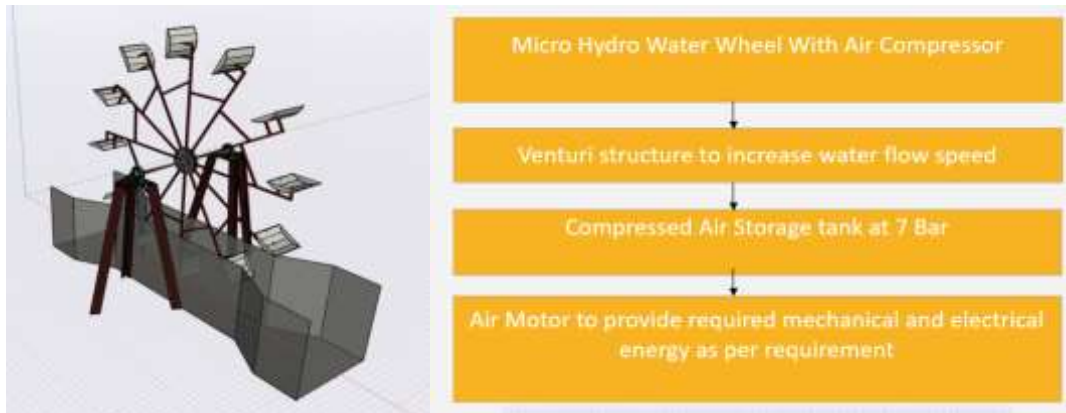
3. Student Team Names:

I. Lovely Gupta

4. Project Description:

This project relates to the field of micro hydro power plant, and more particularly, relates to the water wheel-compressor technology to harness small water Stream Energy with storage and utilization of energy when needed in the form of electrical/ mechanical energy. In general, present hydro plants in India are very high-power capacity plants above 25 MW. Few plants are also installed with small hydro power capacity less than 25 MW. But none of the plant uses modern technology of micro hydro water wheels with compressed air energy storage system in India and also probably nowhere in the world. The new technology based micro hydro water wheels are quite cheap and can be utilized with minimum investment. They can cater to the needs of small operators and with quite ease on any small stream of water either in plains or in hills. The energy can also be used as per requirement of time and capacity. Various designs of water wheel turbine have been developed in the world but in India no development has taken place so far except at some of the places, the old designs of PAN CHAKKI (water flour mills) are operating. In all those places the hydro power is being converted to mechanical movement and being used the same moment when generated, there is no energy storage taking place anywhere. At some places in Europe the electrical power is being generated and being utilized at the time of generation. The project provides a micro hydro power water wheel with compressed air energy storage system, wherein the system provides the easy installation procedure in any small stream at the lowest cost and lowest time span. The system includes an air storage tank, an air motor, a venturi structure, water wheel and air compressor. the venturi structure increases the water flow speed. the water wheel is coupled to the air compressor.

Therefore, the air compressor starts compressing air. The compressed air is stored in the compressed air storage tank. Air storage tank provides the required compressed air to the air motor for providing a required mechanical and electrical energy as per requirement.



5. Project status at beginning of the Year:

Idea Level: Ideation level

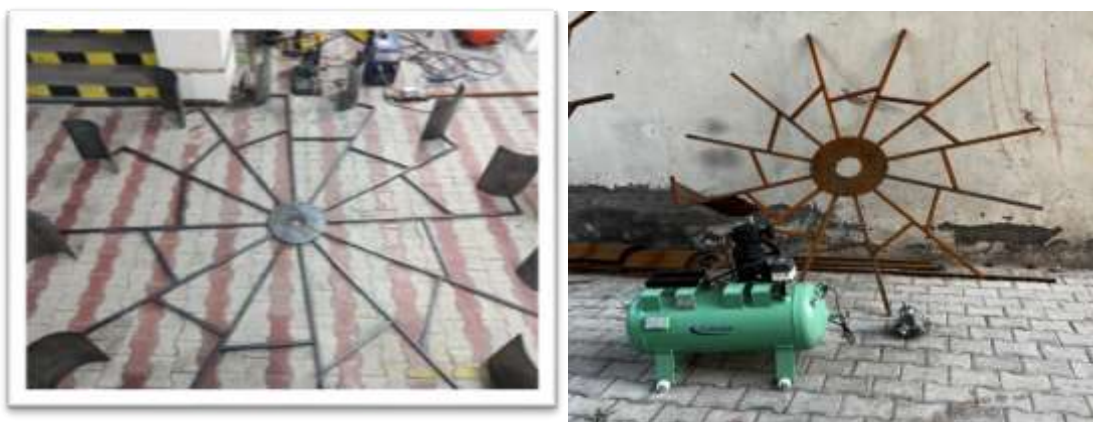
6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD design and water wheel-compressor technology developments.
- Support provided for import of special air motor.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring the location for installation.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-18: Vehicle Alignment Indicator

1. Project Title : Vehicle Alignment Indicator

2. Mentor Name : Mr. Jeevesh Gupta

3. Student Team Names:

- I. Nikunj Kaushik
- II. Nikhil Gupta

4. Project Description:

Wheel alignment influences the way that vehicle responds to steering and has a huge effect on the lifespan of vehicle tires. Routine wheel alignment benefits fuel efficiency, tire wear, tire performance, vehicle handling, and maneuverability. Wheel alignment have many benefits like Increase Fuel Efficiency, Reduce Expensive Auto Repairs, Experience Smoother Driving, Improve Vehicle Safety and Increase the Life of Tires. At present many important information are provided on the vehicle's dash bord like speed, engine cooling status. Seat belt alarms, Hand brake indicator and many more but no real time indication system is available on board. Wheel alignment out is identified by experienced drivers. The common drivers cannot identify the out of wheel alignment. This is the motivation of this project. In this project a laser-based technology is used for the checking the alignment out. The information received from the laser input will be exhibited on the vehicle dash board.

5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for CAD design and laser-based measurement system.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring the commercializing scope.

Project-19: Online payment device for Machine of Beverages

1. Project Title : Online payment device for Machine of Beverages

2. Mentor Name : Mr. Jeevesh Gupta

3. Student Team Names:

I. Vaibhav Kumar Yadav

II. Saket Tiwari

4. Project Description:

This project is developed for the online payment system in a vending machine. The machine starts with receiving an electronic transaction request by a mobile electronic transaction terminal. The method includes receiving an access request initiated by a mobile terminal through scanning the QR code generated by the vending machine and providing the mobile terminal a commodity display interface corresponding to an online supermarket pushing a payment interface to the mobile terminal to be displayed after determining through the mobile terminal a commodity selected by a user. After determining through the mobile terminal, the payment mode selected by the user, with a back end of a payment tool corresponding to the selected payment mode and pushing a payment interface of the payment tool to the mobile terminal for the user to make electronic payment and sending delivery instruction to the vending machine upon receiving a signal indicative of successful payment, so as to make the vending machine output a corresponding commodity. In this case the commodity will be milk-based products. After this process the machine initiates the making of the commodity with the help of a multiple gear system (Customized gearbox). The premix of the desired product is let into the container and the required process (Heating/Chilling) along with mixing of the liquid is initiated. After the process is completed, the mixed drink is poured into the container.

5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for programming and communication interface.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring the commercializing scope.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-20: The Marvel Tooth Brush

- 1. Project Title** : The Marvel Tooth Brush
2. Mentor Name : Dr. Jyoti Batra / Suraj Singh

3. Student Team Names:

- I. Muskaan Sachdeva
- II. Afreen Ali

4. Project Description:

The Marvel toothbrush provides you the real time feedback on your brushing habits using an app and helps to improve your overall health. It will allow the user to apply correct brushing technique and pressure involved. This toothbrush has an ability to detect oral diseases like that of simple dental decay to aggressive mouth cancer via mouth scanning and associated AI module. This brush comes with the detachable bristle plate. It will Include different modes- Brushing Mode, Massage Mode and Tongue cleaning mode.

5. Project status at beginning of the Year:

Idea Level: Ideation level

6. Interventions made:

- Support provided for detailed scope of the project.
- Support provided for programming and camera interface.
- Support provided for fabrication of the prototype.

7. Current status:

- Prototype is done and exploring the commercializing scope.

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



NewGen IEDC: Indian Institute of Information Technology Allahabad

PROGRESS REPORT 2021-2022

(Up to 31st March 2022)

Name of the College/Institution hosting NewGen IEDC	Indian Institute of Information Technology Allahabad		
Year of starting NewGen IEDC	2018-19		
Name of the Head/Principal of the Institution/College	Prof. R.S Verma Director (Acting)		
Name of NewGen IEDC Coordinator	Dr. Ranjana Vyas		
Contact Details of NewGen IEDC Coordinator <ul style="list-style-type: none">• Mobile Number• e-Mail ID	(M) 9405054819 (L) 05322922044 ranjana@iiita.ac.in		
Financial Details	Sr. No.	Sanction Order No./ Date	Amount Sanctioned
Previous Sanction Order Details	1	EDII/DST-NewGen-IEDC/18-19/12 Date: 13/11/2018	Rs. 60,00,000
	2		Rs. 47,50,000
	3		Rs. 60,00,000

1. Details of Activities Undertaken during the year:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

1. Workshop for startups

- It was decided to conduct a 2-day intensive workshop on entrepreneurship development in an online virtual mode due to the pandemic. It was decided to open the same for all colleges, especially the ones running the NewGen IEDC program. The workshop was done by Dalvik Apps

2. Pitching Contest

- A pitching contest was organized for all the students. Considering the online nature due to the pandemic, the contest was open to all students nationwide. The contest got numerous entries, therefore only the best 30 teams were screened, out of which top 4 were rewarded

3. NewGEN IEDC Entrepreneurship Conclave 1.0 (October 2022)

- NewGEN IEDC Entrepreneurship Conclave 1.0 aims to bring together the finest minds in the country on one platform. Startups will get the chance to showcase their innovative vision and products, pitch to the right set of candidates, and find the right investors, mentors, and potential co-workers. The conclave also provides an opportunity for one-on-one engagements with mentors, experts, investors, and professional service providers in one-to-one physical meetings as well as private online room interactions. This conclave takes place to motivate students for generating out-of-the-box ideas and foster innovative thinking.
- 2022 marks the Version 1.0 of the Annual NewGen IEDC Entrepreneurship Conclave 1.0 to be held in the month of October every year. To foster innovation among students from diverse backgrounds, we have Fireside Chats, Discussions, Interactive Talks & Sessions, Workshops, etc. We have eminent speakers and events based on various tracks/themes to inculcate learning and generating new ideas via this platform

4. Idea Pitch for Start-Up Grant-in-aid–Shark Tank NewGen IEDC IIIT Allahabad

- 2022 marks the Version 1.0 of the Annual NewGen IEDC Entrepreneurship Conclave 1.0 to be held in the month of October every year. To foster innovation among students from diverse backgrounds, we have Fireside Chats, Discussions, Interactive Talks & Sessions, Workshops, etc. We have eminent speakers and events based on various tracks/themes to inculcate learning and generating new ideas via this platform
- The best ideas will be given offer letters on-spot for grant-in-aid funds by NewGEN IEDC, supported by NSTEDB, to convert their ideas into working prototypes. The shark tank pitch will be followed by an inception program for on-boarding of the student startups. Here, the startups are guided by mentors & experts to convert their ideas into viable projects and help them develop potential models & experimental design for on-field validation

5. The NewGEN Wall of Fame Showcase - Physical Presentation with Physical Prototype Demonstration

- In “The Wall of Fame Showcase” event, innovators and entrepreneurs are given an opportunity to exhibit their prototypes and innovative ideas in stalls provided at the IIITA campus in NewGEN IEDC arena. The showcase is aimed at providing a common platform for various stakeholders – from innovators, students, and researchers to entrepreneurs in various parts of the country. To showcase in the event, there is no eligibility barriers, and will have participation from various “tracks” such as - “Women Innovators - NAARI SHAKTI”, “Young Innovators - THE TINKERERS”, “Startup Innovators - THE ENTREPRENEURS”, and “College/University Innovators - THE GEEKs”
- There will be special appreciation awards for innovators from each track. The school students will be given an opportunity on the day of Showcase itself. These students will be provided with an offer letter for support by NewGEN IEDC once they get into colleges to convert their ideas into successful prototypes and ventures

- The exhibition will also expose the visitors and others to the pervasive culture of creativity and innovation at grassroots. Seminar/round table discussions on innovations, incubation and entrepreneurship will also be organized during the summit to educate and encourage the young aspirants to take innovations for start-ups

6. **Women Entrepreneurship Accelerator (WEA) Program**

- The Women's Entrepreneurship Accelerator (WEA) Program has the aim to maximize the development impact of women entrepreneurship in achieving Sustainable Development Goals (SDGs) by creating an enabling ecosystem for women entrepreneurs all around India. WEA exemplifies the transformational power of a multi-partnership of unique magnitude to harness the potential of women entrepreneurs.
- WEA aspires to be a leading expert on providing solutions to the constraints involving women entrepreneurship and pioneer thematic approaches to the following challenges
 - Barriers to access to financial products and services;
 - Lack of knowledge and information;
 - Lack of education and need for capacity building at both institutional and individual levels;
 - Challenges to access high value markets.
- Capitalizing on lessons learned and experiences of women entrepreneurship initiatives and programmes, WEA has adopted a set of strategic priorities to:
 - Promote women employment to provide more decent work options to women and girls.
 - Raise national awareness of the positive contributions that women entrepreneurs make for sustainable development and promote new policies and partnerships as new challenges and opportunities arise.
 - Empower women entrepreneurs/innovators through delivery of capacity building workshops, creation of knowledge product and advocacy.
 - Support investment mechanisms which target women entrepreneurship

[B] To identify, develop & commercialize students' innovative ideas

1. Advanced Bio-3d Printers and Multi domain 3D Printing Services
 - The device is ready to sell; Got two pilot orders from ICAR-NDRI Karnal and another one from KGMC Lucknow. One of 12,000 INR completed and dispatched and (payment received, invoice attached) and another of 35,000 INR (yet to be processed)
2. OGO – The place for bikes and e-bikes
 - Product Launched
3. IoT Based smart lighting
 - Prototype is ready and ready to launch. Discussion with customers.
4. A Portable Corona Discharge System with Custom Made Electrodes for PDMS Hydrophilic treatment and Bonding for Microfluidic Chip Fabrication and Cost Effective Micro Impedance Pump For Potential Application in the Micro-fluidics & Biomedical Domain
 - BITS Pilani
5. ContentWREP® (Nazmehayat Enterprises Private Limited)
 - Content WREP launched its website on 30th July 2020
 - Revenue generated of 1.2 lakhs INR since the incorporation
 - Distributors
 - Amazon
 - Flipkart
 - Amazon Kindle
 - Goodreads
 - Snapdeal
 - ContentWREP Bookstore
6. Shubh Wed, the startup provides services to wedding couples. They have currently designed websites/posters for 3 couples. They are currently collaborating with vendors for marketing. They are selected for NCW for a mentorship program
 - Product is launched: Contacting the various couples soon to be married and started getting business from them. till date they have over 10 paying customers
 - Pilot Customers are happy with their product
 - Received positive feedback

[C] To enhance Industry-Academia interaction

1. Visit & Demonstration to Ankur Seeds Nagpur (A Leading Indian Manufacturer of Seeds in Nagpur, Maharashtra) - March 2022

- Support extended for further partnership & support for startups in AI, drones, and IoT devices.
- Support for prototype validation & testing experimentation was provided here

2. Visit & Demonstration to KVK Kaushambi - February 2022

- Experiments performed for different operating conditions & parameters for drone design provided to startup PS-1925
- Letter of Intent received from KVK for purchase of drone under subsidy scheme of Ministry of Agriculture, Government of India

3. Drone Festival of India - May 2022

- DFI 2022 was held from 26-27 May 2022 at Pragati Maidan, New Delhi for demonstration, mentorship, and exposure to leading manufacturing companies in the drone industry. The event was inaugurated by the Prime Minister of India and delegates were invited to represent IIT Allahabad at the event

4. WEE Women's Entrepreneurship Conclave IIT Delhi

- To mark 30 years of diplomatic relations between Israel and India, the Embassy of Israel in India collaborated with IIT Delhi and WEE Foundation to develop a six-week mentorship program for women entrepreneurs.
- 26 women entrepreneurs from WEE Foundation were selected and mentored on various topics. These included validating ideas, building a team, fundraising, building, and distributing the product. Entrepreneurs were mentored by renowned VC & Mentor, Nava Swersky from Israel.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Yes, Due to covid, whole was in online mode

3. Other important highlights (new initiatives), if any:

- i. Some new ventures are in pipeline**

4. Student Projects

Refer to ANNEXURE-A for Details of Student Projects with Prototype Photos

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Best Project-1: 3-D Printer

- I. Project Title** : 3-D Printer
- II. Mentor Name** : Dr. Amit Prabhakar

III. Student team details

- i. Amar Dhvaj
- ii. Prashant Nayak
- iii. Ankur Jaiswar

IV. Brief description of the student start-up

3D printing is a form of additive manufacturing technology where a three-dimensional object is created by laying down successive layers of material. 3D printers are generally faster, more affordable, and easier to use than other additive manufacturing technologies. However, the term 3D printing is increasingly being used to describe all additive manufacturing processes. They offer product developers the ability to print parts and assemblies made of several materials with different mechanical and physical properties, often in a single build process. Advanced 3D printing technologies yield models that can serve as product prototypes. Since 2003 there has been large growth in the sale of 3D printers. Additionally, the cost of these has declined but the errors in using and maintaining it hasn't. These 3D printers still have many flaws that need to be addressed by science and technology. The errors like bed alignment, Auto calibration, portability still hampers 3D printers to come into the consumer market (B2C). Our aim in this project is to make a commercially usable 3D printer and also provide some unforeseen technological development in 3D printers. We aim to provide various types of 3D printing services too in a commercialised form for the field of research and prototype development. Currently we have successfully implemented 3D printing in product development, Nanotechnology Research, robotics and tissue engineering and are also getting requests from many esteemed institutions and their research centres to provide some 3D printing related services to them

V. Startups entrepreneurial journey from ideation to prototype or commercialization along with 2-3 high-resolution photographs.

The Business

- **The product/service/idea:** We have successfully made our own 'self-developed' 3D printers with features filed for Patent rights and some are still under development. The project aims towards entering the new

frontiers of 3D printing such as Poly jet printing, Metal printing, Thermoset based polymer printing and nano tech 3d printing development and providing them as a service.

- **The technology behind the product/service:** The technology behind this project is a part of open source project on CNC and some design and technology developed and patented from our side. As of now our team is quite confident that the level of development in this technology we have achieved is way ahead of existing levels. So we believe that we are in the right place at the right time in the market.
- **Possible innovation at a later stage:** Adding more and more material in 3D printing has always been a challenging task to most of the Research Industries. Nevertheless, we have managed to print using PEG, PGA, SU8 and other Biocompatible polymers that gives us a vision to look further into the Bio-Printing application of the technology. Soon the world will be leading with healthcare products monitored and controlled using robotics and soon we might be having surgical procedures using these technologies, be it indirect involvement or direct.
- **Scalability:** Since we discuss developing 3d printers and then commercialising it in terms of sales or a service from this developed product we try to stick to the JIT Just In Time product development approach thus saving lots of budget being wasted and allowing potential to develop much better products/services on the go. We don't plan to develop a 3D printing farm with around 10-20 3D printers purchased from the market stocked somewhere and then trying to sell it or provide service from it, rather we want to develop what's missing from the market in this technology and trying to empower the users with this technology. The Margins are quite high since such a printer can be developed at a price of 10000-16000 and has a market of 38000 INR as a domestic DIY product. The service cost starts from a minimum of 1500 per 3D print at the leading service providers (eg: shapeways) around the globe excluding shipping.
- **The market (the size of the market and its growth potential):** The 2018 report has the estimated number of desktop systems sold at nearly double the 2015 data (reported in the 2016 report). In just over two years, an astonishing 5,28,952 desktop 3D printers (or systems) are believed to have been sold. forbes.com. Every year around 1,76,000 desktop 3D printers are being sold online with same monotonous features and no extra features. We don't talk about developing desktop 3D printers only. We as a Research Organisation believe much more can be achieved with this technology we look forward to be the first in production and commercialisation of Bio-3D printers aiding the medical and healthcare industry and also to provide service on a large scale with polyJet 3D printing.

VI. Contribution of NewGen IEDC in the same

- The New Gen IEDC has provided us with the opportunity to think bigger and in a broader perspective and lead our project from Ideation level to a prototype and commercially viable level. The support was not only limited to the Funding but also networking and other self assessments were provided that helped in constant growth of the overall project. With the funding scheme of the Newgen IEDC the outsourcing of Raw materials for the project became quite easy and approachable goals were set to develop the MVP (Minimum Viable Product)

VII. Future plan

Our future 3D printing services will include:

- A website to upload your designs/ CAD files and get a quotation for 3D printing and also to get them designed and 3D printed as a whole.
- Develop new technologies in Bio 3D printing and other prototype and launch them in the market.
- A designer's portal that provide opportunities to the CAD developers to design and get paid for their professional work which they will provide to us.
- An e-commerce platform for 3D printed products such as personalised office supplies, gifts and merchandise

Best Project-2: Abyom Rocket TDM (Technology Demonstration Module)

I. Project Title : Abyom Rocket TDM (Tech. Demonstration Module)

II. Mentor Name : Dr. Rahul Kala & Dr. Ranjana Vyas

III. Student team details

- i. Jainul Abedin
- ii. Pranchal Gupta
- iii. Nirvik Choudhury

IV. Brief description about the student Project

Abyom is the 1st officially recognised SpaceTech Startup from Uttar Pradesh. The journey started back in 2020, when Jainul Abedin (CEO & Founder) was invited by ISRO and they recommended to start an own venture on this vision, which is "To put India on the World's Indigenous Reusable & Reliable Space Launch, Infrastructure and Talent map."

The team's experience comes from its college years when it produced a variety of prototypes and tests, such as static solid motor tests, parachute ejection tests, and rockets that were launched in the USA for the Space Port America Cup to a height of 10,000 ft.

It's pleasure to inform that in the last 22 Months our journey is remarkable & achievable at the national level, We have also been felicitated by the Chief Minister Award & recognised by ISRO

V. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

THE BUSINESS

The product/service/idea: Abyom is presently concentrating on developing the Reignition Liquid Engine that will be used to create India's first Reusable sounding rocket which will be utilised to provide services for Meteorology, Weather Forecasting, AgriTech Datas and other Research Experiments in the D and E Atmospheres. Finally developing a Reusable launch vehicle for orbit.

The technology behind the product/service: The focus area of the project is rocket propulsion. We aim to design and manufacture small-scale liquid propellant rocket engine. There are very fewer private companies or start-ups that were able to design a successful rocket engine. We aim to make a smallscale rocket engine and test and launch it. The propellant used will be

eco-friendly, cost efficient with providing high amount a durability. The focus is on sufficient amount of thrust production with regenerative cooling method of fuel. We want to combine this engine into reusability.

Possible innovation at a later stage: Our team is working on designing and testing of reusable launch vehicle that allows reuse of some or all of the components of rocket, its significant advantage is reusability of launch vehicle, which eliminates the cost to create a new component/ vehicle every time, thus it will help to economize time and cost.

Scalability: This launch vehicle will function on liquid propellant system having liquid Ethanol as fuel and liquid oxidizer as an oxidizer, which will produce combustion to lift-off the rocket from sea level as well as landing of that rocket. The mixer of liquid Ethanol with liquid Oxygen will be much safer to use and will provide higher specific impulse which in turn will significantly enhance thrust of the rocket. Ethanol's property to easily dilute with water will also help to keep the engine cool and lower the chances of structural damage due to thermal problems. As a biofuel it will reduce environmental concerns and prevent formation of greenhouse gases and carbon emission. Bell type rocket nozzle is used that will reduce the divergence loss at the exit and will enhance the performance of the vehicle as well as the reduce the size of the nozzle. Pressure-fed system will be used, which is simple and relies only on tank pressure to feed propellant to the chamber pressure, it also requires less quantity of propellant and low-pressure system.

The market (the size of the market and its growth potential): It's been nearly half a century since humans left footprints on the moon and during that time, human space exploration has largely centred on manned low-Earth orbit missions and unmanned scientific exploration. But now, high levels of private funding, advances in technology and growing public-sector interest is renewing the call to look toward the stars. Near term, space as an investment theme is also likely to impact a number of industries along with Aerospace & Defence, such as IT Hardware Telecom and Asteroid mining. The Space Industry is emerging as one of the most lucrative industries globally. The Space Industry, is valued at US\$ 360 billion in 2018, is projected grow at a CAGR of 5.6%, to value US\$ 558 billion by 2026. Demand for re-usable launch vehicle systems is anticipated to be driven by the massive investment made by countries.

markets for reusable launch vehicles, especially those vehicles that can place payloads in LEO orbit. The market for Satellites is anticipated to be the largest category primarily due to the ongoing procurement of such systems by countries of the Asia Pacific, North America and European regions. North America is expected to account for the largest share of the total global expenditure followed by the Asia Pacific Region where countries like India, China, and Japan are investing billions to procure such systems. Currently, the cost to launch a satellite has declined to about \$60 million, from \$200 million, via reusable rockets, we are drop to as low as \$15 million.

VI. Contribution of NewGen IEDC in the same

- With the help of NewGen IEDC we're building a small rocket technology demonstration module

VII. Future plan

- The demand for satellite networks and services for commercial applications has increased. Information
- Technology companies demand satellite bandwidth and network for efficient and speedy connectivity of the internet. Telecommunication companies want expansion of their infrastructure like 5G services. Moreover, the growing utilisation of defence and civil purposes have boosted the market. To provide seamless connectivity between the territorial landscape and orbit of the satellite, a transport conduit is being integrated into the overall communication map. This will result into extending overall satellite services in urban and rural areas. Thus, the subsequent annual launches of satellites have created a parallel demand of RLV to achieve orbital development at a fractional cost compared to expandable conventional launch vehicles

Annexure-A

Details of Student Projects

Project-01: Glexpace Nebula Robotics, LLP

1. Project Title : Glexpace Nebula Robotics, LLP

2. Mentor Name : Dr. Rahul Kala

3. Student Team Names:

- I. Ayush Chaurasia,
- II. Aman Bhaskar

4. Project Description:

The idea was to connect bloggers in a digital space using an AI engine that connects like-minded people

5. Project status at beginning of the Year:

- The product is ready for the market. It has already launched

6. Interventions made:

- To Close at least 3 B2B leads, Competition of Product, Tech and further legalities

7. Current status:

- Running 1 B2B lead closed

Project-02: ContentWREP (Nazmehayat Enterprises Private Limited)

1. Project Title : ContentWREP
(Nazmehayat Enterprises Private Limited)

2. Mentor Name : Dr. Ranjana Vyas & Dr.Rahul Kala

3. Student Team Names:

- I. Anushree Goswami
- II. Swapnil Singh

4. Project Description:

The idea was to connect bloggers in a digital space using an AI engine that connects like-minded people. An AI technology to fill the gap between the long publication processes by automating the processes such as editing, formatting, etc

5. Project status at beginning of the Year:

I await the opportunity to commercialize the product. I am looking forward to the product launch into the market and am also seeking funds to achieve Go-to-Market goals

6. Interventions made:

- We aim to be a 30 million INR company within the next 3 years

7. Current status:

-

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-03: Nirvaan Healing

1. **Project Title** : Nirvaan Healing

2. **Mentor Name** : Dr. Rahul Kala

3. **Student Team Names:**

I. Nirvaan

4. **Project Description:**

Aims to bridge the gap between meditation and mindfulness through healing frequency-based music

5. **Project status at beginning of the Year:**

Launching mobile applications

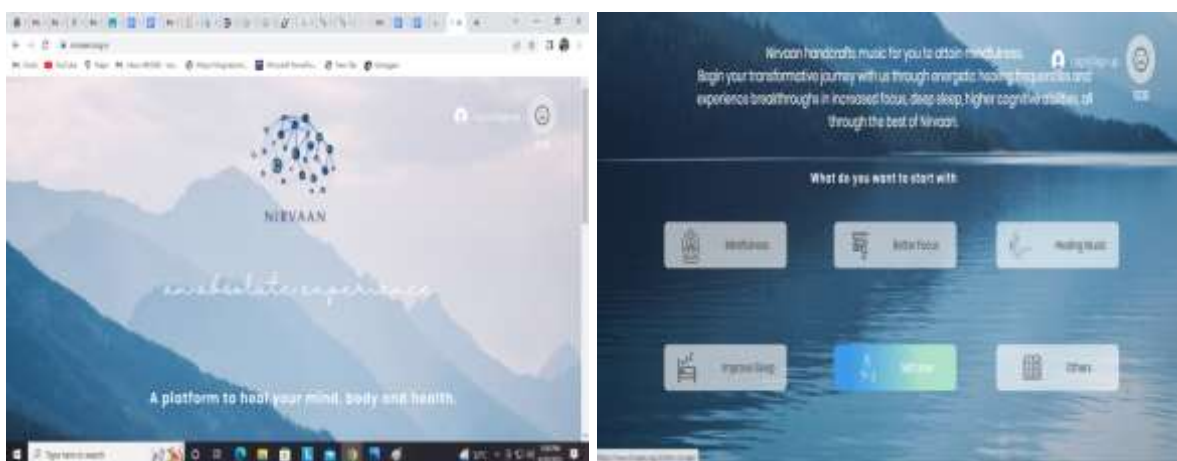
6. **Interventions made:**

- We tried to improve the user-friendliness of the site and the quality of some of our products

7. **Current status:**

- We have successfully launched the platform at www.nirvaan.org.in

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-04: Quordnet Academy

1. **Project Title** : Quordnet Academy

2. **Mentor Name** : Dr. Rahul Kala

3. **Student Team Names:**

I. Orunayan Bhattacharya

4. **Project Description:**

Creating an Ed-Tech platform. for backward class people by not taking the money, so they can use it for free and they will give the money once they earn something

5. **Project status at beginning of the Year:**

Launching offline leg and building in own executive courses

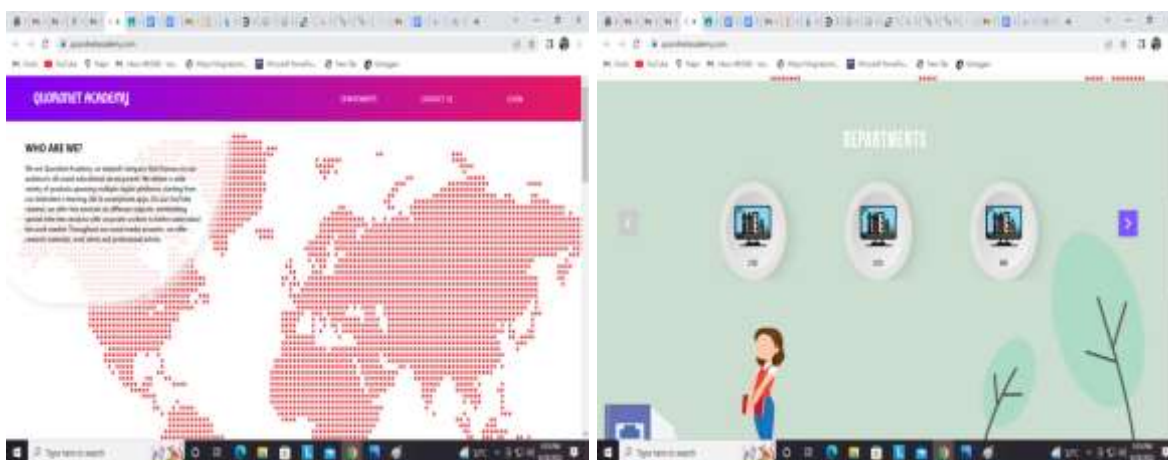
6. **Interventions made:**

- To improve the strategies

7. **Current status:**

- Website Launched

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-05: Grassroot Innovation

1. **Project Title** : Grassroot Innovation

2. **Mentor Name** : Prof. Ranjit Singh

3. **Student Team Names:**

I. Kajal

4. **Project Description:**

Launch of grassroot level challenges across India

5. **Project status at beginning of the Year:**

Extensive travel across India to collect grassroots innovations

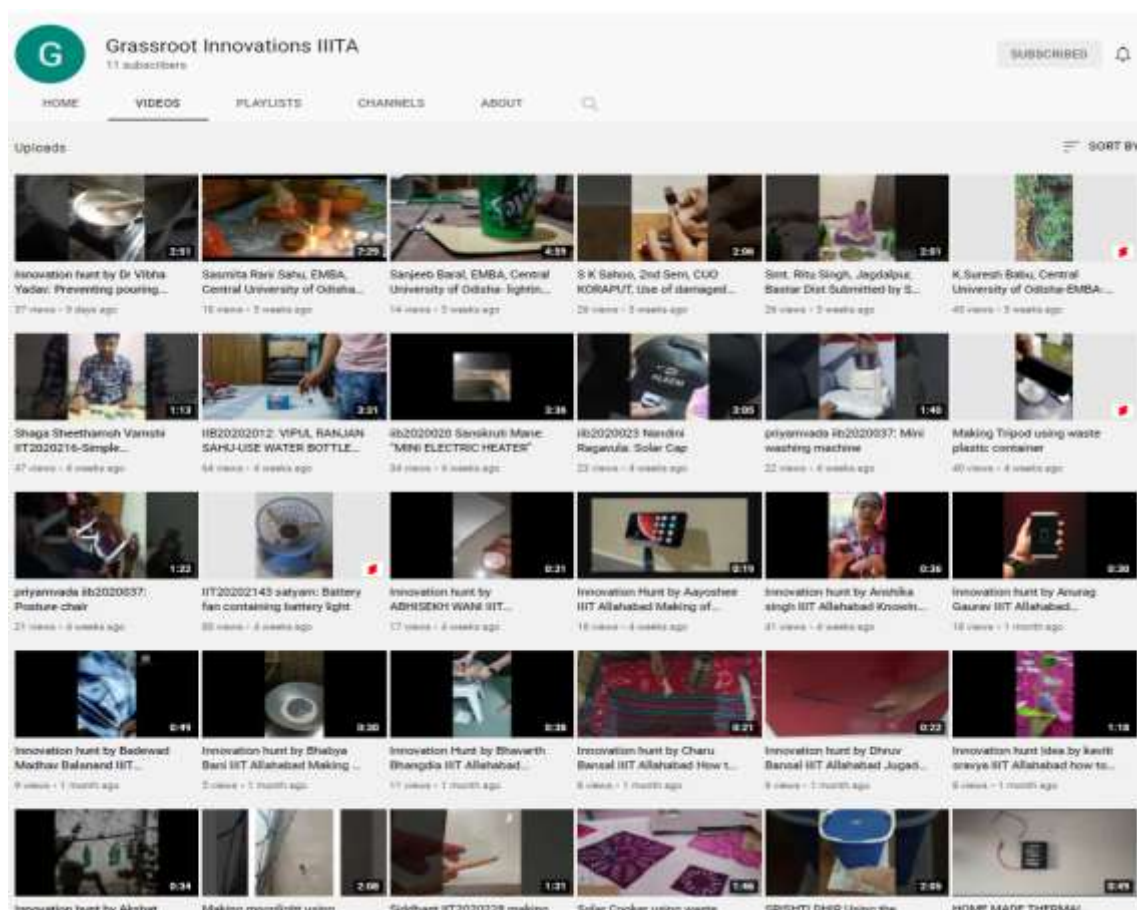
6. **Interventions made:**

- Launch of grassroots level challenges across India

7. **Current status:**

- Running

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-06: LetsGrowMore

1. **Project Title** : LetsGrowMore

2. **Mentor Name** : Dr. Rahul Kala

3. **Student Team Names:**

I. Aman Kesharwani

4. **Project Description:**

The Startup helps students to grow via internship and mentorship programs. They did an intensive research from Tier-2 and Tier -3 institutes, and made applicants grow as mentors. They have specialized communities for such students with many takers. They help people by bringing speakers across multiple channels

5. **Project status at beginning of the Year:**

We are targeting to add more products to generate more revenue

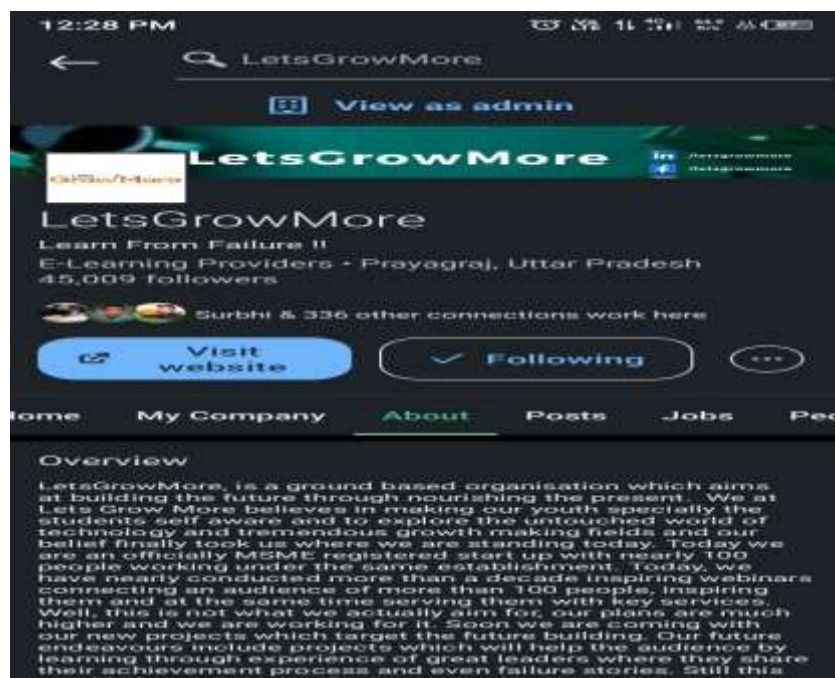
6. **Interventions made:**

- They have specialized communities for such students with many takers, interactive platform

7. **Current status:**

- Running

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-07: MiBi

1. **Project Title** : MiBi

2. **Mentor Name** : Prof. Paawan Kumar & Prof. Shefali Ramteke

3. **Student Team Names:**

I. Shiva Sharma

4. **Project Description:**

Interactive WhatsApp-like app, the AI algorithm will select a handful of the best jobs for the worker to apply, accept or reject in the form of chats for hiring and finance management of the unorganized workers

5. **Project status at beginning of the Year:**

- Collaboration with NGOs as partners to onboard workers in future from their regions

6. **Interventions made:**

- Launching in Asia-Pacific

7. **Current status:**

- App launched, Got certification from Government of India

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-08: Landmine Detector and Digging Robot

1. Project Title : Landmine Detector and Digging Robot

2. Mentor Name : Prof. Riju Bhattacharys

3. Student Team Names:

I. Ms. Manisha Meghani

II. Mr. Vaibhav Koshta

4. Project Description:

The idea behind the product development is to build a robot that is an IoT-enabled device, capable of traversing through any terrain like mud, sand, water, and ground. This is designed mainly for detecting and digging the landmines in the Naxalite area or war fields, which may cause casualties and loss of military equipment

5. Project status at beginning of the Year:

Discuss the feasibility of the product development, deployment, and market penetration

6. Interventions made:

- Exploring (start recently)

7. Current status:

- Discussion with government in process

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-09: Thrust Stand

1. **Project Title** : Thrust Stand

2. **Mentor Name** : Prof. Paawan Kumar & Prof. Shefali Ramteke

3. **Student Team Names:**

- I. Nilesh Upadhyay
- II. Chandra Prakash Maurya

4. **Project Description:**

To design a thrust stands for a drone to cater to the widely expanding drone market at a budgetary level

5. **Project status at beginning of the Year:**

Exploring

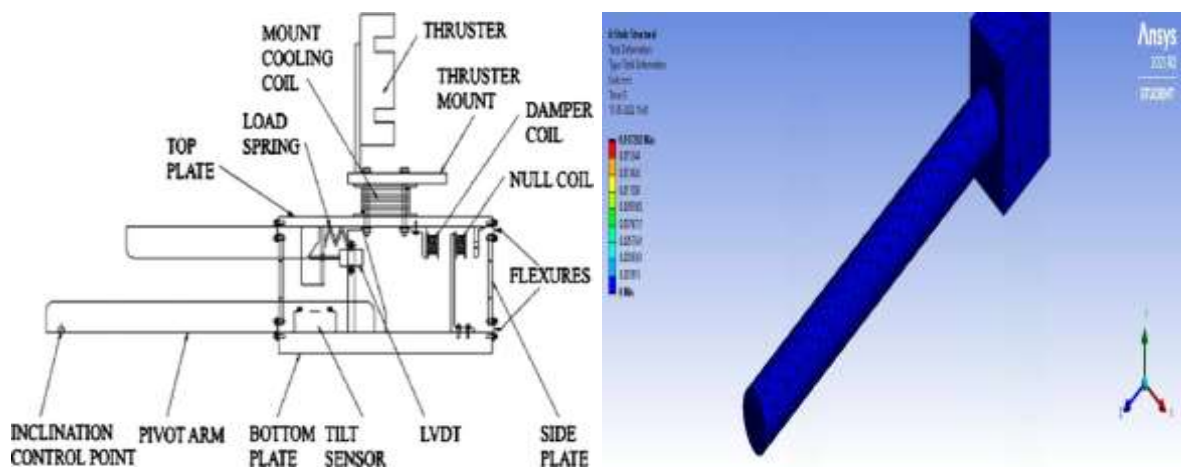
6. **Interventions made:**

- Intends to buy small electronic items to make a prototype and then go into the market. (Recently started)

7. **Current status:**

- Working on Prototype

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-10: Face recognition Door access

1. Project Title : Face recognition Door access

2. Mentor Name : Dr. Bibhash Ghoshal

3. Student Team Names:

I. Rajat Mehra

4. Project Description:

Module will allow or deny door access based on following:

- If the person is already added to the known persons list then door access will be granted immediately.
- In case a new person comes then a notification will be sent to the owner and it will be the owners wish

5. Project status at beginning of the Year:

Exploring the market

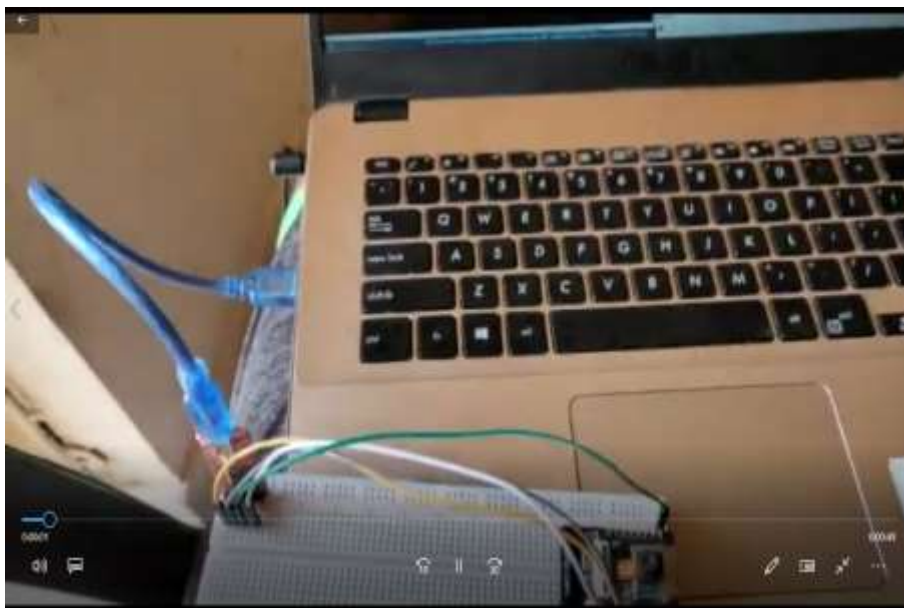
6. Interventions made:

- Support is required to commercialized

7. Current status:

- Prototype is ready, and we are ready to implement it on industrial scale

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-11: Blind Stick

1. Project Title : Blind Stick

2. Mentor Name : Dr. Bibhash Ghoshal

3. Student Team Names:

I. Swaraj Bhosle

4. Project Description:

It is an assistance tool for humans. It will help in the following ways

- Person will be able to move around the places with obstacle avoidance.
- Will be able to find a stick with the help of a self beep mechanism.
- The stick is capable of sending location details to concerned persons in case of emergency

5. Project status at beginning of the Year:

Exploring the market

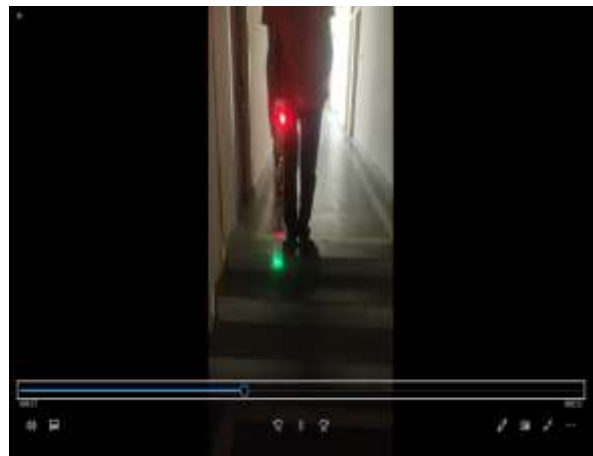
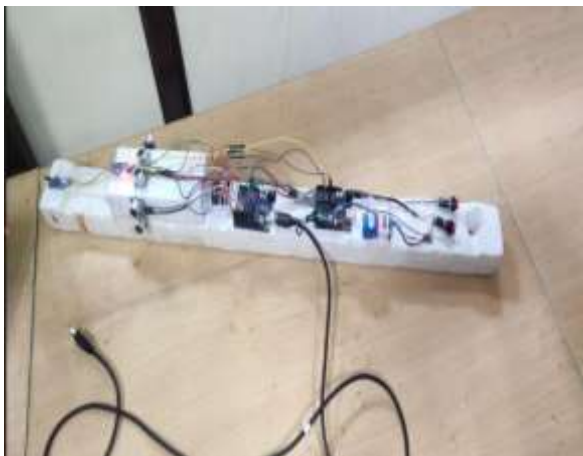
6. Interventions made:

- Support is required to commercialize

7. Current status:

- Prototype is ready, and we are ready to implement it on industrial scale

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-12: Weather Quality Monitor

1. **Project Title** : Weather Quality Monitor

2. **Mentor Name** : Dr. Bibhash Ghoshal

3. **Student Team Names:**

I. Kathuri Abhinav

4. **Project Description:**

The main aim is to develop an android based application, which can display temperature, pressure, humidity and air quality index at multiple locations

5. **Project status at beginning of the Year:**

Exploring the market

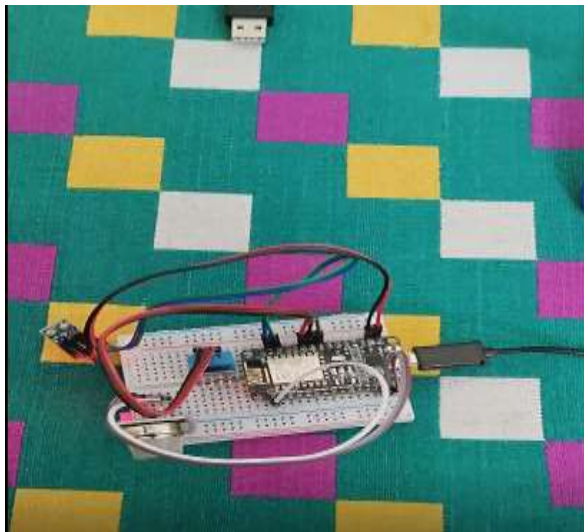
6. **Interventions made:**

- Support is required to commercialised

7. **Current status:**

- Prototype is ready, and we are ready to implement it on industrial scale

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-13: Smart Parking System

1. **Project Title** : Smart Parking System

2. **Mentor Name** : Dr. Bibhash Ghoshal

3. **Student Team Names:**

I. Rajveer

4. **Project Description:**

It has nodes which can be installed at the parking spaces. It will have a web and an app interface to manage booking of parking slot, payment for the same, time duration, vehicle parked or not, etc.

5. **Project status at beginning of the Year:**

Exploring the market

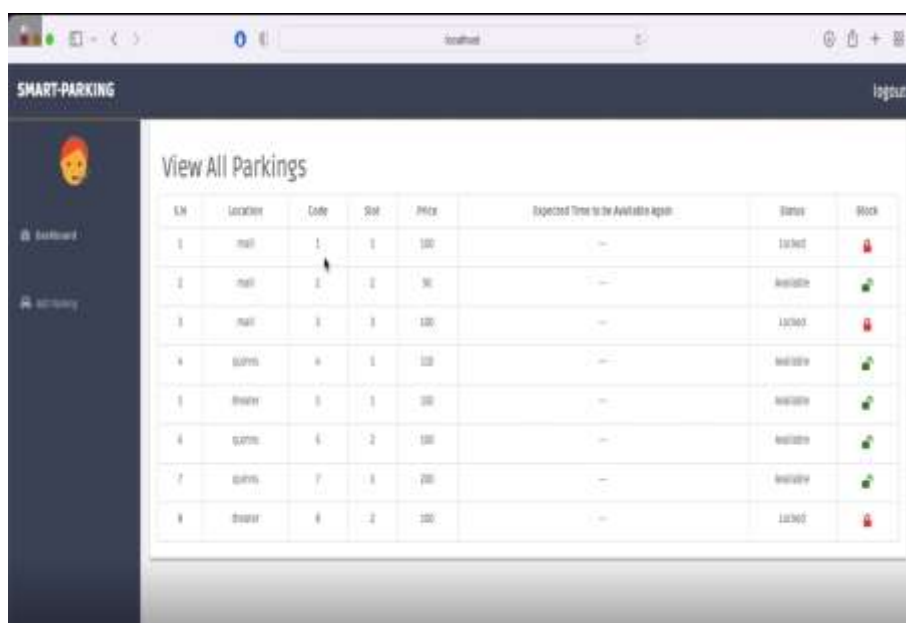
6. **Interventions made:**

- Support is required to commercialized

7. **Current status:**

- Prototype is ready, and we are ready to implement it on industrial scale

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



The screenshot displays a web application titled 'SMART-PARKING' with a 'logout' link in the top right corner. A sidebar on the left contains a user profile icon and navigation links for 'Dashboard' and 'Inventory'. The main content area is titled 'View All Parkings' and features a table with the following data:

S.N	Location	Code	Slot	Price	Expected Time to be Available Again	Status	Block
1	mall	1	0	100	---	Locked	
2	mall	2	0	50	---	Available	
3	mall	3	0	100	---	Locked	
4	garage	4	0	100	---	Available	
5	garage	5	0	100	---	Available	
6	garage	6	2	100	---	Available	
7	garage	7	0	200	---	Available	
8	garage	8	2	100	---	Locked	

Project-14: Smart Fire Alarm System

1. Project Title : Smart Fire Alarm System

2. Mentor Name : Dr. Bibhash Ghoshal

3. Student Team Names:

I. Pravallika Kodi

4. Project Description:

A fire alarm system warns people when smoke, fire, carbon monoxide or other fire-related emergencies are detected. Whenever we detect fire, the admin and accessible people can see the dashboard and get notified as the indication of fire. Additionally we can also mail fire departments and police stations about the same. The newly registered people who can't access the dashboard will send the request. Whenever the request is granted by the admin, he/she can now view the dashboard

5. Project status at beginning of the Year:

Exploring the market

6. Interventions made:

- Support is required to commercialised

7. Current status:

- Prototype is ready, and we are ready to implement it on industrial scale

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-15: Mom's Food, 365

1. **Project Title** : Mom's Food, 365

2. **Mentor Name** : Prof. Shefali Nandan

3. **Student Team Names:**

I. Vimal Kumar Shukla

4. **Project Description:**

At making food from locals that can be commercialized as a tiffin service.

5. **Project status at beginning of the Year:**

Students, paying guests and similar people who regularly order food and do not prefer mess services

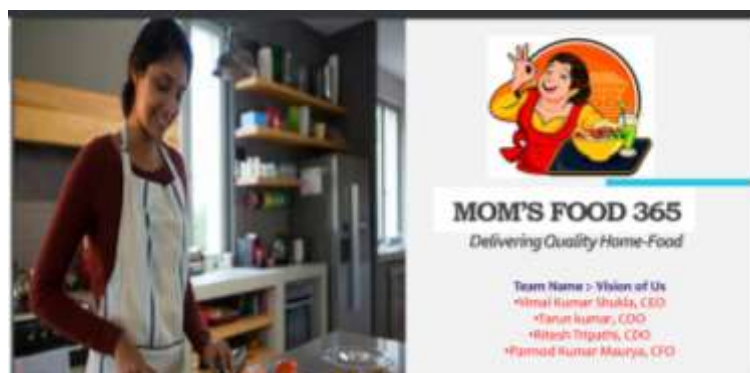
6. **Interventions made:**

- Creating app and website

7. **Current status:**

- Working (Recently started)

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-16: PrintBit

1. Project Title : PrintBit

2. Mentor Name : Prof. Paawan Kumar & Prof. Shefali Ramteke

3. Student Team Names:

I. Shivam Saini

4. Project Description:

To provide remote printing services where a user can print from a printer by paying payment fee without needing a human expert (typically a shopkeeper) that happens in the current system

5. Project status at beginning of the Year:

Exploring the market

6. Interventions made:

- Creating app and website

7. Current status:

- Started Recently

8. High resolution pictures showing the Prototype/product along with the students and their mentor for each project:



Project-17: BAE (Breast Cancer Examination)

1. **Project Title** : BAE (Breast Cancer Examination)

2. **Mentor Name** : Prof. Paawan Kumar & Prof. Shefali Ramteke

3. **Student Team Names:**

I. Khushi

II. Pushti Sheth

4. **Project Description:**

The team helps in social awareness of Breast Cancer by letting people know about the problem and using AI for Breast Cancer Examination. The team intends to eventually connect prospective patients to hospitals and doctors

5. **Project status at beginning of the Year:**

Exploring the market

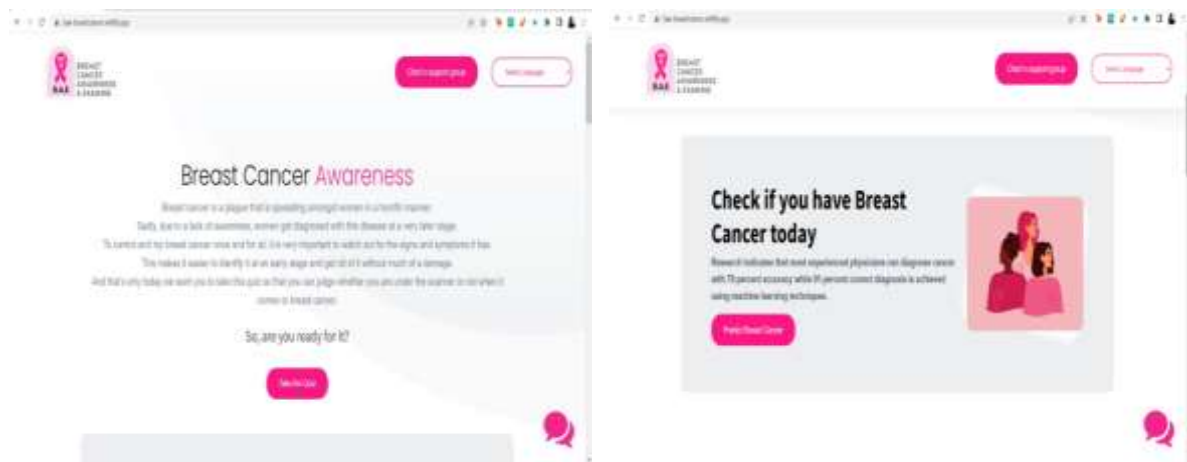
6. **Interventions made:**

- Creating app and website

7. **Current status:**

- Started Recently

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-18: CupWaala

1. **Project Title** : CupWaala

2. **Mentor Name** : Prof. Paawan Kumar & Prof. Shefali Ramteke

3. **Student Team Names:**

I. Shivangi Jha

4. **Project Description:**

To save the planet, we know and believe if New Gen IEDC will support our project, our "Agri Cups " which is 100% disposable with zero chemical, zero toxin, zero waste and Eco friendly can be 100 % dissolved in water in 2 hour and feed fishes, we can together save millions of trees and inspires billions of people to switch to Agri cups which can save our planet

5. **Project status at beginning of the Year:**

Exploring the market

6. **Interventions made:**

- Exploring (Start Recently)

7. **Current status:**

- Started Recently

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Project-19: Camp Plus (Varopro Pvt Ltd)

1. Project Title : Camp Plus (Varopro Pvt Ltd)

2. Mentor Name : Dr. Rahul Kala

3. Student Team Names:

- I. Nihar Sanda
- II. Mayank Kumar

4. Project Description:

The project aims to provide a campus management solution for the institution administration running a residential campus but can also be used by corporate campuses and independent event organizers

5. Project status at beginning of the Year:

Focus on building the Event Management feature of the App, Build the entry-exit check-in system and complete the laundromat booking system using IoT

6. Interventions made:

- Completed the Event Management feature and pivoted to building a unified ID and Student analytics system to generate better student insights for the institution administrators

7. Current status:

- MVP completed, testing out on 800 users at IIIT Dharwad. Hosting the 2-month-long summer Techfest using the Camplus App

Project-20: Abyom

1. **Project Title** : Abyom

2. **Mentor Name** : Dr. Rahul Kala

3. **Student Team Names:**

I. Jainul Abedin

4. **Project Description:**

The prototype is nearly-developed. The team continues to provide workshop, training and other services at different institutions, most recently at the propulsion lab at LPU

5. **Project status at beginning of the Year:**

The prototype is nearly-developed

6. **Interventions made:**

- More Workshop and seminars are to be conducted

7. **Current status:**

- They have signed MOUs with a few institutes for such services. They have signed MOUs with a few institutes for such services

8. **High resolution pictures showing the Prototype/product along with the students and their mentor for each project:**



Annexure-I

Details of Patent Granted

Patent-01: Glass Concrete

- 1. Name of the Technology:** Glass Concrete
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
A product that uses less concrete and still enhances the strength of the paver block
- 3. Impact it will create:**
 - Recycling glass is a costly affair and if it can be upcycled in this manner then it can impact the green house emission
- 4. Current Status of the Patent:**
 - Granted
- 5. Student team details**
 - i. Mr. Yash Patel
 - ii. Mr. Harshad Makwana
 - iii. Mr. Nirmal Suthar
 - iv. Mr. Gaurav Mer
 - v. Mr. Vansh Agrawal
 - vi. Mr. Sahej Tuteja
- 6. Patent Filing date:** 13th December, 2019
- 7. Patent Granted date:** 20-07-2021
- 8. Patent Application Number:** 201921051659

Patent-02: Shuttle Express safety comfort convenience

- 1. Name of the Technology:** Shuttle Express safety comfort convenience
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
 - A SaaS based startup, a website with complete information for the events in corporate sector.
- 3. Impact it will create:**
 - One stop solution for any corporate to conduct events.
- 4. Current Status of the Patent:**
 - Granted
- 5. Student team details**
 - i. Udit Tiwari
- 6. Patent Filing date:** 2020/09/15
- 7. Patent Granted date:** Granted
- 8. Patent Application Number:** 4658240

Patent-03: An apparatus and method of measuring the muscle strength

1. **Name of the technology:** An apparatus and method of measuring the muscle strength
2. **Highlights of the technology (innovation / uniqueness etc.):**
 - Digital Instrument to measure the foot muscle strength
3. **Impact it will create:**
 - Easy to diagnose the foot muscles. The accuracy of the muscle strength can be calculated.
4. **Current status of the Patent:**
 - Granted
5. **Student Team Details:**
 - i. Bharath Kumar
6. **Patent Filing Date:** 13.06.2019
7. **Patent Granted Date:** 23.04.2022
8. **Patent Application Number:** 201941023462

Patent-04: A candy making machine

1. **Name of the Technology:** A candy making machine
2. **Highlights of the Technology:**

A region-specific product was developed to automate the preparation of peanut candy in cottage industries.
3. **Impact it will create:**

The machine and its process reduce the effort of human workers and increase the production rate for meeting the demand. Direct physical involvement of the human worker is diminished, and many health issues can be avoided.
4. **Current Status of the Patent:** Patent granted (Patent No. 393303)
5. **Student team details**
 - i. K. R. Praveen Krishna
 - ii. M. Pravin
 - iii. M. Subramani
 - iv. A. Sakthi
6. **Patent Filing date:** 20-02-2020
7. **Patent Granted date:** 29.03.2022
8. **Patent Application Number:** 202041007310

Patent-05: Treadmill Electric Cycle

- 1. Name of the Technology:** Treadmill Electric Cycle
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
E-Bicycle combined with treadmill
- 3. Impact it will create:** Promoting health awareness and environment
- 4. Current Status of the Patent:** Granted (361044 Date: 12/03/2021)
- 5. Student Team details**
 - i. Sachin Singh Sengar
 - ii. Himanshu Mishra
 - iii. Karanjeet Singh Randhawa
 - iv. Gaurav Verma
 - v. Ravi kumar Shukla
 - vi. Tejas Singh
- 6. Patent Filing date:** 16.07.2018
- 7. Patent Granted date:** 361044 Date: 12/03/2021
- 8. Patent Application Number:** 201811026312

Patent-06: Automatic Toilet Seat with Auto Flush

- 1. Name of the Technology:** Automatic Toilet Seat with Auto Flush
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Hygiene Awareness
- 3. Impact it will create:** More awareness towards personal hygiene
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Ayush Goswami
 - ii. Shubham Agrwal
 - iii. Kapil Sharma
- 6. Patent Filing date:** 17.12.2019
- 7. Patent Granted date:** 371263 Date 06.07.2021
- 8. Patent Application Number:** 201911052367

Patent-07: Smart Bird (Petrol Bike into Hybrid Bike)

- 1. Name of the Technology:** Smart Bird (Petrol Bike into Hybrid Bike)
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Hybrid Electric cum petrol bike
- 3. Impact it will create:** Converting present vehicle to electric
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Akash Jain
 - ii. Amit Chaturvedi
 - iii. Chirag Rajpoot
 - iv. Harsh varshney
 - v. Deepak Pal
 - vi. Sunil Sharma
- 6. Patent Filing date:** 17.12.2019
- 7. Patent Granted date:** 357023 Date 29.01.2021
- 8. Patent Application Number:** 201911052235

Patent- 08: Water Purification System (distillation based water purification system)

- 1. Name of the Technology:** Water Purification System (distillation based water purification system)
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Highly efficient Purification system saving water upto 70%
- 3. Impact it will create:** Saving water wastage in normal RO system
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Kaustubh Srivastava
- 6. Patent Filing date:** 17.12.2019
- 7. Patent Granted date:** 353518 Date 11.12.2020
- 8. Patent Application Number:** 201911052368

Patent-09: Under Water Robot (Under water RoboticVehicle)

- 1. Name of the Technology:** Under Water Robot (Under water RoboticVehicle)
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Robot design especially for under-water surveillance
- 3. Impact it will create:** Can be used for rescue mission or expedition mission and also for defence purpose
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Himanshu Baghel
 - ii. Mudit Sehgal
- 6. Patent Filing date:** 19.12.2019.
- 7. Patent Granted date:** 355581 Date 11.01.2021
- 8. Patent Application Number:** 201911052868

Patent-10: Smart Vegetable Cutter

- 1. Name of the Technology:** Smart Vegetable Cutter
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Device can cut different type of vegetable at high speed
- 3. Impact it will create:** Helping cook and chefs to cut vegetable with lesser human efforts in less time
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Himanshu Goyal
 - ii. Raghav Agrawal
- 6. Patent Filing date:** 28.12.2019.
- 7. Patent Granted date:** 359133 Date 23.02.2021
- 8. Patent Application Number:** 201911054346

Patent-11: Eco Gap Filler

- 1. Name of the Technology:** Eco Gap Filler
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Adhesive from non-biodegradable foam
- 3. Impact it will create:** A novel adhesive prepared by recycling of non-biodegradable styrofoam for sticking various surfaces
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Raghav Rohatgi
- 6. Patent Filing date:** 28.12.2019
- 7. Patent Granted date:** 352171 Date 25.11.2020
- 8. Patent Application Number:** 201911054344

Patent-12: I-COS (Ignition Cut Off System)

- 1. Name of the Technology:** I-COS (Ignition Cut Off System)
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Vehicle Ignition cut off system based on different parameter
- 3. Impact it will create:** Will prevent theft of motorcycles
- 4. Current Status of the Patent:** Grant
- 5. Student team details**
 - i. Rajat Yadav
- 6. Patent Filing date:** 28.12.2019.
- 7. Patent Granted date:** 354941 Date 31.12.2020
- 8. Patent Application Number:** 201911054343

Patent-13: Solar Collector

- 1. Name of the Technology:** Solar Collector
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
 - Solar Collector innovative Designed intend to reduce the heat losses from absorber tube by providing cut on upper portion of the tube. Absorber tube have direct heat losses of concentrated heat in the tube this cut portion. The cut portion palte is Welded with low thermal heat losses plates
- 3. Impact it will create:**

It protects the design of the system
- 4. Current Status of the Patent:**
 - Design is published
- 5. Student team details**
 - i. Mr. Gaurav Vithalani
 - ii. Mr. Akhil Sidpara
 - iii. Mr. Mihir Thakar
- 6. Patent Filing date:** 18/12/2019
- 7. Patent Granted date:** 13/04/2021
- 8. Patent Application Number:** 324828-001

Patent-14: Flexural Displacement Measuring Device

- 1. Name of the Technology:** Flexural Displacement Measuring Device
- 2. Highlights of the Technology (innovation/uniqueness etc.):**

Deflection, in structural engineering terms, refers to the movement of a beam or node from its original position due to the forces and loads being applied to the member. It can occur from external applied loads or from the weight of the structure itself, and the force of gravity in which this applies. It can occur in beams, trusses, frames and basically any other structure.
- 3. Impact it will create:**

It prevents the unique design of the flexural diaplacement device
- 4. Current Status of the Patent:**
 - Design is published
- 5. Student team details**
 - i. Mr. Rinkesh Makwana
- 6. Patent Filing date:** 03/10/2020
- 7. Patent Granted date:** 27/01/2021
- 8. Patent Application Number:** 336655-001

Patent-15: Tele-operated Smart Transportation Vehicle

1. Name of the Technology: Tele-operated Smart Transportation Vehicle

2. Highlights of the Technology (innovation/uniqueness etc.):

- We have invented a new design of a Tele Operated Smart Transportation Vehicle as outlined in the following specifications. The claimed design of the Tele Operated Smart Transportation Vehicle consists of an arrangement to deliver medicines or foods or other products without contamination at desired location through remote controller using Global Positioning System operated using internet. The vehicle is designed to carry weight of 60 kg, and has two separate spaces each for carrying medicines or foods and other products. Both storage spaces are equipped with ultraviolet light of wavelength in the range of 207-222 nanometres to avoid contamination. Storage space for medicines or food has special arrangement of cooling system to prevent contamination during delivery period. The vehicle will have two modes of operation including manual and automatic mode.

3. Impact it will create: Automatic Material Handling System with hurdle detection facility

4. Current Status of the Patent: Design published

5. Student team details

- Mr. Chandrasinh Parmar
- Mr. Viraj Shekhada

6. Patent Filing date: 08/02/2022

7. Patent Granted date: 11/04/2022

8. Patent Application Number: 358078-001

Patent-16: Loop Device for a Plurality of Teeth

1. Name of the Technology: Loop Device for a Plurality of Teeth

2. Highlights of the Technology (innovation/uniqueness etc.):

In an existing technology, retraction loops are present in continuous arch wire to retract anterior and posterior teeth. Main disadvantage with retracting loop is that the loop may fail to produce required results for correcting misaligned teeth due to the complexity of loop fabrication. Furthermore, the moment to force ratio generated by the retraction loops is 8:1, which is less than required moment to force ratio. Moreover, due to complicated fabrication of the retraction loop is difficult to configure on patient teeth, and repeated activation by an orthodontist can cause breakage in retraction loop. Another disadvantage with existing technology is that a large height of retraction loop causes tissue impingement of teeth and jaws. The device provides a simple and cost-effective loop device for teeth which can generate required moment to force ratio and can easily be configured on teeth for realigning teeth at required position

3. Impact it will create:

The device is simple and cost-effective alternative to complex devices required for patient care and it will be useful for clinicians and patients equally resulting in better treatment outcomes.

4. Current Status of the Patent:

- Granted

5. Student Team details

- Meenakshi M. Tiwari
- Vikrant V. Jadha

6. Patent Filing date: 28-02-2020

7. Patent Granted date: 27-11-2020

8. Patent Application Number: 202021008633

Patent-17: Mini Implant Placement Guiding Device

- 1. Name of the Technology:** Mini Implant Placement Guiding Device
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
 - A guiding instrument for accurately locating position of mini screws implant between roots of adjacent tooth
- 3. Impact it will create:**
 - Cost effective
 - Reduces patient visits to dentist as customization is not required
 - Prediction of accurate location by Dentist based on their experience can be avoided
 - Reduces the chances of tooth root damage
 - Reduces human errors/efforts
- 4. Current Status of the Patent:**
 - Granted
- 5. Student Team details**
 - i. Murarka Shreya P.
- 6. Patent Filing date:** 03-03-2020
- 7. Patent Granted date:** 27-11-2020
- 8. Patent Application Number:** 202021009122

Patent-18: An IoT Based Portable Vaccine Cold Carrier

1. Name of the Technology: An IoT Based Portable Vaccine Cold Carrier

2. Highlights of the Technology (innovation/uniqueness etc.):

- Many vaccines must be stored at low temperatures, some below - 15°C, and others between 2 and 8°C. If vaccines are not stored correctly, they can lose their effectiveness. The ideal temperature for storing vaccines in the ILR is 30 +2 degrees to + 8 degrees.
- Many vaccines must be stored at low temperatures, some below - 15°C, and others between 2 and 8°C. If vaccines are not stored correctly, they can lose their effectiveness. The ideal temperature for storing vaccines in the ILR is 30 +2 degrees to + 8 degrees.
- There is therefore a need in the art to provide an improved, effective and efficient system. Hence the present invention provides an IoT based portable vaccine cold box for smart healthcare

3. Impact it will create:

- The invention is to improve the proper maintenance of supply cold chain. by designing a constant temperature enclosure using thermoelectric module for longer working hours and to interface it with IOT

4. Current Status of the Patent:

- Granted

5. Team details

- i. Gaidhane Shilpa
- ii. Fulzele Punit

6. Patent Filing date: 19-03-2021

7. Patent Granted date: 28-04-2021

8. Patent Application Number: 2021101427

Patent-19: A Device for Dilation of the Cervix

1. Name of the Technology: A Device for Dilation of the Cervix

2. Highlights of the Technology (innovation/uniqueness etc.):

- Cervical dilators are the devices that are used for effective dilation of cervix. Dilation of cervix is done during childbirth, miscarriage, induced abortion or for some gynecological surgery. A dilator is used to gently open the cervix before a gynecologic procedure that requires the cervix to be open, allowing access to the uterus and fallopian tubes. Cervical dilation reduces the risk of injury to the cervix during such a procedure. The dilator can be placed much easier and more comfortably for the patient, but also one that is simple in its method of action, safe and one that can shorten the length of labor. Hence the present invention provides a device for effective dilation of the cervix

3. Impact it will create:

- Device for effective dilation of the cervix
- Reduce the time taken for dilation and to speed up the process of dilation
- Minimize the labor pain of patient during the surgery.
- Facilitate ease of sterilization ability and the ease of assembling and faster dilatation.

4. Current Status of the Patent:

- Granted

5. Team details

- i. Khedkar Sandip Sudhakarrrao
- ii. Arpita Jaiswal

6. Patent Filing date: 19-03-2021

7. Patent Granted date: 28-04-2021

8. Patent Application Number: 2021101426

Patent-20: Apparatus for treating sleep disorder

1. Name of the Technology: Apparatus for treating sleep disorder

2. Highlights of the Technology (innovation/uniqueness etc.):

- Obstructive sleep apnea (OSA) occurs when the muscles in the back of a patient's throat relaxes more than usual to allow normal breathing. These muscles support 15 structures including the back of the roof of the mouth (soft palate), the triangular piece of tissue hanging from the soft palate (uvula), the tonsils, and the tongue. When the muscles relax, the airway narrows or closes as breathe is taken in and breathing may be inadequate for 10 seconds or longer. This may lower the level of oxygen in the blood and can cause a buildup of carbon dioxide. The brain may sense this impaired breathing and briefly rouses the subject from sleep so that the subject can reopen the airway. This awakening is usually so brief that it may occur that the subject may not remember it. efforts have been made in the current invention to overcome the limitations of current modalities for OSA.

3. Impact it will create:

- It provides an apparatus for forming 15 auxiliary airways for treating patients suffering from obstructive sleep apnea.
- simple and cost-effective apparatus for forming auxiliary airways
- reliable and efficient 20 apparatus for forming auxiliary airways

4. Current Status of the Patent:

- Granted

5. Student Team details

- Mr. Vikram Belkhode
- Mr. Sharayu Nimonkar

6. Patent Filing date: 07-07-2020

7. Patent Granted date: 02-07-2021

8. Patent Application Number: 202021028726

Patent-21: Forceps for IRIS Claw Lenses

1. Name of the Technology: Forceps for IRIS Claw Lenses

2. Highlights of the Technology (innovation/uniqueness etc.):

- The iris claw lens has an advantage that it can be fixated to the iris without sutures because the peripheral iris is incarcerated between the claws. Forceps are a handheld, hinged instrument used for grasping and holding objects. The available forceps presently in use in Iris claw fixation makes the surgery still more difficult as it becomes difficult to catch hold of the lenses and fix it appropriately.

3. Impact it will create:

- efficient forceps that can be used for iris-claw fixation
- simple and cost-effective forceps that is used for iris-claw fixation
- reliable and efficient forceps that is used for iris-claw fixation.

4. Current Status of the Patent:

- Granted

5. Team details

- i. Mr. Deepika Singhal
- ii. Mr. Deepak Saxena
- iii. Mr. Nazli Khatib

6. Patent Filing date: 16-07-2020

7. Patent Granted date: 02-07-2021

8. Patent Application Number: 202021030400

Patent-22: An apparatus for stretching hamstring muscles

1. Name of the Technology: An apparatus for stretching hamstring muscles

2. Highlights of the Technology (innovation/uniqueness etc.):

There are a number of specific stretching exercises that are useful for properly conditioning the hamstrings. One of these exercises requires a person to lean forward toward a wall and to place their hands on the wall for support while keeping one leg relatively straight and stretching the other leg out behind them. These methods of stretching the hamstring, however, are difficult for many people to perform as these exercises require a relatively high degree of mobility and flexibility. We designed a portable exerciser which can be used anywhere and required minimum effort for performing exercises.

3. Impact it will create:

- invention provides a device to stretch the leg and strengthening the hamstring muscle
- portable hamstring muscles stretching exerciser apparatus so that it can be transferred from patient to patient

4. Current Status of the Patent:

- Granted

5. Student Team details

- i. Qureshi Irshad
- ii. Khedkar Sandip Sudhakar Rao

6. Patent Filing date: 03-06-2021

7. Patent Granted date: 09-07-2021

8. Patent Application Number: 2021103076

Patent-23: Knee valgus / varus dynamic deformity measurement tool.

1. Name of the Technology: Knee valgus / varus dynamic deformity measurement tool

2. Highlights of the Technology (innovation/uniqueness etc.):

- apparatus for determining tibiofemoral deviation
- useful for quantitative & accurate measurement of knee deformity without use of any other sophisticated tools

3. Impact it will create:

- Used in any medical department, such as outpatient department (OPD), occupational therapy (OT), and primary health center (PHCs). It is low cost, simple, easy to use, also can be used by anyone with minimal training and expertise. Moreover, apparatus can be used as a tool to measure deformity and quantify improvements during course of treatment

4. Current Status of the Patent:

- Granted

5. Team details

- i. Deshpande Sanjay

6. Patent Filing date: 14-09-2019

7. Patent Granted date: 11-08-2021

8. Patent Application Number: 201921037088

Patent-24: Forceps for IRIS Claw Lenses

1. Name of the Technology: Forceps for IRIS Claw Lenses

2. Highlights of the Technology (innovation/uniqueness etc.):

- The iris claw lens has an advantage that it can be fixated to the iris without sutures because the peripheral iris is incarcerated between the claws. Forceps are a handheld, hinged instrument used for grasping and holding objects. The available forceps presently in use in Iris claw fixation makes the surgery still more difficult as it becomes difficult to catch hold of the lenses and fix it appropriately.

3. Impact it will create:

- efficient forceps that can be used for iris-claw fixation
- simple and cost-effective forceps that is used for iris-claw fixation
- reliable and efficient forceps that is used for iris-claw fixation.

4. Current Status of the Patent:

- Granted

5. Team details

- i. Ms. Deepika Singhal
- ii. Mr. Deepak Saxena
- iii. Ms. Nazli Khatib

6. Patent Filing date: 04-06-2021

7. Patent Granted date: 06-10-2021

8. Patent Application Number: 2021103117

Patent-25: Apparatus for treating sleep disorder

1. Name of the Technology: Apparatus for treating sleep disorder

2. Highlights of the Technology (innovation/uniqueness etc.):

- Obstructive sleep apnea (OSA) occurs when the muscles in the back of a patient's throat relaxes more than usual to allow normal breathing. These muscles support 15 structures including the back of the roof of the mouth (soft palate), the triangular piece of tissue hanging from the soft palate (uvula), the tonsils, and the tongue. When the muscles relax, the airway narrows or closes as breathe is taken in and breathing may be inadequate for 10 seconds or longer. This may lower the level of oxygen in the blood and can cause a buildup of carbon dioxide. The brain may sense this impaired breathing and briefly rouses the subject from sleep so that the subject can reopen the airway. This awakening is usually so brief that it may occur that the subject may not remember it. efforts have been made in the current invention to overcome the limitations of current modalities for OSA.

3. Impact it will create:

- It provides an apparatus for forming auxiliary airways for treating patients suffering from obstructive sleep apnea.
- simple and cost-effective apparatus for forming auxiliary airways
- reliable and efficient 20 apparatus for forming auxiliary airways

4. Current Status of the Patent:

- Granted

5. Student Team details

- Mr. Vikram Belkhode
- Mr. Sharayu Nimonkar

6. Patent Filing date: 04-06-2021

7. Patent Granted date: 06-10-2021

8. Patent Application Number: 2021103112

Patent-26: An apparatus for facilitating Ultrasound based soft

1. Name of the Technology: An apparatus for facilitating Ultrasound based soft

2. Highlights of the Technology (innovation/uniqueness etc.):

- Apparatus for providing a deep penetrating ultrasound therapy an instrument assisted soft tissue Mobilisation (IASTM) tool operatively coupled to an ultrasound therapy transducer head configured to the ultrasound therapy transducer apparatus, and wherein diameter of the ultrasound therapy transducer head is flexible so as to adjust fixing of the IASTM tool with the transducer.

3. Impact it will create:

- An apparatus that combines 25 IASTM tool to an ultrasound apparatus
- An apparatus with a pointed end to localise and release trigger points
- Facilitate providing a deep heating effect and healing properties of ultrasound
- Facilitate helping a patient with myofascial pain syndrome, scar mobilisation, chronic pain, stiffness, and spasm

4. Current Status of the Patent:

- Granted

5. Student Team details

- i. Mr. Waqar Naqvi
- ii. Ms. Laukik Vaidya

6. Patent Filing date: 04-06-2021

7. Patent Granted date: 06-10-2021

8. Patent Application Number: 2021103109

Patent-27: An apparatus for facilitating Ultrasound based soft

1. Name of the Technology: An apparatus for facilitating Ultrasound based soft

2. Highlights of the Technology (innovation/uniqueness etc.):

- apparatus for providing a deep penetrating ultrasound therapy an instrument assisted soft tissue Mobilisation (IASTM) tool operatively coupled to an ultrasound therapy transducer head configured to the ultrasound therapy transducer apparatus, and wherein diameter of the ultrasound therapy transducer head is flexible so as to adjust fixing of the IASTM tool with the transducer.

3. Impact it will create:

- an apparatus that combines 25 IASTM tool to an ultrasound apparatus
- an apparatus with a pointed end to localise and release trigger points
- facilitate providing a deep heating effect and healing properties of ultrasound
- facilitate helping a patient with myofascial pain syndrome, scar mobilisation, chronic pain, stiffness, and spasm

4. Current Status of the Patent:

- Granted

5. Student Team details

- i. Mr. Waqar Naqvi
- ii. Ms. Laukik Vaidya

6. Patent Filing date: 03-09-2020

7. Patent Granted date: 20-10-2021

8. Patent Application Number: 202021038065

Patent-28: Dhara Device for Treating Musculoskeletal Disorders

1. Name of the Technology: Dhara device for treating Musculoskeletal disorders

2. Highlights of the Technology (innovation/uniqueness etc.):

- The spinal disorders are on high due to lifestyle changes. The spinal disorders are characterized by degenerative changes in spine, intervertebral disc or facet joints, vertebral body sclerosis, and hypertrophy of spinal column ligaments. dhara device used in treatment of the musculo skeletal disorders The dhara device includes a table. Characterized in that the table includes a vibrator, one or more movable sliders, an oil reservoir, a control system, and one or more adjustable rings. The table allows a patient to lay down and receive the treatment of the musculo skeletal disorders

3. Impact it will create:

- simple and cost-effective device
- reliable and efficient device for treatment of the musculo skeletal disorders

4. Current Status of the Patent:

- Granted

5. Student Team details

- i. Devendra Shahare
- ii. Vaishali Kuchewar

6. Patent Filing date: 06-10-2020

7. Patent Granted date: 12-01-2022

8. Patent Application Number: 202021043329

Patent-29: An apparatus to hold crown during crown manipulations

1. **Name of the Technology:** An apparatus to hold the crown during crown manipulations
2. **Highlights of the Technology (innovation/uniqueness etc.):**
 - Device to hold crown during manipulation
3. **Impact it will create:**
 - Help the clinician in managing and treating the patients
4. **Current Status of the Patent:**
 - Granted
5. **Team details**
 - i. Punit Fulzele
 - ii. Adakane Rakesh Datta
6. **Patent Filing date:** 04-06-2021
7. **Patent Granted date:** 20-04-2022
8. **Patent Application Number:** 2021103111

Patent-30: Height adjustable folding arm rest table with slidable holders (Project Title: All in One Laptop Stand with Integrated Table)

1. **Name of the Technology:** Height adjustable folding arm rest table with slidable holders (Project Title: All in One Laptop Stand with Integrated Table)
2. **Highlights of the Technology (innovation/uniqueness etc.):**
 - A laptop stand with integrated table with the unique features
 - Adjustable height and angle, and includes features like wireless charging, USB ports and a USB-powered study lamp
3. **Impact it will create:**
 - It is a good consumer product, uniquely designed to provide support to the laptop screen which improves the posture of user.
4. **Current Status of the Patent:** Granted
5. **Student team details**
 - i. Pranav Garg
6. **Patent Filing date:** 26-Aug-20
7. **Patent Granted date:** 9-Jul-21
8. **Patent Application Number:** 332371-001

Patent-31: Portable Ventilated Universal Laptop Stand (Project Title: All in One Laptop Stand with Integrated Table)

- 1. Name of the Technology:** Portable Ventilated Universal Laptop Stand (Project Title: All in One Laptop Stand with Integrated Table)
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
 - Mesh base to avoid overheating along with sliding USB powered fans for additional cooling
- 3. Impact it will create:**
 - Adjustable height and angle, and includes features like wireless charging, USB ports and a USB-powered study lamp improves the quality of product.
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Panav Garg
- 6. Patent Filing date:** 26-Aug-20
- 7. Patent Granted date:** 5-Mar-21
- 8. Patent Application Number:** 332372-001

Patent-32: Rodent Surgical Table

- 1. Name of the Technology:** Rodent Surgical Table
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
 - Advanced stainless-steel surgical table with extra facilities
 - Automated temperature regulator system
 - Less complicated than available designs
- 3. Impact it will create:**
 - Provides an accurate position and height of the working table for surgery with proper temperature regulation.
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Nikhil Garg
- 6. Patent Filing date:** 21-Jul-20
- 7. Patent Granted date:** 18-Jun-21
- 8. Patent Application Number:** 331265

Patent-33: Inhalable Microparticles of Hydroxychloroquine for Management of Acute Respiratory Syndrome

1. Name of the Technology: Inhalable Microparticles of Hydroxychloroquine for Management of Acute Respiratory Syndrome

2. Highlights of the Technology (innovation/uniqueness etc.):

Formulation development of freeze dried inhalable micro-particles of hydroxychloroquine and surfactants for pulmonary delivery for management of ARDS in COVID & SARS diseases

3. Impact it will create:

- Inhalable HCQ micro-particles pass through airway & prevent replication of virus effectively & surfactants maintain alveolar capacity.
- Administration of formulation using an autohaler (Inhaler) produces long duration of action in lungs
- Inhalable HCQ micro-particles could be an important tool for acute respiratory distress syndrome (ARDS) in COVID as well as in emergency care clinical team.

4. Current Status of the Patent: Granted

5. Student team details

- i. Ms. Rupanshi Grover

6. Patent Filing date: 18-Jun-20

7. Patent Granted date: 16-Apr-21

8. Patent Application Number: 202011025625

Patent-34: GK Retractor

1. Name of the Technology: GK Retractor

2. Highlights of the Technology (innovation/uniqueness etc.):

Perineal retractor for safe and accurate episiotomy during vaginal delivery

3. Impact it will create:

- The product has novel design of a device that will be 3D printed and economical
- Based on potential market, the device can be used in all PHC, CHC and medical colleges both in India and abroad

4. Current Status of the Patent: Granted

5. Student team details

- i. Vanya Sharma

6. Patent Filing date: 10-Sep-20

7. Patent Granted date: 29-Sep-21

8. Patent Application Number: 334120-001

Patent-35: System for Controlling Traffic at an Intersection (Project Title: Intelights)

- 1. Name of the Technology:** System for Controlling Traffic at an Intersection (Project Title: Intelights)
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Deep learning-powered Intelligent System for Controlling Traffic at an Intersection
- 3. Impact it will create:**
 - A dynamic signal controlling and coordinating mechanism to decrease the AWT (Average Wait Time) of vehicles
 - It helps in reducing the number of harmful gases released by vehicles and lowers the consumption of fuel being burned on the traffic signal.
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Rahul Goyal
- 6. Patent Filing date:** 8-Nov-19
- 7. Patent Granted date:** 21-Jun-21
- 8. Patent Application Number:** 201911045568

Patent-36: Cap for Bottle (Project Title: Active Cap)

- 1. Name of the Technology:** Cap for Bottle (Project Title: Active Cap)
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
A bottle cap which stores and protect vital ingredients, till consumption.
- 3. Impact it will create:**
 - The concept is to develop the best infusion cap technology, which can be useful in daily life.
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Pintu Kumar
- 6. Patent Filing date:** 5-Nov-19
- 7. Patent Granted date:** 6-Nov-20
- 8. Patent Application Number:** 323330

Patent-37: A Mouse Trap (Project Title: Pied- Piper)

- 1. Name of the Technology:** A Mouse Trap (Project Title: Pied- Piper)
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
An AI based autonomous mouse trap
- 3. Impact it will create:**
 - The human touch free mouse trap will reduce the risk of diseases.
 - Economical and easy to operate device.
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Rouble Gupta
- 6. Patent Filing date:** 17-Dec-18
- 7. Patent Granted date:** 18-Mar-21
- 8. Patent Application Number:** 201811047766

Patent-38: Method of Extracting Hydrochar from Biodegradable solid waste by hydrothermal carbonization using Laser beam

- 1. Name of the Technology:** Method of Extracting Hydrochar from Biodegradable solid waste by hydrothermal carbonization using Laser beam
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
The Main product of the company is Bio renewable Hydrochar. Hydrochar is highly calorific value containing product equal to the brown coal. The main innovation of the company is Compact HTC Bioreactor plant, which converts Municipality Solid Waste into Hydrochar.
- 3. Impact it will create:**
Brahmastra Bioenergy mainly concentrates on the Municipality Solid Waste Management, Bio Renewable energy, Pollution control and Reduction of Greenhouse Gases emission from Landfills of the country
- 4. Current Status of the Patent:** Patent Granted
- 5. Student team details**
 - i. Subhash P K
- 6. Patent Filing date:** 29.06.2021
- 7. Patent Granted date:** 09.07.2021
- 8. Patent Application Number:** 202141029016

Patent-39: Electric Motor

- 1. Name of the Technology:** Electric Motor
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
A multi piece Swing arm system
- 3. Impact it will create:**
This is an application-level patent and will improvise the serviceability of motors in Electric vehicles.
- 4. Current Status of the Patent:** Granted
- 5. Student team details**
 - i. Karthik Donthula
 - ii. Pradeep Kumar
- 6. Patent Filing date:** 9 August 2019
- 7. Patent Granted date:** 29.04.2022
- 8. Patent Application Number:** 201941032469

Patent-40: Vacuum Assisted Climbing Apparatus

- 1. Name of the Technology:** Vacuum Assisted Climbing Apparatus
- 2. Highlights of the Technology (innovation/uniqueness etc.):**
Innovation
- 3. Impact it will create:**
It is using in college campus
- 4. Current Status of the Patent:** Patent granted
- 5. Student team details**
 - i. Ch. Vinay Kumar Reddy
- 6. Patent Filing date:** 29/03/2019
- 7. Patent Granted date:** 21/06/2022
- 8. Patent Application Number:** 201941012756A

Annexure-II

Details of Companies/Starts up set up by Students

Start-up-001: Power Agro Solutions Pvt. Ltd.

1. Name of the Company/Start-up: Power agro solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product : BLDC MOTOR

Investment : 4 Lakhs

Employment generated : 03

Commercialized or not : No

3. Impact it will create (including social impact, if any)

- It will reduce the burden of small scale farmers.
- It will reduce their dependence on manpower.
- It is environment friendly.
- Our cost effective BLDC motor will replace the Fossil fuel engines.

4. Current Status of the Company/Start-up

- Registration in Process

5. Student team Details

- i. R. Santhosh Kumar
- ii. S. A. Arif
- iii. Joseph.K. Martin
- iv. J. Josinpaul

6. Establishment date of the Company/Start-up/Commercialization:

Registration in Process

7. One paragraph on the Company/Start-Up covering all the points.

We are a startup company looking to develop BLDC motor for various applications in agricultural field. A Brushless DC Electric Motor (BLDC) is an electric motor powered by a direct current voltage supply and commutated electronically instead of by brushes like in conventional DC motors. BLDC motors are more popular than the conventional DC motors nowadays, but the development of these type of motors has only been possible since the 1960s when semiconductor electronics were developed. Most of the farm equipment's used by small scale farmers are either operated by diesel engine or two stroke petrol engine. This is a huge burden to small scale rural farmer. Our motive is to provide technical service to the rural farming community, with help of our motors we can reduce the cost incurred for fossil fuel.

Start-up-002: Abhielectrobest & Consultancy Pvt. Ltd.

1. Name of the Company/Start-up: Abhielectrobest & Consultancy Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Covid detection using Smart sensing Materials Detection of obstacles using Robot
Investment	: Rs. 10.00 Lakhs
Employment generated	: 04
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

In eluru region it will create high impact on covid detection equipment and help full to society

4. Current Status of the Company/Start-up:

Applied for approval and registration

5. Student team Details

- i. K. Abhishek
- ii. J. Prasanth kumar

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

After the first case has appeared in China, the COVID-19 pandemic continues to pose an omnipresent threat to global health, affecting more than 70 million patients and leading to around 1.6 million deaths. To implement rapid and effective clinical management, early diagnosis is the mainstay. Today, real-time reverse transcriptase (RT)-PCR test is the major diagnostic practice as a gold standard method accurate diagnosis of this disease. On the other side, serological assays are easy to be implemented for the disease screening. Considering the limitations of today's tests including lengthy assay time, cost, the need for skilled personnel, and specialized infrastructure, both strategies, however, have impediments to be applied to the resource-scarce settings. Therefore, there is an urgent need to democratize all these practices to be applicable across the globe, specifically to the locations comprising of very limited infrastructure.



for

Start-up-003: Med Mitra Health Manger Pvt. Ltd.

1. Name of the Company/Start-up: Med Mitra Health Manger Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company produces medicine tracking System to know about patient medicine Record
Investment	: Rs. 12.00 Lakhs
Employment generated	: 03
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

Most of the patient don't have time to remind about medicine to take in time, this product will help to support health

4. Current Status of the Company/Start-up:

Applied for startup registration and office location

5. Student team Details

- i. A. Uma MaheswaraRao
- ii. Shameena Begum

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

The adoption of technology in healthcare over the years has led to better diagnosis and treatment of patients. Out of all the benefited sectors from technology adoption, healthcare is probably the most important one. Consequently, it improved the quality of life over time, and it has saved many lives. But what are some of the benefits of technology in healthcare? And what are some groundbreaking medical technologies in healthcare right now. Someone cannot argue that technology in healthcare is a new thing. Medication adherence, a growing concern to healthcare systems, usually refers to whether patients take their medications as prescribed (eg, twice daily), as well as whether they continue to take a prescribed medication. Poor adherence to prescribed

regimens can result in substantial disease progression, additional medical costs and physician visits, medication changes, and leads sometimes to death. However, managing medication is very hard. To date, measurement of patient medication adherence and use of interventions to improve adherence are rare in routine clinical practice. For people, who take medication on regular basis, organizing and remembering is a huge challenge. To address this challenge, it is proposed to develop a user-friendly medication management tool, Med-Mitra+, that tracks the medication in a simple and smart way and measure the medical adherence. The device can be designed to remind the patients or elderly parents about the medication due, effortlessly track what they have taken and instantly notify the people their health attributes and feelings that need to know, thus enabling them to live quality and independent life.



Start-up-004: KR electronic innovations Pvt. Ltd.

1. Name of the Company/Start-up: KR electronic innovations Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company planning to manufacture Automated toilet cleaning devices, only One company in this region focused on automated cleaning system manufacturing
Investment	: Rs. 06.00 Lakhs
Employment generated	: 03
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any):

It gives good support to maintain hygiene in toilets

4. Current Status of the Company/Start-up:

Under startup registration process

5. Student team Details:

- i. K Raju
- ii. M. Durga Bhavani

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points.

Moving towards our glorious goal of developed and prosperous nation, cleanliness is one of the biggest need. „Swachh Bharat Abhiyan” is our motto behind the research of „Robot Toilet Cleaner” and it is the great leap towards the cleanliness of private as well as Public Lavatories. Dirty toilets cause contagious diseases which are hazardous for human life. This system is a remedy for human health as well as our goal towards „clean and smart India”. The purpose of this system is to maintain hygiene level of toilets through cleaning the bowl in a semi automatic way. At present, cleaning system of toilets is worst and leads to health issues. This system automatically cleans the western toilet with the help of robotic arms. There is a sequential cleaning algorithm for the same. The robotic arm has a brush attached to its end that is used for the cleaning purpose. Water jets are provided. In this system there is minimum usage of water & electricity. To maintain the periodicity of cleanliness level servo motor and DC motors are used



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Start-up-005: FuGen Electronics Pvt. Ltd.

1. Name of the Company/Start-up: FuGen Electronics Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company targeting to grab gap of this Product in market
Investment	: Rs. 03.00 Lakhs
Employment generated	: 03
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

A product with less cost and quality, it will create to support water saving in urban and rural

4. Current Status of the Company/Start-up:

Product production is going on-Company registration is in progress

5. Student team Details:

- i. B. Pravallika
- ii. S. Jagan Mohan Rao

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-up covering all the points

When the water level in the overhead tank exceeds the required level, the pump automatically turns off and stops the pumping process thus preventing the over flow of water. It uses a relay to cut off the power supply to the water pump.

- ❖ This project is based on the theme that water should be controlled to such a level that it can be utilized with proper use. With this project we not only save water but also the power consumption and running time of motor. Own designing of the circuit with ambient temperature of 0-65degC for commercial purpose, 120degC for Industrial purpose, and -50 to 120degC for Military purpose.
- ❖ For the indication of the levels we are using Magnetic Reed Sensors.
- ❖ Magnetic Reed Sensor: A reed switch is an electromagnetic switch used to control the flow of electricity in a circuit. They are made from two or more ferrous reeds encased within a small glass tube-like envelope, which become magnetised and move together or separate when a magnetic field is moved towards the switch.
- ❖ Working Specifications would be different for different purposes.

SCOPE OF MARKET

- ❖ It will help industries in saving water
- ❖ It will increase the motor running time.
- ❖ Fully automatic, saves man power.
- ❖ Avoid seepage of roofs and walls due to overflowing tanks.
- ❖ All domestic house owners
- ❖ Industries
- ❖ Railways
- ❖ Schools, Colleges, Office and Hostels etc.,



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Advantage of Product

- ❖ For 1HP motor Power consumed is 746watts. It's RPM(Revolutions per Minute) is 3,450.
- ❖ It's Maximum flow rate is 80 LPM.
- ❖ If a 1HP motor runs for a minute it consumes $746 \times 0.0166667\% \times 100 = 0.1243333582$ units
- ❖ In Indian Currency 1 Unit=5.43 Rupees.
- ❖ So, if we delay a minute to turn off the motor for 60 days we can save nearly 330 rupees.
- ❖ Similarly we can save 17.904 K watts of Power and 4800 Liters of water in 60 days.
- ❖ If we can save that much of power and water in 60 days in just one place, we can save lots of energy and power if it is widely used.

Start-up-006: PR Argo services Pvt. Ltd.

1. Name of the Company/Start-up: PR Argo services Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company manufacturing products help full To support agriculture
Investment	: Rs. 12.00 Lakhs
Employment generated	: 02
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

It gives huge support to farmers for increasing production rate

4. Current Status of the Company/Start-up:

Applied for sales and marketing approvals

5. Student team Details:

- i. S. Harish
- ii. P. Rajesh

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

Soil and field analysis- Agricultural drones can be used for soil and field analysis to help in field planning. They can be used to mount sensors that measure soil moisture content, topographical conditions, soil conditions, soil erosion, soil nutrients, and soil fertility. Crop monitoring- Crop surveillance refers to the monitoring of a crop from seeding to harvesting. This

includes applying fertilizers at the appropriate times, tracking the impact of weather conditions, and inspecting for insect infestation. When dealing with seasonal crops, crop surveillance is the only way to secure a timely harvest. Crop failure could come from any faults made at this time. Crop surveillance helps in understanding and planning for the next farming season



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Start-up-007: Solar Tech Power Solutions Pvt. Ltd.

1. Name of the Company/Start-up: Solar Tech Power Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Established to manufacture different types of products based on solar energy to support agriculture and domestic usages
Investment	: Rs. 20.00 Lakhs
Employment generated	: 06
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

New applications of solar energy based products will be developed

4. Current Status of the Company/Start-up:

Products manufacturing started, Apply for approval

5. Student team Details:

- i. Ms. Poojitha M.
- ii. Mr. S. S. Sarma

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

This unique integrated solar device can be used as a solar water heater during the winter, a solar cooker during clear days and a solar dryer for fruits or vegetables. It can produce about 50 lt of hot water of 50-60°C utilising the low altitude position of sun during winter and food for a family can be boiled within 2-3 hours, when used as a solar cooker and that too without sun tracking. As a dryer, fruits and vegetables can be dehydrated efficiently with regulation of temperature during the day with water working as a sink regulating temperature and helps continuation of the drying process in the night through the solar heated water. Plant protection is an important component of agriculture. Solar PV duster is a novel device suitable for dusting insecticide and pesticide powder on crops. It essentially comprises a PV panel carrier, a storage battery and a specially designed compatible dusting unit.



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Start-up-008: VNSR Power Tech Pvt. Ltd.

1. Name of the Company/Start-up: VNSR Power Tech Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company invested to manufacture air Purifiers
Investment	: Rs. 13.00 Lakhs
Employment generated	: 04
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any)

Heavy Capacity air purifiers for large public spaces manufacturing unit create high impact in market

4. Current Status of the Company/Start-up:

Applied for product License

5. Student team Details

- i. M. Divya jyothi
- ii. Mr. Murthy

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

Pollution has rocked the world with skyrocketing pollution levels. Though the long term solution to the pollution problem lies in finding and minimizing pollution sources, we need to bring the current pollution levels under control by the time. The best way of controlling pollution is by using air purifiers. But regular indoor air purifiers are small low power devices that don't possess enough purifying capability needed for outdoor spaces. Along with this there is also an issue of power supply in outdoor machines. So here we design a heavy duty outdoor air purifier that is made for outdoor purification along and powered by solar panels so it is energy independent. Our solar air purifier consists of a heavy duty suction fan that pulls air from the bottom of the purifier through a layer of HEPA and Carbon filters for elimination of PM 10 PM 2.5 pollutants as well as gases. The purifier uses 2 layer purification, the first one being HEPA layer and second and active carbon filter. The combination of these 2 filters leads to dual filtration using a centrifugal air force to suck large amount of air and purify it of dust particles.



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K. J. Somaiya College of Engineering, Vashi

Start-up-009: Ramachandra Batteries Pvt. Ltd.

1. Name of the Company/Start-up: Ramachandra Batteries Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Low-cost lithium phosphorus and lithium-ion Manufacturing battery unit
Investment	: Rs. 07.00 Lakhs
Employment generated	: 03
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any):

In India we have less battery production units, by establishment of company can supply the battery in this region of Andhra pradesh

4. Current Status of the Company/Start-up:

Applying for raw material handling license and contract

5. Student team Details:

- i. Mr. J. Ranga
- ii. Mr. E. Ravi Teja

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

From the time Electric Vehicles (EV) came in to Indian market, the growth is slow but steady. This is due to huge initial cost.

- Nowadays, the most expensive part of an electric vehicle is the battery, which represents 25 ... 50 % of the price of the electric vehicle, depending of the technology used.
- A decrease in the acquisition price of the electric vehicles is mandatory until it reaches a level closer to that of the internal combustion engine vehicles.
- Which will determine a significant decrease in the acquisition price of the electric vehicles.

- The costing of batteries is reducing in recent days but still it shares the major cost
- The pricing of battery can be reduced by importing the cell of the batteries and then assembling them.
- This technology will contribute to manufacturing and marketing of battery at low cost, this accelerates the sales of EVs in the market.

So that, more customers show much willingness to buy EVs Product:

Benefits:

- i. Priority for the high performance pack with higher efficiency.
- ii. BMS will monitor all the cells and equalize the cell voltage at load.
- iii. User friendly
- iv. We can be easily carry.
- v. This technology represents the best “charge to weight” solution, fulfilling one of the most important conditions for battery used in electric vehicles, which made an easy replacement of NI-MH batteries and lead acid batteries.

Features:

- i. Cost effective
- ii. Reliable
- iii. State-of-Art Design
- iv. Effective after sales service
- v. Continuous improvement through technology development and continuous R&D.



Customers:

- i. Small-scale Industries
- ii. Public sectors
- iii. All future vehicles are works on Electricity
- iv. Future will completely depend on the EVs

Start-up-010: Aqua sustains solutions Pvt. Ltd.

1. Name of the Company/Start-up: Aqua sustains solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: In West Godavari District most of the Peoples depend up on aqua culture, this Developed technology helps to improve fish Growth rate and production rate
Investment	: Rs. 15.00 Lakhs
Employment generated	: 03
Commercialized or not	: Product released and handover to customer-Applying for aqua culture license

3. Impact it will create (including social impact, if any):

It creates high impact on social aqua culture economics

4. Current Status of the Company/Start-up:

Estimated proposal prepared for fund acquiring

5. Student team Details:

- i. Bhavanarayana K.
- ii. S. Venkat
- iii. K. Venkatesh

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

Optimal Recirculation aquaculture systems (ORAS) represent a new and unique way to farm fish. Instead of the traditional method of growing fish outdoors in open ponds and raceways, this system rears fish at high densities, in indoor tanks with a controlled environment. Recirculating systems filter and clean the water for recycling back to fish culture tanks.

This report, Recirculating Aquaculture Systems, provides an introduction to Recirculating Aquaculture Systems (RAS). This closed-loop fish farming facilities that retain and treat water within the systems. This form of aquaculture is quickly

gaining popularity in the United States. Recirculating Aquaculture Systems also provides commercial case studies of existing successful RAS operations in the United States. ORAS can be of various sizes ranging from large-scale production systems (over 1 million pounds per year) to intermediate-sized systems (500,000 pounds per year), to small systems (50,000 pounds per year). They can be used as grow-out systems to produce food fish or as hatcheries to produce eggs and fingerling sport fish for stocking and ornamental fish for home aquariums. ORAS are currently being used to grow catfish, striped bass, tilapia, crawfish, blue crabs, oysters, mussels, and aquarium pets. Indoor fish culture systems offer considerable flexibility to (1) grow a wide diversity of fish species, (2) rear a number of different species simultaneously in the same tank (polyculture) or different tanks (monoculture), (3) raise a variety of different sizes of one or several species to another depending on market demand and price.



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Start-up-011: Super Sonic Sigma Pumps Pvt. Ltd.

1. Name of the Company/Start-up: Super Sonic Sigma Pumps Pvt. Ltd.

2. Highlights of the Company/Start-up (Please include the following):

Product	: Company established to manufacture Electrically powered agriculture application Machines. Initially planned to manufacture Battery powered water pump. Trail run and Testing completed
Investment	: Rs. 16.00 Lakhs (2 Lakhs Procured)
Employment generated	: 03
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

When farmer replace the exist fossil fuel pump with this electrical based pump, farmer can save 80% of money and ecofriendly. High efficiency

4. Current Status of the Company/Start-up:

Collaborating with local dealers

5. Student team Details:

- i. K. Srinivas Prabhu
- ii. Chandra Sekhar

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

Pump is a mechanical device which converts mechanical energy into hydraulic energy. Existing pumping systems are based upon conversion electrical to mechanical to hydraulic . It has less efficiency and high rate of power consumption so we need to reduce the power consumption and need to increase the efficiency save for energy conservation. In this project we aim to fabricate a pump which has high efficiency and compactable to carry and to work without any external supply. Sonic pump has less energy consumption as compared to existed pumps. It is very compactable to carry anywhere and use at any location where we don't have power availability. In some areas and in some applications

power is not available so we are unable to use existed pumps so this problem overcome by this sonic pump it has own power built assistance to work any remote areas.

- This sonic pump Runs on dc supply so no need of AC power source
- It has a self-power unit to carry any here to work
- Major advantage of this pump is it can operate in remote areasw here no power is available.
- It is also useful for agriculture nursery maintenance
- On one complete charge it will run up to 100 min and above
- It sucks water from up to 11 feet's and deliver up to 15 feet height
- It is a multipurpose pump, it can use in municipality works especially repair of leakage water pipe lines
- Produces zero emissions then compared to existed portable petrol engines
- Consumes less power and running cost is very less.
- Easy to operate and handle
- No maintenance is required as petrol or oil engines
- Operate at different speeds as per required flow rate it is not possible in existed AC water pumps
- Efficiency is high



Start-up-012: Ramachandra Mech irrigation Pvt. Ltd.

1. Name of the Company/Start-up: Ramachandra Mech irrigation Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product : Company focusing to develop hydraulic
and marine machines for irrigation canals
and drain maintenance

Investment : Rs. 10.56 Lakhs

Employment generated : 4

Commercialized or not : Company registration in Process

3. Impact it will create (including social impact, if any)

In our India no one company focused to develop machines for this application,
This will help to farmers and to increase cultivation rate

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. Rama Koteswara Rao
- ii. Venkatesh.K
- iii. Bhavanarayana K.

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points.

Liquid fluid power is used by hydraulic machines to carry out the specific task. Hydraulic fluid is compressed to various hydraulic motors and hydraulic cylinders inside of this type of equipment and is then controlled by hoses using directional control valves to move pipes. The movement is managed hoses, either manually or automatically, through management valves, either pipes or tubes. The popularity of hydraulic machinery is due to the large amount of power that can be transferred through small tubes and flexible hoses, as well as the high power density and wide variety of actuators that can use this power, as well as the significant force multiplication that can be achieved by applying pressures over relatively large areas. Pumps that provide limitless flow are used in the proposed

hydraulic circuits. The management valve's open centre allows the flow to be returned to the tank; hence, once the management valve is cantered, it offers an open return path to the tank and also ensures that the fluid is not under excessive pressure. Otherwise, if the management valve is operated, fluid is sent to the nursing assistant from the nursing assistant mechanism and tank. Given that the pump has an ongoing output, any resistance will be overcome by an increase in fluid pressure. A pressure valve allows liquids to return to the tank if the pressure gets too high. Additionally, many management valves are stacked non-parallel. Constant displacement pumps with minimal costs are suitable for this type of circuit. And also hydraulic gear pump is operated by using the fluid power. By using the hydraulic gear pump along with chain cutter can remove the aquatic weeds plants.

Start-up-013: GB Mechanical Works Pvt. Ltd.

1. Name of the Company/Start-up: GB Mechanical Works Pvt. Ltd.

2. Highlights of the Company/Start-up :

Product:

- Implementation of ozone treatment mechanism in domestic washing machines and laundry machines
- Killing and eliminating the bacteria from cloths during washing in washing machine by using UV light. Washing machine having the UV treated water pumping system and UV water treating mechanism
- Washing machine consists of Ozone gas (O₃) pumping mechanism and UV treatment, UV water treatment system.

Investment : Rs. 13.00 Lakhs

Employment generated : 02

Commercialized or not : Applied for approval

3. Impact it will create (including social impact, if any) Our proposed and developing technology taking the washing machine working to next level of advancement by implementing the ozone technology in washing machines.

4. Current Status of the Company/Start-up : Under startup registration process

5. Student team Details

- M.Vimal Teja
- G. Bhanu Prakash

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points.

Ozone technology gives more effectiveness in washing performance. Our technology removes bacteria/virus and manganese, Iron, Hydrogen sulphide from laundry. Ozone technology creates impact on mentioned solvents and stains of cloths and water. So that it will removes more dirt with less water consumption in less time. We are using high chemical power detergents and chemicals to clean the cloths, finally it happens to contaminate soil and air due to draining in to drainages etc. In this developed technology ozone gas is used to react with germs and dirt of cloths, after reaction of gas will converts in to oxygen. It was eco-friendly. ozone generator system consist of regulator mechanism to control the feeding rate of O₃ gas in to the rotating drum chamber. UV light is fixed to washing machine to kill microbiological bacteria on laundry cloths This designed washing machine having UV treated water pumping assisted system it helps full to eliminates water source bacteria, this implementation improves washing quality.

Start-up-014: HALIKASETHU

1. Name of the Company/Start-up : HALIKASETHU

2. Highlights of the Company/Start-up;

Product	:
Investment	: Rs. 07.58 Lakhs
Employment generated	: 02
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any)

This project is going to be the gateway between the producer and consumer that is it helps the organic products from the producer reach the consumer directly without interference of any another mediator

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. A. Sai Venkata Sandeep
- ii. U. Pavan
- iii. Ch Swathi

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

In this advancing world no producer is being paid enough for their products. Most of the producers are farmers. Farmers have never been paid enough for what they have produced because of a mediator who deals with their products. Mediator is gaining more money than the one who is producing or the one who is buying. Because of a mediator huge commission has to be given. In this case the producers are being paid less than the budget they have planned to produce the goods which makes a huge loss for them and the consumers have to buy the products at high rate from the mediators which even make a huge loss for them.

There are chances to avoid a mediator and our whole projects works on this. Avoiding a mediator benefits the producer as well as the consumer.

- We can avoid adulteration of products by direct dealing.
- Consumers can buy the goods at reasonable prices
- Producers can be benefited by getting sufficient amount of money for their valid products
- Direct access between the producer and consumer provides accountability and liability.

Start-up-015: Macpro circuits Pvt. Ltd.

1. Name of the Company/Start-up: Macpro circuits Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Progressive Mechanized Air Conditioner
Investment	: Rs. 02.50 Lakhs
Employment generated	: 02
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any)

This product reduces power consumption in air conditioners and saves 15% of electricity

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

i. Chandrasekhar K.

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

In day to day life air conditioners are becoming a necessary appliance to conditioning the living space. In India lakh of air conditioners in House hold and in industry are working around a day, here cost of equipment and maintenance is on one end and power consumption, power bill on other end in thoughts before going to buy or install. People sure to vote for low power consumption high efficiency Air conditioners it seems to eco-friendly and financial safety. In this invention a truly eco-friendly Sub cooling technology with evaporative cooling mechanism is developed to fix Air conditioner for energy saving. By this technology cooling rate will increase and efficiency will be stable on all season of year-round. It Pre condition the air pass to the condenser.



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Start-up-016: Athritek Innovations

1. Name of the Company/Start-up: Athritek Innovations

2. Highlights of the Company/Start-up:

Product/Service	: Aqua IoT Equipment
Investment	: Rs. 2.00 Lakhs
Employment generated	: 5
Commercialized or not	: Not commercialized

3. Impact it will create (including social impact, if any)

It helps aqua farmers in reducing the farming cost and production cost using IoT based hardware.

4. Current Status of the Company/Start-up

Running

5. Student team Details

i. Ramya Undavalli

6. Establishment date of the Company/Start-up/Commercialization:

- 13-09-2021

7. One paragraph on the Company/Start-Up covering all the points.

The company is manufacturing the devices related to IoT technology for aqua farmers in identifying various farming parameters to take care. It has achieved Start-up Recognition from DPIIT, Govt. of India.

Start-up-017: Synsalus Technomed LLP

1. Name of the Company/Start-up: Synsalus Technomed LLP

2. Highlights of the Company/Start-up:

Product/Service : Sukoon and Dant Setu

Investment : Rs 02.50 Lakhs

Employment generated : 3-4

Commercialized or not : Not commercial

3. Impact it will create (including social impact, if any)

- Mental and wellness application

4. Current Status of the Company/Start-up

- Development of application

5. Student team Details

- i. Sunansh Malik

6. Establishment date of the Company/Start-up/Commercialization:

- 13 March 2020

7. One paragraph on the Company/Start-Up covering all the points.

Synsalus is a start-up venture which aims at bringing about a paradigm shift in healthcare. By integrating technology and healthcare we intend to help healthcare organizations achieve efficient, connected and continuous care. This shall lead to better self-care and enhanced health outcomes in patients.

Start-up-018: Halestein Foodlabs LLP

1. Name of the Company/Start-up: Halestein Foodlabs LLP

2. Highlights of the Company/Start-up:

Product/Service : Health based organic edibles and drinks

Investment : Rs 02.50 Lakhs

Employment generated : 04-05

Commercialized or not : Not commercialized

3. Impact it will create (including social impact, if any)

- Providing healthy snacks and drinks to the customer for last minute food cravings

4. Current Status of the Company/Start-up

- The company is working on opening food outlets

5. Student team Details

i. Pranaw Jha

ii. Anshu Jha

6. Establishment date of the Company/Start-up/Commercialization:

- 07-Oct-2019

7. One paragraph on the Company/Start-Up covering all the points.

HALESTEIN FOODLABS LLP is an initiative by two nutritionists with a mission to inculcate a healthy regime among the youth

- With products. Rich in antioxidants, aiding digestion, hydrating the body, enhancing immunity and improving the skin we are preparing the future generation for a disease free, healthy and productive life ahead. Our aim is to increase the interest of children and youth of the country towards nutritious products to promote the rich nutritional heritage of India for a healthier lifestyle approach and make nutrition easily accessible to a larger population

Start-up-019: Svachalan Technolgy LLP

1. Name of the Company/Start-up: Svachalan Technolgy LLP

2. Highlights of the Company/Start-up:

Product/Service	: Product
Investment	: Rs 02.50 Lakhs
Employment generated	: 2-3
Commercialized or not	: Not commercialized

3. Impact it will create (including social impact, if any)

- Water management in agriculture and domestic

4. Current Status of the Company/Start-up

- Finalizing the MVP

5. Student team Details

- iii. Jahanvi Aggarwal

6. Establishment date of the Company/Start-up/Commercialization:

- June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- Moity is an automated water sprinkler system which will provide water to the plants if the water level goes below the threshold level. The user can see the moisture content using a mobile phone application in real time.
- Moity App is the name of an app on which the user can get the readings of soil moisture content. The user needs to connect to the Bluetooth of the microcontroller and after that the respective current reading of the soil moisture gets displayed on screen. We can connect the device with wifi to give a more wide area of access. An alert can be given to the user in case of no electricity or no water.

Start-up-020: Baso Fresh Foodlab LLP

1. Name of the Company/Start-up: Baso Fresh Foodlab LLP

2. Highlights of the Company/Start-up:

Product/Service	: Product
Investment	: Rs 02.50 Lakhs
Employment generated	: 2-3
Commercialized or not	: Not commercialized

3. Impact it will create (including social impact, if any)

- Organic and healthy mouth freshners, drinks

4. Current Status of the Company/Start-up

- Finalizing the MVP

5. Student team Details

- i. Mahika Goel
- ii. Shreya Pasricha

6. Establishment date of the Company/Start-up/Commercialization:

- June 2022

7. One paragraph on the Company/Start-Up covering all the points.

Nutrifresh is a initiative by three of us to promote herbal eating in day to day life. Under nutrifresh, we have a herbal mouth freshener with all natural products and no added preservatives. With **tulsi seed** being the main ingredient along with lata kasturi, stevia, peppermint etc natural flavors. **Tulsi** is preeminent and has been seen in reducing physical, mental, chemical, metabolic, and psychological stress as well as antibacterial properties.

Start-up-021: Big Daddy Car Wash LLP

1. Name of the Company/Start-up: Big Daddy Car Wash LLP

2. Highlights of the Company/Start-up:

Product/Service	: Product
Investment	: Rs 02.50 Lakhs
Employment generated	: 3-4
Commercialized or not	: Not commercialized

3. Impact it will create (including social impact, if any)

- Automatic car washing

4. Current Status of the Company/Start-up

- Developing final MVP

5. Student team Details

- i. Ankit Dagar
- ii. Chirag Arora

6. Establishment date of the Company/Start-up/Commercialization:

- June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- We are AutoShineCare,
- Manufacturing of tech-oriented automatic car washing machine and selling machine to local workstations and big businesses as well.
- As said, it is tech oriented that can be operated with an app for its users, and (for later stage) machine uses special AI-features to justify car body, shape, design and level of dirt in order to control the pressure and water consumption.
- We are generating solar energy to use electricity for some extent.
- We Will also be settling up our own Hi-Tech automatic car washing stations in near future.

Start-up-022: Arctic Innovage Private Limited

1. Name of the Company/Start-up: Arctic Innovage Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: MyGarage (SaAs based)
Investment	: Rs. 02.50 Lakhs
Employment generated	: 10
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

- Door to door service for two wheeler. And providing business to small scale automobile garages.

4. Current Status of the Company/Start-up

- Applying for Series funding

5. Student team Details

- i. Aman

6. Establishment date of the Company/Start-up/Commercialization:

- Establishment date is 10/12/2021

7. One paragraph on the Company/Start-Up covering all the points.

- We had introduced our vehicle washing service application in the market with the name EZwash. Customer can get his vehicle washed at his desired location (home, office etc.). It has provided us an opportunity to survey about customer's requirement of vehicle services and improvement. After getting results from EZwash and from the survey we can proceed with the vehicle's periodic services and maintenance activities. The service which we plan to introduce is routine maintenance of vehicle at customer's desired location. The setup will require an application for customers and partners. And simultaneously collaborating with workshops for a better network.

Start-up-023: Logicyard technologies Pvt Ltd

1. Name of the Company/Start-up: Logicyard technologies Pvt Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Innominate (Ed-Tech)
Investment	: Rs. 02.50 Lakhs
Employment generated	: 8
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

- Online skill development application, chance to create jobs for promoters.

4. Current Status of the Company/Start-up

- Applying for Series funding

5. Student team Details

- i. Vikas Baisoya
- ii. Sarthak Negi

6. Establishment date of the Company/Start-up/Commercialization:

- 02/2021

7. One paragraph on the Company/Start-Up covering all the points.

- Innominate is a start-up of skill-based education platform where we provide skills apart from academics. Skills which one can pursue for their best like for their passion hobbies or to make living out of it. We have started this start-up 9 month ago through beta website Base portal.
- Which was just a beta version to test thing up? In which we have connected industries Best collaborator to our customers. We have accumulated of three lakhs in sales within 6 month and have successfully run our beta website. Now we are currently working on developing an app for our online courses, to give our customers better understanding and experience of the courses. On this app we'll be going to providing skills
- Fashion Industry: Fashion designing, Apparel making, jewelry designing, graphic designing
- Cooking and baking classes and tips
- Nutrition & Fitness

Start-up-024: Hobit technologies Private Limited

1. Name of the Company/Start-up: Hobit technologies Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Hobit (An Online skill based app)
Investment	: Rs. 02.50 Lakhs
Employment generated	: 20
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

- Online skill development application focusing on hobbies, chance to create jobs for promoters.

4. Current Status of the Company/Start-up

- Applying for Series funding

5. Student team Details

- i. Arpit Tyagi

6. Establishment date of the Company/Start-up/Commercialization:

- 15/06/2020

7. One paragraph on the Company/Start-Up covering all the points.

- Founded in June, 2020 with a mission to become the world's most Hobby centric platform. HOBIT is a one-of-its kind virtual platform with a vision to connect educators and learners from all over the globe. The platform enables the users to access prerecorded modules and live video sessions with the topmost tutors across the world. HOBIT is providing 360-degree solution for hobbies/ passion learning through their application

Start-up-025: DNA ADDA Private Limited

1. Name of the Company/Start-up: DNA ADDA Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Gamerzpit
Investment	: Rs. 02.50 Lakhs
Employment generated	: 2-3
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

A cross platform games development company.

4. Current Status of the Company/Start-up

Developing games and IP generation

5. Student team Details

i. Ayush Goel

6. Establishment date of the Company/Start-up/Commercialization:

- 17 June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- Our venture aims on creating 2D & 3D games. We also plan on designing websites and applications. Moreover, we'll be targeted towards building custom PC systems irrespective of the purpose. Our company will also simultaneously be handling both hardware and software technologies.

Start-up-026: Trufit Kitchen LLP

1. Name of the Company/Start-up: Trufit Kitchen LLP

2. Highlights of the Company/Start-up:

Product/Service	: Product
Investment	: Rs 2.50 Lakhs
Employment generated	: 4-5
Commercialized or not	: Not Commercialized

3. Impact it will create (including social impact, if any)

- Smart kitchen appliances

4. Current Status of the Company/Start-up

- Development of prototypes and IP

5. Student team Details

- i. Ashutosh
- ii. Pawan Dixit

6. Establishment date of the Company/Start-up/Commercialization:

- June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- We are providing all in one solution for smart kitchen automation.
- We have two products:
- Adjustable slab: we are adjusting the slab by using gestures and advanced IT features like Artificial intelligence and Machine learning.
- Smart dustbin: we segregating green and non-green waste which is helpful to segregate the waste easily and
- Our aim is to improve the quality of kitchen life and make relevant technologies accessible to all.
- The company also sets out to offer IT solutions for automating the daily needs in the kitchen.

Start-up-027: Ennovate LLP

1. Name of the Company/ Start-up: Ennovate LLP (application still in process)

2. Highlights of the Company/Start-up;

Product	: Smart home appliances
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Automation of home/ domestic/ office premises, remote control of appliances, etc.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- Abu Bakr Siddiq Laskar
- Shubhrajyoti Dhar

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

The startup aims to focus in the domain of home automation and introduce remote controlling of domestic/ electrical appliances, etc with target users being residential apartments, hospitals and other institutions where such operations will boost just in time control of required functionality. For example, an apartment with senior citizens will be benefitted by a remote control of the app, water pumps, etc which will be controlled and monitored by their sons/ daughters during the working hours.

Start-up-028: Poshe LLP

1. Name of the Company/ Start-up: Poshe LLP (application still in process)

2. Highlights of the Company/Start-up;

Product	: Herbal tea and drinks
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Providing preservative free beverages to the community and including farmers in the manufacturing process

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- Dorthi Rajkumari
- Soubam Nickol Devi

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

The startup aims to harness the rich diverse fruits, vegetable and flowers of the region towards offering healthy preservative free beverages fortified with natural nutritional supplements. The targeted niche being the health-conscious segment of the population. At present, test marketing of the same is being initiated and also the startup registration is in process.

Start-up-029: Topical Use

1. Name of the Company/ Start-up: Topical Use

2. Highlights of the Company/Start-up;

Product	: Antifungal formulation
Investment	: Rs. 1.00 Lakhs
Employment generated	: 8 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Natural antifungal agents are in great needed because currently used therapeutics have toxic side-effects, may interact with other drugs, and become ineffective as a result of the rapid development of fungal resistance

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Hafiz Nekibur Rahman Ahmed

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- The project targets collection, identification, extraction, analysis and in vitro study of the plant compound to analyze their antifungal activity and formulation of the product at a low cost.

Start-up-030: Weedkill

1. Name of the Company/ Start-up: Weedkill

2. Highlights of the Company/Start-up;

Product	: Bio-weedicide
Investment	: Rs. 01.00 Lakhs
Employment generated	: 9 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Bio-weedicide have been identified as a significant biological control strategy. Bio-weedicide have many advantages such as clearly defined for target weeds, no side effect on beneficial plants or human health, a lack of pesticide residue build-up in the environment, and effectiveness for control of some herbicide-resistant weed biotypes.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Madhumita Roy

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Since it is bio-weedicides it won't have any kind of harmful side effects and it won't disturb the existence of other beneficial bugs, insects like honeybee which helps in pollination and other microbials which helps in increasing the fertility of soil.

Start-up-031: Arogya

1. Name of the Company/ Start-up: Arogya

2. Highlights of the Company/Start-up;

Product	: Food supplement
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- The product can lower the sugar level effectively and can be routinely taken for maintenance of the glucose level (consultation with the doctor is also required for specific patients).
- Moreover this product also can be given to patients suffering from liver troubles
- Since this product is made from the local herbs so side effects are very less.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Arupjyoti Konwar

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- The product is totally herbal and made from the medicinal plants of NorthEast India.

Start-up-032: AIKlin

1. Name of the Company/ Start-up: AIKlin

2. Highlights of the Company/Start-up;

Product	: Sanitary napkin
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- An organic bioplastic based sanitary napkin which can be used in both rural and urban areas focusing mainly on female health and hygiene in an eco-friendly manner without causing harm to the environment on its proper disposal.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Jilimani Nath
- ii. Srijana Jaishi

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- The product aims at being antimicrobial, aromatic, anti-plasmodic and anti-inflammatory

Start-up-033: Piscine: Fish Food

1. Name of the Company/ Start-up: Piscine: Fish Food

2. Highlights of the Company/Start-up;

Product	: Aqua feed from waste
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- The prototype developed by considering hostel waste which is economically and environmentally beneficial. It has led to the development of nutritional supplementary or regular buoyant fish feed for the aquatic animals by utilization the waste & converting them to a valuable nutritive product. The developed prototype might lead to expansion of fishery industries through sustainable way without degrading the environment.

4. Current Status of the Company/Start-up:

- Start-up process initiated.

5. Student team Details

- i. Yashodhara Goswami
- ii. Soubam Nickol Devi

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- To use hostel waste which include the lignin based food products, the egg shells, the chicken feathers, etc for the development of floating fish feed.

Start-up-034: Algal Matbag Filter

1. Name of the Company/ Start-up: Algal Matbag Filter

2. Highlights of the Company/Start-up;

Product	: Filtration system
Investment	: Rs. 01.00 Lakhs
Employment generated	: 8 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Algae are great accumulators, absorbents and adsorbents with a high selectivity for pollutants.
- They generate high alkalinity which is essential for precipitation of heavy metals.
- They are potentially efficient for the removal of heavy metals

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Mercillia Sangma

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- A filtration system was developed using different materials and green algal mat bags are prepared in the form of tea bags which can remove toxic metals from the water significantly and below the permissible limit prescribed by BIS.

Start-up-035: Jaivik- An Algal Fertilizer

1. Name of the Company/ Start-up: Jaivik- An Algal Fertilizer

2. Highlights of the Company/Start-up;

Product	: Bio fertilizer
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- The use of algal bio-fertilizer provides an effective, eco- friendly and non-polluting approach in improving the productivity of crop by both nitrogen fixation and photosynthesis. Algal bio-fertilizers improve soil structure and increase yield productivity even if applied in a small area. The application of algal bio-fertilizers in plants has resulted in increase in root, shoot length with number of leaves and hence overall growth of the plant has been increased.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Pushpanjali Sharma
- ii. Marpe Bam

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Develop an organic fertilizer from green algae which forms bloom in different water bodies making the Depletion of DO level in many water bodies

Start-up-036: Prakruti

1. Name of the Company/ Start-up: Prakruti

2. Highlights of the Company/Start-up;

Product	: Organic hand wash and hand sanitizer
Investment	: Rs. 1.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- The gadget is ultimately expected to contribute to contactless hand disinfection in public places and virus infection prevention. Additionally, it is economical and eco-friendly by decreasing waste emissions

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Pankaj Chitrakar
- ii. Jakia Wahid

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- A cost effective non-alcoholic anti-viral/ bacterial hand sanitiser and hand wash with an additional dispenser timer gadget so as to save water and to maintain equal time interval between sanitisation.

Start-up-037: Smart Urban Tree

1. Name of the Company/ Start-up: Smart Urban Tree

2. Highlights of the Company/Start-up;

Product	: Smart Urban Tree
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Urban trees on average reduce air temperatures on summer days by 2-4°F, although in some circumstances the cooling effect can be even larger. Trees also sequester carbon, helping to mitigate climate change.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- Anuradha Boruah
- Eldad Ngurienkhum Riengsete

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Fight air pollution using an artificial tree structure and different lower groups of organisms.

Start-up-038: Bio Incense

1. Name of the Company/ Start-up: Bio Incense

2. Highlights of the Company/Start-up;

Product	: Incense sticks and mosquito repellent
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- The Mission of our team's innovative prototypes is to provide women entrepreneurship opportunities by aligning itself with Swachh Bharat Abhiyan, Skill India, Make in India, and Startup India by utilizing bioresources i.e. cow dung, divine flowers, and purely organic herbs.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Sampriti Goswami
- ii. Glarisa Mary Nongsiej

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Incense Sticks and mosquito repellent are made using cow dung, pious temple flowers, natural & non-toxic ingredients – with NO Chemicals, petrochemicals, charcoal, dyes, alcohol or pesticides

Start-up-039: Vehicle Speed Estimator

1. Name of the Company/ Start-up: Vehicle Speed Estimator

2. Highlights of the Company/Start-up;

Product	: Speed estimator
Investment	: Rs. 01.00 Lakhs
Employment generated	: 8 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Implement a real-time vehicle classification and speed estimation system and apply it to videos acquired from traffic cameras installed in highways. In this approach we: a) Detect moving vehicles through background-foreground segmentation techniques. b) Compare different supervised classifiers (e.g. artificial neural networks) for vehicle classification into categories: (car, motorcycle, van, and bus/truck). c) Apply a calibration method to georeference vehicles using satellite images. d) Estimate vehicles speed per class using feature tracking and nearest neighbors algorithms.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Rashanara Ahmed
- ii. Anusri Baruah

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Computer based image processing can be a best technique for the surveillance of traffic to keep an eye on every vehicle through only a computer located area wise traffic control rooms.

Start-up-040: Herbal Tea

1. Name of the Company/ Start-up: Herbal Tea

2. Highlights of the Company/Start-up;

Product	: Herbal tea
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Herbal tea is a boon to mankind as it provides specific benefits-including digestion, detoxification and weight loss. Rich in antioxidants, minerals and vitamins, it not only makes your body healthy but also helps in relaxing, recovery and refreshing your mind.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Rony Bhowal
- ii. Shahbaaz Ahmed
- iii. Arun Jerang

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Develop a herbal product basically as herbal tea made purely from natural plant parts.

Start-up-041: Natural Dye

1. Name of the Company/ Start-up: Natural Dye

2. Highlights of the Company/Start-up;

Product	: Natural dye
Investment	: Rs. 1.00 Lakhs
Employment generated	: 8 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Because they come from natural sources, natural dyes are not harmful to the environment, which makes it so appealing for consumers. Natural dyes are biodegradable and disposing them don't cause pollution.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Md. Saeed Ahmed
- ii. Rajesh Adhikary

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Develop Natural Dye basically from natural plant parts.

Start-up-042: Tita Gura

1. Name of the Company/ Start-up: Tita Gura

2. Highlights of the Company/Start-up;

Product	: Immunity booster
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- The medicinal plants and herbs playing a critical role to boosting our immunity. It is also very important to consume supplements in the form of immune nutrients such as vitamin A, C, E, D, B-complex, Zinc and copper that will support your body to fight against the pathogens.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Ms. Dharitree Sonowal
- ii. Aiman Nawaz

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- The product, “Tita gura” (powdered mixture of different medicinal herbs), a medicinal herb-based immune booster having anti-inflammatory, anti-carcinogenic, anti-diarrheal, antioxidant, antimicrobial, etc. properties.

Start-up-043: Diabetic Chocolate

1. Name of the Company/ Start-up: Diabetic Chocolate

2. Highlights of the Company/Start-up;

Product	: Herbal & Sugar-Free Chocolate
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Sugar free chocolate candy bars have more antioxidants than red wine or green tea. Chocolate contain flavonoids that is good for the heart. It thins the blood platelets and prevents clotting. In addition, flavonoids may be helpful in the prevention of cancer.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Sharvanee Borah
- ii. Mobina Ahmed

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- The product can be enjoyed by diabetic patients without any fear as it does not alleviate or fluctuate blood sugar levels. The ingredients added to this product are herbs, some simple, easily available materials.

Start-up-044: Prebiotic Food

1. Name of the Company/ Start-up: Prebiotic Food

2. Highlights of the Company/Start-up;

Product	: Prebiotic Food Supplements
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Eating a diet rich in prebiotics and taking prebiotic supplements may benefit certain aspects of metabolic health, including blood sugar, cholesterol, and triglyceride levels.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- Ankita Kalita
- Anishmita

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Prebiotic food supplement is a mixture of healthy fibers made from raw materials found in the North East of India. These raw materials are in the dried form

Start-up-045: Meynikar Labs Pvt Ltd

1. Name of the Company/Start-up: Meynikar Labs Pvt Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Virtual Reality based Education Module
Investment	: Rs. 02.50 Lakhs
Employment generated	: Nil
Commercialized or not	: Nil

3. Impact it will create (including social impact, if any)

- Allows students to learn practically more than classroom learning. Students will get live learning experience with virtual reality. Students' knowledge will improve in the aspect of real time and practical learning.

4. Current Status of the Company/Start-up

- Working on VR Modules and Customer Demo

5. Student team Details

- i. M. Ganesh Babu

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 12.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

- Meynikar Labs Pvt Ltd is a start-up Incubated at AKC which is currently working on Virtual Reality based Education Module. The Start-up is founded by three students of MBA IEV with a vision to incorporate practical learning among the students' community especially in medicine. The start-up is under initial proof of concept development and seeking investments. Meynikar Labs is now developing the modules in VR (Virtual Reality) using animation and 3D software. Currently there is no employment has been generated and the product is not yet commercialized. The company was incorporated on 12th April 2022.



Start-up-046: Nov Influx Healthcare LLP

1. Name of the Company/Start-up: Nov Influx Healthcare LLP

2. Highlights of the Company/Start-up:

Product/Service	: Shoe sole for foot ulcer
Investment	: Rs. 02.50 Lakhs
Employment generated	: 1
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Foot ulcer is one of the serious problems which diabetic patients face. It is caused by lack of circulation in the feet. Foot ulcer causes serious damages to the health of the patients. This project will create an impact among the diabetic population by simulating the blood circulation in the feet via vibrating shoes.

4. Current Status of the Company/Start-up

- Product Development

5. Student team Details

- i. Nabeena.N
- ii. Hamida Hana.Z

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 24/11/2021

7. One paragraph on the Company/Start-Up covering all the points.

- The startup is at present focusing on providing the good product for the society by considering the touch points. Rapport is been improving with other departments regarding the product development and technical training. Once when the product is developed, focus will be on the clinical trials by getting the ethical committee approval.

Start-up-047: Mov Makers LLP

1. Name of the Company/Start-up: Mov Makers LLP

2. Highlights of the Company/Start-up:

Product/Service	: Muscle spasticity grading machine
Investment	: Rs. 02.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Muscle spasticity graders will create impact on sports field like how much the muscle is tensed. So that we can determine whether the player is fit to play or not. This will prevent many sport accidents

4. Current Status of the Company/Start-up

- Product Development

5. Student team Details

- i. Daranisri J.
- ii. Mennushaa K.
- iii. Aamir Basha V.

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 09/11/2021

7. One paragraph on the Company/Start-Up covering all the points.

The startup is a registered entity under LLP act. This startup is currently focusing on manufacturing physiotherapy products. Main focus of this startup is on muscle spasticity grader which is an equipment can detect the muscle tightness level. The future ideas for this startup is to get the second level funding for further development of prototype and to commercialize the product. This product can be patented and patenting is under progress

Start-up-048: Healinn Pharmaceuticals Pvt. Ltd

1. Name of the Company/Start-up: Healinn Pharmaceuticals Pvt. Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Ionto orthotic device for knee pain
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Arthritis is a serious issue now a day. Treatment of arthritis is much more painful than arthritis itself. This novel method for treating arthritis will create an impact on arthritis patients by reducing the pain in the treatment process.

4. Current Status of the Company/Start-up

- Product Validation

5. Student team Details

- i. M. Tharun Kumar
- ii. B. A Tanisha

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 18/10/2021

7. One paragraph on the Company/Start-Up covering all the points.

The startup is a registered entity under Pvt Ltd act. This startup is currently focusing on pharmaceutical equipment. Currently working on arthritis problem and providing solution for the same. The startup is now getting revenue out of sales of pharmaceutical products as well. This project has been applied for next level funding and patent filing is under progress.

Start-up-049: Creative Physiocare LLP

1. Name of the Company/Start-up: Creative Physiocare LLP

2. Highlights of the Company/Start-up:

Product/Service	: Balance accessor for geriatric patients
Investment	: Rs. 02.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Balance accessor is the machine which can provide balance for geriatric patients. This product will create an impact on physiotherapy sector especially in geriatric care.

4. Current Status of the Company/Start-up

- Product Development

5. Student team Details

- i. Manju Bashini M.
- ii. Preethi S.
- iii. Bhavani V.

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 31/12/2021

7. One paragraph on the Company/Start-Up covering all the points.

The startup is a registered entity under LLP act. This startup is mainly focusing on physiotherapy equipment. Currently building the balance accessor. The main moto of this project is to create an impact in geriatric care. The future plan of this company is to establish a physiotherapy equipment manufacturing company.

Start-up-050: RoboTech

1. Name of the Company/Start-up: RoboTech

2. Highlights of the Company/Start-up:

Product/Service	: Toilet cleaning robot
Investment	: Rs. 02.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- This startup is working on toilet cleaning robot. This project will create an impact on sanitary workers life. Toilet cleaning robot will clean the public toilets and reduce the human intervention in toilet cleaning

4. Current Status of the Company/Start-up

- Product Development

5. Student team Details

- i. Aasif Ahmed

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 01/08/2021

7. One paragraph on the Company/Start-Up covering all the points.

The startup is registered as SME under MSME's Udyog AADHAR Scheme. This startup is currently working on hygiene care sector. Cleaning public toilets is a very un-humane process which should not include humans to do that. This startup was rewarded with Best innovation award in IIT PALS InnoWah Competition for toilet cleaning robot. Robotech is working on developing toilet cleaning robots. Future scope of this startup is to register as Pvt. Ltd. company and commercialize the product for the betterment of our future.

Start-up-051: Medaza Healthcare LLP

1. Name of the Company/Start-up: Medaza Healthcare LLP

2. Highlights of the Company/Start-up:

Product/Service	: Pocket friendly medicine carrier cartridge
Investment	: Rs. 02.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- The med-cartridge allows people to carry the medicine they require for the day and not all the medicines which might mess up the container/bag. Making peoples' life easier.

4. Current Status of the Company/Start-up

- Product Development

5. Student team Details

- i. Sneha G.
- ii. Vigenesh Kumar S.

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 23/08/2021

7. One paragraph on the Company/Start-Up covering all the points.

Medazza Healthcare LLP is a startup incubated at AKC with NewGen IEDC Funding. It is currently working on medicine cartridge which helps people carry medicine around in their pockets. The startup is manufactures pharmaceutical based instruments and currently one of their product called Med-cartridge is under testing.

Start-up-052: IATRICK Healthcare LLP

1. Name of the Company/Start-up: IATRICK Healthcare LLP

2. Highlights of the Company/Start-up:

Product/Service	: Heart monitoring device - holter
Investment	: Rs. 02.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Heart health can be monitored regularly

4. Current Status of the Company/Start-up

- Proof of Concept

5. Student team Details

- Sandhiya B.
- Mano R.
- Lohitha V.

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 23/08/2021

7. One paragraph on the Company/Start-Up covering all the points.

Iatric healthcare LLP is a startup incubated at AKC with 2.5 Lakhs of NewGen IEDC Funding. The startup focuses on healthcare sector and working on a project called Holter Device. The project is now under ideation stage and design is under development.

Start-up-053: RPKS BIOBAGS LLP

1. Name of the Company/Start-up: RPKS BIOBAGS LLP

2. Highlights of the Company/Start-up:

Product/Service	: Sanitary Napkin disposal management bag
Investment	: Rs. 02.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Managing bio-waste will create an environmental impact like prevention of disease and infection.

4. Current Status of the Company/Start-up

- Proof of Concept

5. Student team Details

- i. Rhiyana A.
- ii. Boopalan
- iii. Jimsy

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 22/10/2021

7. One paragraph on the Company/Start-Up covering all the points.

RPKS Biobags LLP is a startup incubated at AKC under NewGen IEDC Funding of Rs. 2.5L. The startup focuses on sanitary products. Currently the startup is working on sanitary napkin disposal bags.

Start-up-054: MARKHOR Tech Factory LLP

1. Name of the Company/Start-up: MARKHOR Tech Factory LLP

2. Highlights of the Company/Start-up:

Product/Service	: Portable junction box cum power bank
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Makes the travellers life easier

4. Current Status of the Company/Start-up

- Product Validation

5. Student team Details

- i. Venkatesh V

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 24/11/2021

7. One paragraph on the Company/Start-Up covering all the points.

Markhor Tech Factory LLP is a startup incubated at AKC under NewGen IEDC Funding of Rs. 2.5 L. The startup focuses on manufacturing tech related products. Currently working on Multi-purpose junction box which can be carried around while travelling

Start-up-055: IGNIT Technical Solutions Pvt. Ltd.

1. Name of the Company/Start-up: IGNIT Technical Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Automatic medicing mixing machine
Investment	: Rs. 02.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Makes the ayurvedic basti automatically by blending all the mixtures in correct proportion. It will make the work easier for the medical people

4. Current Status of the Company/Start-up

- Prototype

5. Student team Details

- i. Gunjara Shalini
- ii. K. Divya
- iii. K. S. Supraja

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 18/10/2021

7. One paragraph on the Company/Start-Up covering all the points.

IGNIT Technical Solutions Pvt Ltd is startup incubated at AKC with 2.5 L of seed funding support. The startup is currently working on medicine making machine and some other electronic, mechanical devices.

Start-up-056: NOBACO Toothpaste LLP

1. Name of the Company/Start-up: NOBACO Toothpaste LLP

2. Highlights of the Company/Start-up:

Product/Service	: Toothpaste to remove tobacco strains
Investment	: Rs. 02.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Improves the confidence in people who chew / smoke tobacco as well as it will improve the oral health of the people

4. Current Status of the Company/Start-up

- Product Validation

5. Student team Details

- i. S. S. Nivedha
- ii. N. Aprose Nisa Alea

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 18/10/2021

7. One paragraph on the Company/Start-Up covering all the points.

Nobaco toothpaste LLP, currently under the developing process of "The Nobaco -toothpaste assisting tobacco user, received the initial funding amount of Rs. 2.5 Lakhs from (new gen IEDC) and utilised the funding from the same for developing proof of concept and the following prototype. The startup is making a toothpaste that counteract the oral harmful effects of tobacco among the smoke and smokeless form of users that will positively impact their day to day life in regard to oral hygiene with a specially formulated toothpaste which is easy and efficient to use

Start-up-057: AGNI SIRAGUGAL

1. Name of the Company/Start-up: AGNI SIRAGUGAL

2. Highlights of the Company/Start-up:

Product/Service	: Woman safety device
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Improves safety and security for women who travel along at night

4. Current Status of the Company/Start-up

- Proof of Concept

5. Student team Details

- i. C. P. Sasidharan

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 18/10/2021

7. One paragraph on the Company/Start-Up covering all the points.

Agnisiragugal is a proprietor company working on women safety devices. Their next stage is incorporating their company as an LLP and work more on safety devices and softwares. It has received an amount of Rs. 2.5 L as seed fund and incubated at AKC.

Start-up-058: KleenTech LLP

1. Name of the Company/Start-up: KleenTech LLP

2. Highlights of the Company/Start-up:

Product/Service	: Water door mats
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- People can wash their feet before entering into house / other places. It will create a clean environment.

4. Current Status of the Company/Start-up

- Prototyping

5. Student team Details

- i. Booja C. S.

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 04/09/2021

7. One paragraph on the Company/Start-Up covering all the points.

KLEENTECH LLP is a startup incubated at AKC with 2.5 L of funding support. Currently the startup is working on hygiene products and clean water technology. This project is water mat which can be used as door mats and people can wash their feet before entering their houses.

Start-up-059: Innovotech Healthcare LLP

1. Name of the Company/Start-up: Innovotech Healthcare LLP

2. Highlights of the Company/Start-up:

Product/Service	: Sensor Turner Beds
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Bed ridden patients may not get bed sores by using this bed

4. Current Status of the Company/Start-up

- Product Validation

5. Student team Details

- Jaya bharathi.C.
- Keerthiga
- Thiruvarangan

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 18/05/2022

7. One paragraph on the Company/Start-Up covering all the points.

Innovotech Healthcare LLP is a startup incubated at AKC with Rs. 2.5 L of funding support. This startup is making healthcare and medical equipments. The project sensoturner made by this startup is currently under product validation stage. Using this bed, bed ridden patients can avoid bed sores

Start-up-060: Easythermorecords LLP

1. Name of the Company/Start-up: Easythermorecords LLP

2. Highlights of the Company/Start-up:

Product/Service	: Sensor Turner
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Food can be served at a perfect temperature

4. Current Status of the Company/Start-up

- Product Validation

5. Student team Details

- i. Rewti Ranjan
- ii. Sanaya Sinha

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 01/11/2021

7. One paragraph on the Company/Start-Up covering all the points.

Easythermorecords LLP is a startup incubated at AKC with 2.5 L funding support. This startup is focusing on hotel management devices and food related devices manufacturing. This startup is currently working on Thermal monitoring for foods being served at hotels and prototyping is done by this team. Currently it is in product validation stage.

Start-up-061: BLINDBUY Tech Innovations

1. Name of the Company/Start-up: BLINDBUY Tech Innovations

2. Highlights of the Company/Start-up:

Product/Service	: Sensor Turner
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- One spot solution for all the nuts and spices

4. Current Status of the Company/Start-up

- Prototyping

5. Student team Details

- i. Adnan Umar Mallick

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 05/01/2022

7. One paragraph on the Company/Start-Up covering all the points.

The company was incorporated on 15th January 2022 with 2.5 Lakhs of funding support under DST NewGen IEDC Scheme. Currently working on UI and UX development of e commerce website with a team of 6 members

Start-up-062: Shoreline Scientific LLP

1. Name of the Company/Start-up: Shoreline Scientific LLP

2. Highlights of the Company/Start-up:

Product/Service	: Sensor Turner
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Creating a mosquito free environment

4. Current Status of the Company/Start-up

- Product Validation

5. Student team Details

- i. Priyadharshini M.

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 05/01/2022

7. One paragraph on the Company/Start-Up covering all the points.

Our company aims to produce an efficient and eco-friendly mosquito trap. "Attract Trap & Kill" is the process expected to be fulfilled by our product. We are setting an innovative way to kill only the mosquitoes that has the potential to kill us

Start-up-063: YESDG Innovations LLP

1. Name of the Company/Start-up: YESDG Innovations LLP

2. Highlights of the Company/Start-up:

Product/Service	: Sensor Turner
Investment	: Rs. 2.50 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Measuring and analysing the energy consumed by each equipment so that we can know the energy consumption and audit accordingly

4. Current Status of the Company/Start-up

- Product Validation

5. Student team Details

- i. P. Ezhilarasi

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 05/01/2022

7. One paragraph on the Company/Start-Up covering all the points.

YESDG INNOVATIONS LLP is a startup incubated at AKC with 2.5 L of funding support. This startup is working on energy sector and currently developing an energy meter which monitors the individual electricity consumption of the household appliances

Start-up-064: Fenice Technical Solutions LLP

1. Name of the Company/Start-up: Fenice Technical Solutions LLP

2. Highlights of the Company/Start-up:

Product/Service	: Clog Removing Autonomous Bot
Investment	: Rs. 15.50 Lakhs
Employment generated	: 1
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Reducing the human interventions in manhole scavenging work. Creating social cause for sanitary workers.

4. Current Status of the Company/Start-up

- Product Testing

5. Student team Details

- i. L. Madheshwaran

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 16/01/2019

7. One paragraph on the Company/Start-Up covering all the points.

Fenice Technical Solutions LLP is a Technology based startup working on Sanitation and hygiene care. The startup mainly focuses on the problem statement – manhole scavenging. The Clog Removing Autonomous Bot (CRAB) was developed by the startup and it is an automated bot which could clear the clog inside manholes. The startup also focuses on other prototypes such as “All Weather Power Generating panel” and also provides technical training for the students. The startup is incubated at AKC and funded by NewGen IEDC, Startup NIDHI and AICTE with an amount of 15.5 Lakhs.

Start-up-065: PPM Design Studios LLP

1. Name of the Company/Start-up: PPM Design Studios LLP

2. Highlights of the Company/Start-up:

Product/Service	: Coir Acoustic Panels
Investment	: Rs. 12.50 Lakhs
Employment generated	: 1
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Waste to wealth product which makes environment clean and producing commercial product like acoustic panels from coir-waste generated while making coir mats.

4. Current Status of the Company/Start-up

- Product Testing

5. Student team Details

- i. Pavan Kalyan A.
- ii. Pankaj Jangid S.

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 26/02/2019

7. One paragraph on the Company/Start-Up covering all the points.

PPM Design Studios LLP is a start-up incubated at Dr. APJ Abdul Kalam CoE in Innovation and Entrepreneurship (AKC). It is an architecture based startup working on waste to wealth management in making coir based acoustic panels. The startup has generated employment by offering internships to the students of architecture and management. The startup has been funded with Rs. 12.5 Lakhs from NewGen IEDC and Start up NIDHI. Currently they are working in Research and Development of Acoustic Panels and on Designing

Start-up-066: Brainbuds Healthcare Pvt. Ltd.

1. Name of the Company/Start-up: Brainbuds Healthcare Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Ergonomic Wheelchair cum stair climber
Investment	: Rs. 18.50 Lakhs
Employment generated	: 1
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- It makes bed ridden patients' life easier

4. Current Status of the Company/Start-up

- Product Testing

5. Student team Details

- i. S. Sabariswaran

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 26/02/2019

7. One paragraph on the Company/Start-Up covering all the points.

Brainbuds Healthcare Pvt Ltd is a Healthcare based startup focusing on developing wheelchair cum stretcher and stair-climber. The startup is incubated at AKC funded by NewGen IEDC, Nidhi Prayas and AICTE with around 19 lakhs of funding. The startup has generated employment opportunities for students and welders. Currently the startup is generating revenue by selling and manufacturing physiotherapy products and wheelchair.

Start-up-067: Illakanam Private Limited

1. Name of the Company/Start-up: Illakanam Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Hybrid Desalination & Vacuum Ruspension
Investment	: Rs. 0.30 Lakhs
Employment generated	: Nil
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Approaching Customers

5. Student team Details

- i. M. Muralikrishnan

6. Establishment date of the Company/Start-up/Commercialization:

- 11/03/2022

7. One paragraph on the Company/Start-Up covering all the points.

- To promote research and development in the field of Engineering, Business, Technology, Educational, Telecommunication, Cellular Device, Braille, Agriculture, Automotive, Electro-Mechanical devices and other related fields and to engage in design, manufacturing, production, buying, importing, assembly, repairing, improving, selling, reselling, export, store, supply, etc. including the manufacture of scientific Prototypes and other equipment relating to the above fields. Also, to promote growth and development of R&D activities in engineering field and other related fields to be explored.

Start-up-068: Emsensing Technologies Private Limited

1. Name of the Company/Start-up: Emsensing Technologies Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Electronics, Health care
Investment	: Rs. 0.45 Lakhs
Employment generated	: Nil
Commercialized or not	: Pitching done

3. Impact it will create (including social impact, if any)

- **Functionality Validation Analysis:** We have performed on-site physical field trials with the device developed to monitor and control intravenous fluid flow rate as per the requirement even from remote locations using a mobile phone-based application programming interface. Demonstration held in the premises of Post-Operative Patient wards and Orthopedics ward for the various saline capacity and different time periods from 18th July 2022 to 20th July 2022. The observation made during the trials were documented and testimonials/comments/suggestions were received from the respective duty nurses concerned.
- It is noted that the device shows the capacity to monitor and control the fluid in the IV tube as per the commands executed by the user, accurately and found to be with various functional aspects, including setting flow rate, monitoring residual capacity, setting flow based on the time period, and empty bottle warning. The prototype can also do the desired tasks such as saline drip control per minute, Saline capacity in ml, capacity to infuse, timer, room temperature, humidity, real-time drips per minute status, consumed volume, remaining volume, and battery.
- **Business Summary:** Exists the problem of manually monitored and controlled drip rate of intravenous infusion tube replaced by an autonomously monitoring and controlling utility. It is envisaged that product knowledge may be transformed to the customer in a matter of time or by showing the product as the problem is well known and still not been solved. Hospitals are the large customer base; reaching them will be performed through dealers, digital advertisements, competition, and direct marketing

4. Current Status of the Company/Start-up

- Submitted Innovation Voucher Program, Start up India Seed Grant, BIRAC BIG Grant

5. Student team Details

- i. S. Praveen Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 18/08/2021

7. One paragraph on the Company/Start-Up covering all the points

Emsensing Technologies is an Electronic Product and Solutions offering company founded in 2021 based in Chennai, India. Our Product Development and Solution Offering Engineering Team has talented skills on industry domains and platforms such as medical & healthcare, automotive, Industrial Automation that helps to reduce development risk and offer time and cost to market advantage. We research, investigate, understand the technology, and give our clients a competitive cutting edge solution . Understanding the technology and market trends give Emsense a key advantage in helping and deciding customers in realizing their dream of new products which are successful in their launch

Start-up-069: Spionage Technologies Private Limited

1. Name of the Company/Start-up: Spionage Technologies Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Smart Alerting Seat
Investment	: Self-Funded
Employment generated	: 1
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- This company device is a retro fit to the driving seats of Heavy load vehicles which alerts the driver through seat vibration. This will reduce the no. of road accidents caused due to drowsiness

4. Current Status of the Company/Start-up

- Device under Testing

5. Student team Details

- i. V. Harideep

6. Establishment date of the Company/Start-up/Commercialization:

- 19th June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This company works on different types of Dc Motors in developing applications related to actuations. This company aims to develop a safe and healthy travelling and their first idea is to avoid accidents because of Drowsiness. They are also trying to implement few other projects inline with Transportation.

Start-up-070: Chipsets and technologies

1. Name of the Company/Start-up: Chipsets and technologies

2. Highlights of the Company/Start-up:

Product/Service	: Embedded devices-Turbo Clean & IR locks
Investment	: Self-Funded
Employment generated	: 1
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- This companies device changes the way people clean their over head Tanks

4. Current Status of the Company/Start-up

- Device under Testing

5. Student team Details

- i. Kotapati Pratyush

6. Establishment date of the Company/Start-up/Commercialization:

- 19th June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This company is aimed to solve local society needs of the people and their first invention to clean the over head Tank cleaning System.They are also trying to build a Smart Lock system.

Start-up-071: InvadoTechs Private Limited

1. Name of the Company/Start-up: InvadoTechs Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Smart Billing Cart for Super Markets
Investment	: Self-Funded
Employment generated	: 3
Commercialized or not	: Working Model Ready

3. Impact it will create (including social impact, if any)

- This IoT based Smart Cart will eliminate the Queues in Shopping mll and Super markets as it provides billing at the cart

4. Current Status of the Company/Start-up

- Working Model Ready

5. Student team Details

- i. K. Pranav Sarma
- ii. K. Nanda Gopal
- iii. Konnagula Srikanth

6. Establishment date of the Company/Start-up/Commercialization:

- 27th June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This Company works on IoT and Cloud based Technology, their first project on Smart billing Cart to avoid the long queus in the Super Markets.is associated with the same technology. Also they are trying to implement Smat Security systems in the same lines.

Start-up-072: Sakisighs Technologies Private Limited

1. Name of the Company/Start-up: Sakisighs Technologies Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Virosafe-Disinfection systems & Robots
Investment	: Self-Funded
Employment generated	: 1
Commercialized or not	: Working Model Ready

3. Impact it will create (including social impact, if any)

- This company develops solutions for different kinds of disinfection systems such as automated Sanitizer sprayers, U V disinfection system Sanitizer sprayer Robots and Medicine dispensing Robot

4. Current Status of the Company/Start-up

- Working Model Ready

5. Student team Details

i. Priyanshu Sethi

6. Establishment date of the Company/Start-up/Commercialization:

- 28th June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This company is working on non contact Sanitization solution and one of their project is Ai based robot spraying the Sanitizer in hospitals, educational institutions etc

Start-up-073: Octo Blooms Private Limited

1. Name of the Company/Start-up: Octo Blooms Private Limited

2. Highlights of the Company/Start-up:

Product/Service : Wire Less stethoscope

Investment : Self-Funded

Employment generated : 2

Commercialized or not : Not

3. Impact it will create (including social impact, if any)

- This company works on developing medical devices and tools. A wireless Low cost Electronic Stethoscope can be widely used during the spread of Contagious diseases like viral and Corona.

4. Current Status of the Company/Start-up

- Working Model Ready

5. Student team Details

- i. V. Sai Harshith
- ii. G. Pravallika Reddy

6. Establishment date of the Company/Start-up/Commercialization:

- 17th June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This Company works closely with Medical Devices and their enhancements as per the need and problem statements from the doctor. Their first product which is ready to commercialize falls in the same line .

Start-up-074: Kartomatic Technologies Private Limited

1. Name of the Company/Start-up: Kartomatic Technologies Private Limited

2. Highlights of the Company/Start-up:

Product/Service : Grocery Lift

Investment : Self-Funded

Employment generated : 2

Commercialized or not : Not

3. Impact it will create (including social impact, if any)

- This company works on developing an IoT based daily collectables for senior people living in Apartments and multi-floored buildings. This will impact the live of senior citizens from climbing stairs and reduce the Knee related problems.

4. Current Status of the Company/Start-up

- Working Model Ready

5. Student team Details

- i. Y. Jeshwanth
- ii. S. Abhinav

6. Establishment date of the Company/Start-up/Commercialization:

- Company name approved Waiting for CIN.

7. One paragraph on the Company/Start-Up covering all the points.

- This company Works in solving the problems of Elderly People especially to develop something smart for their needs.their first project Grocery lift is to help elderly people to lift the groceries automatically with a switch of a button from ground floor to top floors avoiding them to climb and step down and use force to pull the bucket up and down.

Start-up-075: Threatrecon Private Limited

1. Name of the Company/Start-up: Threatrecon Private Limited

2. Highlights of the Company/Start-up:

Product/Service : Smart Protective face shield for Municipal Workers.

Investment : Recently selected for MSME start-up Grant for Commercialization

Employment generated : 1

Commercialized or not : Not

3. Impact it will create (including social impact, if any)

- This company impacts the lives of municipal Workers especially in the sanitization department who are prone to harmful gases.

4. Current Status of the Company/Start-up

- Working Model Ready

5. Student team Details

- i. Sushant Tiwary

6. Establishment date of the Company/Start-up/Commercialization:

- Company name approved Waiting for CIN.

7. One paragraph on the Company/Start-Up covering all the points.

- This company works on local society problems generally associated with Municipal corporation such as waste management, waste tracking system, protective face shield to avoid exposure of harmful gases to municipal workers.

Start-up-076: Tredmolen E - Cycle Private Limited

1. Name of the Company/Start-up: Tredmolen E - Cycle Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Electric Cycle (Product)
Investment	: Rs. 07.00 Lakhs
Employment generated	: 12 Persons
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

We are offering health to our customers by providing them a unique treadmill which can be used as an e-bike as well as cycle. The lack of time availability in today's scenario due to which people are not concerning to their health? Cheap Price, three in one concept offering three different products in single one (i.e. as treadmill, bicycle, and an e-bike).

4. Current Status of the Company/Start-up

- Private Limited Company

5. Student team Details

- i. Sachin Singh Sengar
- ii. Tejas Singh
- iii. Himanshu Mishra
- iv. Karanjeet Randhawa
- v. Gaurav Verma
- vi. Ravi kumar Shukla

6. Establishment date of the Company/Start-up/Commercialization:

- 02/05/2019

7. One paragraph on the Company/Start-Up covering all the points.

This is a manufacturing unit in which we manufacture and sell the product names "Tred-E-cycle "and company is registered as Tredmolen -E-Cycle Pvt. Ltd. Manufacturer of a product named Tred-e cycle which is an electric treadmill bicycle with three? transmissions and can be used as three products in single product i.e., Bicycle, treadmill and e-bike in single Tred-e cycle.

Start-up-077: Sayrnew Private Limited

1. Name of the Company/Start-up: Sayrnew Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: SI Phase Locator (Product)
Investment	: Rs. 01.50 Lakhs
Employment generated	: 4 Persons
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

- We can detect phase with a distance of 1cm. human safety against electric shock.

4. Current Status of the Company/Start-up

- Private Limited Company

5. Student team Details

- i. Ms. Suzanne Sharma
- ii. Mr. Atul Kumar Maurya

6. Establishment date of the Company/Start-up/Commercialization:

- 29 /09/2021

7. One paragraph on the Company/Start-Up covering all the points.

It is a device which detects the phase on the insulated wire by the LED, which we use as an indicator, we get to know the presence of current. We can detect phase with a distance of 1cm. human safety against electric shock with the use of SI Phase locator. It is the cheapest and easy to use. It detects the high voltage in spark plugs of vehicles. Easily detect the fault in bull's series connection it easily detects high voltage area. Its operation is on very low battery consumption. It works for several months.

Start-up-078: LIFEEZY Products Private Limited

1. Name of the Company/Start-up: LIFEEZY Products Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: AASAWAN Water Purifier (Product)
Investment	: Rs. 02.50 Lakhs
Employment generated	: 8 Persons
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

Our primary objective is to showcase our idea with working prototype beneath several government bodies for tests and certifications. meanwhile we also plan to present public demos in order to arise awareness amongst users regarding our product.

4. Current Status of the Company/Start-up:

- Private Limited Company

5. Student team Details

- Mr. Kustubh Srivastava

6. Establishment date of the Company/Start-up/Commercialization:

- In Process

7. One paragraph on the Company/Start-Up covering all the points.

Asswan is Hindi translation of distillation. Asswan water purifier works on advance distillation-based technology which ensures pure water enriched with all the necessary minerals to chinch optimum quality of water to the user. As the working principle of ASSWAN water purifier is based on distillation in which water changes its phase and converts into steam which is the purest form of water which could be extracted, ASSWAN water purifier is also capable in eliminating problems associated with other water filtration techniques i.e. dealing with high TDS values, water wastage, etc.

Start-up-079: ML Volt Private Limited

1. Name of the Company/Start-up: ML Volt Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Modified Fitness Band (Product/Service)
Investment	: Rs. 2.0 Lakhs
Employment generated	: 04 Persons
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

Our primary objective is to showcase our idea with working prototype beneath several government bodies for tests and certifications. meanwhile we also plan to present public demos in order to arise awareness amongst users regarding our product.

4. Current Status of the Company/Start-up

- Private Limited Company

5. Student team Details

- Mr. Prince Gupta
- Mr. Ayushman Agrahari

6. Establishment date of the Company/Start-up/Commercialization:

- 17-08-2021

7. One paragraph on the Company/Start-Up covering all the points.

Our Mission for starting this StartUp is to provide technical support to those creative entrepreneurs who have a product idea but don't know to build it practically due to lack of technical knowledge and limited project budget. Our team has highly experienced in Electronics Engineers, Mechanical engineers, Android app developers, web developers and graphics designers. Which plan and develop your idea into a tangible product at the minimum development budget.

Start-up-080: Metge

1. Name of the Company/Start-up: Metge

2. Highlights of the Company/Start-up:

Product/Service	: IoT enabled Medical ERP
Investment	: Pre-Seed
Employment generated	: Nil
Commercialized or not	: Under MVP Stage

3. Impact it will create (including social impact, if any)

- 24*7 Patient Monitoring through app/software
- IoT enabled smart hospitals
- Creating Data sets for insurance company

4. Current Status of the Company/Start-up

- MVP Stage

5. Student team Details

- Ashishi Soni
- Aditya Saraswat

6. Establishment date of the Company/Start-up/Commercialization:

- June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- Due to more patients and less staff in hospitals the problem of monitoring the patient arises. Metge's software and IoT devices will help staff to monitor the patient supplies like oxygen and IV fluid in real-time and in hand.

Start-up-081: Amaletix Infotech Private Limited

1. Name of the Company/Start-up: Amaletix Infotech Private Limited (Registered address is 1703, Tower CB-2 Supertech Capetown Sector 74, Noida Gautam Buddha Nagar UP 201301 IN)

2. Highlights of the Company/Start-up:

Product/Service	: Computer and related activities
Investment	: Rs. 06.00 Lakhs (Authorised Capital Rs. 5,00,000 + Paid Up Capital 1,00,000)
Employment generated	: NA
Commercialized or not	: NA

3. Impact it will create (including social impact, if any)

- NA

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Rajiv Kumar Mishra

6. Establishment date of the Company/Start-up/Commercialization:

- Corporate Identification Number is (CIN) U72900UP2021PTC153516 and its registration number is 153516.

7. One paragraph on the Company/Start-Up covering all the points.

- The company has CIN U72900UP2021PTC153516 is Private company incorporated with MCA on 2021-10-07. Amaletix Infotech Private Limited is listed in the class of Private company and classified as Non-govt company. This company is registered at Registrar of Companies(ROC), RoC-Kanpur with an Authorized Share Capital of ₹ 500000 and paid-up capital is ₹ 100000. The company directors/key management personal name are Rajiv Kumar Mishra – Director, Hanumant Singh Shekhawat – Director. Amaletix Infotech Private Limited company registration number is 153516 and its Corporate Identification Number(CIN) provided from MCA is U72900UP2021PTC153516. As per MCA records Amaletix Infotech Private Limited is involved in activities such as (Computer and related activities) Other computer related activities [for example maintenance of websites of other firms/ creation of multimedia presentations for other firms etc.].

Start-up-082: M/S. Technogic

1. Name of the Company/Start-up: M/S. Technogic

2. Highlights of the Company/Start-up:

Product/Service	: Smart stick for blind people
Investment	: Rs. 02.00 Lakhs
Employment generated	: 02
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

- The affordable smart blind stick helps visually impaired to guide the user to respective destination and avoiding to collide with the obstacles.

4. Current Status of the Company/Start-up

- Product Development

5. Student team Details

- Mr Krupal Jivrajani
- Mr Bhavik Kalpesh

6. Establishment date of the Company/Start-up/Commercialization:

- 22/05/2021

7. One paragraph on the Company/Start-Up covering all the points.

- Technogic is a startup developing an innovative smart Blind stick which is designed for visually disabled people that improves navigation for visually disabled people. We here propose an advanced blind stick that allows visually challenged people to navigate with ease using disruptive technologies

Start-up-083: Fantom Technocrats LLP

1. Name of the Company/Start-up: Fantom Technocrats LLP

2. Highlights of the Company/Start-up:

Product/Service	: Augmented, Virtual Reality & Digital Twin
Investment	: Rs. 02.00 Lakhs
Employment generated	: 02
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

- It will provides the immersive experience to the learners

4. Current Status of the Company/Start-up

- Product Development

5. Student team Details

- Mr. HetavSamani
- Mr. Bhargav Bagda

6. Establishment date of the Company/Start-up/Commercialization:

- 24/11/2021

7. One paragraph on the Company/Start-Up covering all the points.

- FANTOM TECHNOCRATS LLP is a limited liability partnership business entity registered under The LLP Act, 2008. Its incorporate as LLP limited company dated 2021-11-24. It's registered for pre-defined objects or activity Computer and related activities as per Activity Code mentioned under Company CIN Number AAZ-5979.
- Fantom Technocrats develops Interactive Virtual reality environment for Industrial training and visualization purpose enabling institutes and industries to provide training with high level of safety standards. We also provide service on Industrial Internet of Things, Digital twinning and Augmented Reality based solutions for Mechanical, Architecture and civil.

Start-up-084: Khumb Organics

1. Name of the Company/Start-up: Khumb Organics

2. Highlights of the Company/Start-up:

Product/Service	: Mushroom and its Farming
Investment	: Rs. 02.00 Lakhs
Employment generated	: 02
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

- Mushrooms demonstrate a great impact on agriculture and the environment, and they have great potential for generating a great socio-economic impact in human welfare on local, national, and global levels

4. Current Status of the Company/Start-up

- Awaiting for ROC

5. Student team Details

- i. Karishma Baria
- ii. dhaval van
- iii. Chinmaypitroda
- iv. Ruchita Rathod

6. Establishment date of the Company/Start-up/Commercialization:

- Ongoing company registration

7. One paragraph on the Company/Start-Up covering all the points.

- Khumb organics cultivates the Mushrooms by organics farming technique since it's has been considered as a delicacy. Mushrooms are being used as food since time immemorial. From the nutrition point of view mushrooms are placed between meat and vegetables. It is rich in protein, carbohydrate and vitamins. Mushrooms are low in caloric value and hence are recommended for heart and diabetic patient

Start-up-085: IRA Medical Technology Private Limited

1. Name of the Company/Start-up: IRA Medical Technology Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Device for sleep apnoea
Investment	: Rs. 02.00 Lakhs
Employment generated	: 02
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- It will provide a unique solution to patients suffering from sleep apnoea

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Vikram Belkhode

6. Establishment date of the Company/Start-up/Commercialization:

- 31 August 2021

7. One paragraph on the Company/Start-Up covering all the points.

- IRA Medical Technology Private Limited is a start-up incorporated for the product Device for sleep apnoea by Vikram Belkhode on 31 August 2021

Start-up-086: Precisurg Private Limited

1. Name of the Company/Start-up: Precisurg Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Reusable and adjustable surgical cutting Guide for fibula free flap surgery in Mandibular reconstruction
Investment	: Rs. 05.00 Lakhs
Employment generated	: 02
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- A Reusable and adjustable solution for mandibular reconstruction surgeries and will save precious surgical time & costs

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Sandeep Dahake

6. Establishment date of the Company/Start-up/Commercialization:

- 24 July 2021

7. One paragraph on the Company/Start-Up covering all the points.

- Precisurg Private Limited is a start-up incorporated for the product Reusable and adjustable surgical cutting guide for FIBULA FREE FLAP SURGERY in mandibular reconstruction Sandeep Dahake on 24 Jul 2021

Start-up-087: Visgenic Analytica LLP

1. Name of the Company/Start-up: Visgenic Analytica LLP

2. Highlights of the Company/Start-up:

Product/Service	: Smartphone enabled Urinary Tract Infection detection, using colorimetric Analysis of urine dipstick
Investment	: Rs. 01.00 Lakhs
Employment generated	: 01
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- It will be point of care invitro diagnostic device for UTI screening. It will help a lot of patients suffering from UTIs & related issues

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Jayalakshmi Jayakumar

6. Establishment date of the Company/Start-up/Commercialization:

- 07 June 2021

7. One paragraph on the Company/Start-Up covering all the points.

- Visgenic analytica LLP is a start-up incorporated for the product Smartphone enabled Urinary Tract Infection detection, using colorimetric analysis of urine dipstick by Jayalakshmi Jayakumar on 07 June 2021

Start-up-088: Humen Edutech LLP

1. Name of the Company/Start-up: Humen Edutech LLP

2. Highlights of the Company/Start-up:

Product/Service	: An apparatus for facilitating Ultrasound Based soft
Investment	: Rs. 01.00 Lakhs
Employment generated	: 02
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- The device will help physiotherapists to provide better treatment to the patients and better outcome

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Waqar Naqvi

6. Establishment date of the Company/Start-up/Commercialization:

- 05 August 2021

7. One paragraph on the Company/Start-Up covering all the points.

Humen Edutech LLP is a start-up incorporated for the product an apparatus for facilitating Ultrasound based soft by Waqar Naqvi on 05 August 2021

Start-up-089: Two Decimals Pvt. Ltd.



1. Name of the Company/Start-up: Two Decimals Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: BhuGoal
Investment	: Rs. 20.00 Lakhs
Employment generated	: 10
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- The product gives more accurate information about the weather conditions which helps to schedule events and activities at local level.
- The local weather prediction is quite helpful for farmers to reduce crop damage
- A reasonably economical product for commercialization

4. Current Status of the Company/Start-up

- The product is in industrial development stage

5. Student team Details

- i. Rahul Kinra

6. Establishment date of the Company/Start-up/Commercialization:

- 19-Oct-19

7. One paragraph on the Company/Start-Up covering all the points.

- Too Decimal Private Limited provides precise weather monitoring at the local level. It augments traditional weather data sources by collecting millions of data points from multiple sources. The company has a vision to Empower people and businesses to outsmart weather events by planning and taking prior actions. The start-up serves the sectors like Municipalities, Aviation, Construction, landscaping, Mining etc

Start-up-090: Active WTR Wellness Beverage LLP

1. Name of the Company/Start-up: Active WTR Wellness Beverage LLP

2. Highlights of the Company/Start-up:

ACTIVE WTR

Product/Service : Active Cap
Investment : Rs. 02.50 Lakhs
Employment generated : No
Commercialized or not : No

3. Impact it will create (including social impact, if any)

- It reduces the wastage of beverages.
- It will bring change in healthcare sector

4. Current Status of the Company/Start-up

- The startup is in development stage

5. Student team Details

- i. Pintu Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 10-May-21

7. One paragraph on the Company/Start-Up covering all the points.

Active Wtr Wellness Beverage Llp is a Limited Liability Partnership firm incorporated on 10 May 2021. It is registered at Registrar of Companies, Jharkhand. Active Wtr is a beverage packaging startup. The company's concept is to develop the world's best infusion cap technology. The Activecap helps other companies from various segments to expand their product lines and generate growth using its unique solutions. It is a revolutionary way to store and protect vital ingredients, till consumption

Start-up-091: Core Idea Innovations Pvt. Limited

1. Name of the Company/Start-up: Core Idea Innovations Pvt. Limited

2. Highlights of the Company/Start-up:

Product/Service	: Virtual Reality Based Home Eye Testing Device for Measuring Spectacle Power of the Eye
Investment	: Rs. 02.30 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Most of the rural places in India have no eye care facilities. The device will provide the facility of tele-eye consultation and tele-eye testing

4. Current Status of the Company/Start-up

- Active, the startup has Minimal buyable product ready and is in developmental stage

5. Student team Details

- i. Maheswari Srinivasan

6. Establishment date of the Company/Start-up/Commercialization:

- 11-Nov-21

7. One paragraph on the Company/Start-Up covering all the points.

- Core Idea Innovations Private Limited classified as Non-Govt. Company and registered at Registrar of Companies (ROC), Tamil Nadu. The product is a virtual reality-based device that can connect clinicians and patients through cloud systems. The device tests the spectacle power of the eye and sends the prescription remotely. It helps the patients to reach out the ophthalmologists easily across the countries. The company is in its initial stage and product is ready for final testing and launch in market

Start-up-092: GFF Innovations Private Limited



1. Name of the Company/Start-up: GFF Innovations Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Rodent Surgical Table, Moksha—Bio fuel Convertor
Investment	: Rs. 25.00 Lakhs
Employment generated	: 02
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- The table is equipped with advanced facilities as per the surgeon's requirement.
- The design's significant commercial value will provide preclinical researchers with a better option for starting rodent surgeries with the 100 percent efficiency, and reduce complications.

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- Varinder Singh

6. Establishment date of the Company/Start-up/Commercialization:

- 29-May-18

7. One paragraph on the Company/Start-Up covering all the points.

- GFF Innovations Private Limited is registered and incorporated in May 2018. The product Rodent surgical tables used for animals' examinations or surgery by a veterinary surgeon or preclinical researchers are in developmental stage. The present design is an improved surgical table and efficient with facilities as it is made up of stainless-steel surface with heating pads, LED lamp, tool tray, waste drainage pipe, beaker space (250 ML and 100 ML), animal tissue holder, with an automated temperature regulator as per the need of physiological demand and an automated position setter for the ease of the surgery. The company is planning to attract various companies and researchers for the investment with the proposed design



1. Name of the Company/Start-up: Dagriation Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Brill-Tab Edukit (Intelligent Urea Spreading Machine)
Investment	: Rs. 07.00 Lakhs
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Brilltab Edukit provides electronic and advanced device for visually impaired children. It promotes lifelong learning opportunities.
- Intelligent Urea Spreading Machine' will help to reduce the consumption of in-organic fertilizers

4. Current Status of the Company/Start-up

- The start up is in developmental stage

5. Student team Details

- i. Virender Kadyan
- ii. Puneet Bawa

6. Establishment date of the Company/Start-up/Commercialization:

- 12 July 2019

7. One paragraph on the Company/Start-Up covering all the points.

- Dagriation Solutions Private Limited is a Private incorporated in July 2019 and classified as Non-government company It is registered at Registrar of Companies, Delhi. It is involved in Software publishing includes production, supply and documentation, other applications software, computer games software for all platforms, consultancy and supply. Consultancy includes providing the best solution in the form of custom software after analyzing the users' needs and problems

Start-up-094: Ramanuj Technologies



1. Name of the Company/Start-up: Ramanuj Technologies

2. Highlights of the Company/Start-up:

Product/Service	: Video Laryngoscope
Investment	: No
Employment generated	: No
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- A low cost health care instrument which is easy operates for health professionals

4. Current Status of the Company/Start-up

- Active, The start-up is in commercializing stage

5. Student team Details

- i. S. N. Panda

6. Establishment date of the Company/Start-up/Commercialization:

- 19-Jul-2019

7. One paragraph on the Company/Start-Up covering all the points.

- Ramanuj Technologies Private Limited is a 2 years 10 months old Private Company incorporated on 19 Jul 2019. Its registered office is in Ambala, Haryana, India. The Company's status is Active

Start-up-095: Sustainergic Tech Private Limited

1. Name of the Company/Start-up: Sustainergic Tech Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Hybrid T Brewer
Investment	: Rs. 07.00 Lakhs
Employment generated	: Hired freelancer
Commercialized or not	: No



3. Impact it will create (including social impact, if any)

- Solar based wending machine will bring the revolution in the market.
- Economical and easy to operate machine, beneficial to small vendors

4. Current Status of the Company/Start-up

- The startup is in developmental stage

5. Student team Details

- i. Prateek Srivastava

6. Establishment date of the Company/Start-up/Commercialization:

- 17 Feb 2021

7. One paragraph on the Company/Start-Up covering all the points.

- Sustainergic Tech Private Limited is a Private incorporated on 17 February 2021. It is classified as Non-govt Company and is registered at Registrar of Companies. Its authorized share capital is Rs. 100,000. Prateek Srivastava is the director of Sustainergic Tech Private Limited. It is involved in hot beverage wending machines. The company is developing a Smart tea/coffee brewer which works on both electrical energy and solar energy

Start-up-096: Tronix



1. Name of the Company/Start-up: Tronix

2. Highlights of the Company/Start-up:

Product/Service	: Pro Comp Projector
Investment	: Rs. 07.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Richard R
- ii. Kamatam Krishna Kaanth
- iii. Bharath A
- iv. Chinnakotla Sreeharsha

6. Establishment date of the Company/Start-up/Commercialization:

- 21.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

Our start up idea is to design and manufacture Computer Projector. It is designed to give dual performance. It has inbuilt WIFI and Bluetooth for Wireless Connection. It won't consume high electric current like desktop and projector. A mobile adapter is enough to power up this projector. It is light weighted we can carry this product anywhere.

Vision

- To Design, Inspire and Promote PRO-COMP Projector to make Productive and Successful Business

Mission

- To have better Ads in all social Media, Free demonstration to all retailer shops and schools and colleges, Highlight and Motivate peoples to showcase the features of our product as compared with existing product.
- To have positive impact to Customers to practise for better quality of Services
- To develop lasting customer relations by providing quality PRO-COMP Projector

Start-up-097: Green D Co



1. Name of the Company/Start-up: Green D Co

2. Highlights of the Company/Start-up:

Product/Service	: Development of A Natural Soft Drink Incorporated with Betel and Sarsaparilla Extracts
Investment	: Rs. 04.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- i. Indhu.S
- ii. Deepika.A
- iii. Jeevitha.S

6. Establishment date of the Company/Start-up/Commercialization:

- 02.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

The proposed drink is a lemon-based drink incorporated with betel and sarsaparilla extracts. The addition of betel and sarsaparilla will make the drink have medicinal properties such as anti-diabetic, anti-carcinogenic, anti-inflammatory, anti-microbial, anti-diuretic, and indigestion preventive. It will be a refreshing, post/pre-meal soft drink with a well-known and acceptable taste profile suitable for all age groups. It aims to develop products for the health of society and also to preserve and document our natural traditional sources

Vision:

- Taking inspiration from our traditional way of life for the betterment of our future generations and to perceive people's fondness to create a better standard of living naturally.

Mission:

- To refresh the world naturally
- To create a healthy and refreshing life by joining hands with the nature.

Start-up-098: Pops Soup Mix



1. Name of the Company/Start-up: Pops Soup Mix

2. Highlights of the Company/Start-up:

Product/Service : Water Melon Seed Instant Soup Mix
Investment : Rs. 03.00 Lakhs
Employment generated : Under Process
Commercialized or not : Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Denuja S

6. Establishment date of the Company/Start-up/Commercialization:

- 10.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

Start up idea is to design and manufacture soup product which is developed from waste food, under the process of waste food management. Watermelon Seed Instant soup mix, specially made for children, soup lovers and for parents who are interested in serving their children both healthy and tasty food product. This product is prepared under all rules and regulations, without adding heavy flavourings. And By this product we are going to create awareness about reducing plastic usage by covering our product by cloth covering from our company and by attaching one seed per packet, we are going to enhance growing of plants. Innovations are utilizing the waste food product to a value added product.

Vision:

- To develop value added products from food waste thus to help in food waste management.

Mission:

- To develop good quality and healthy products from the waste and by products of food industry.
- To create awareness on planting trees and to help in reducing plastic usage

Start-up-099: Nano Waters



1. Name of the Company/Start-up: Nano Waters

2. Highlights of the Company/Start-up:

Product/Service	: Water Purification System Using Nanomaterials
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Niranjan Sahadev
- ii. Hari Krishnan S
- iii. Vishnu Biju
- iv. Don Martin V J

6. Establishment date of the Company/Start-up/Commercialization:

- 21.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

Our start up idea is to manufacture a product which desalinates as well as purifies sea water into pure drinkable water. A product which purifies water to levels that modern day purifiers could not and that to at an affordable price. Not only sea water it can purify water containing toxic substances, nuclear wastes etc. It utilizes a novel Graphene Oxide (GO) desalination technique to desalinate and purify sea water, and our aim is every household must have access to pure drinkable water.

Vision:

- To deliver pure drinking water to all households.

Mission:

- To deliver the quality water through modern technology.
- To create awareness on energy resources available

Start-up-100: Resilient Organic Facemask



1. Name of the Company/Start-up: Resilient Organic Facemask

2. Highlights of the Company/Start-up:

Product/Service	: Organic face mask with silver nano Particles
Investment	: Rs. 02.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- Akhil Ajay
- Nafath M.

6. Establishment date of the Company/Start-up/Commercialization:

- 27.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

Resilient Organic Facemask is a startup company founded by Mr. Nafath M in 2022. It is a organic mask manufacturing company. Our motive is to develop the best quality of organic masks maintaining the highest quality and hygienic standards.

Vision:

- To see a world enhanced production against pandemic situations.

Mission:

- To prepare reusable and eco-friendly face mask with advanced microbial resistant technic by using silver nano particles and to deliver quality masks on every time at competitive prices.

Goals:

- To manufacture and distribute of reusable and safe face mask.
- To provide quality products and excellent customer service.

Start-up-101: Gadifem



1. Name of the Company/Start-up: Gadifem

2. Highlights of the Company/Start-up:

Product/Service	: Women Safety Watches
Investment	: Rs. 05.50 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- Gayathri L
- Divya Bharathi K

6. Establishment date of the Company/Start-up/Commercialization:

- 22.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

In our Country, even though it has super power and an economic development, but still there are many crimes against women. The atrocities against the women can be brought to an end with the help of our product “GADIFEM” This watch device is a security system, specially designed for women in distress. This watch is specially made with camera, Alarm, transmitters for sending messages, sharing photos; sharing location just in one button to crime and nearby police station and it is also specially made for handicaps. We can also add pepper spray and needle in one button for girl’s safety. Finally it’s an “ALL IN ONE” security device which has all the features in one click

Vision:

- To design and manufacture a world class smart wearable product with high quality trend setting watches.

Mission:

- To develop and launch new models of smart watches with contemporary styling.
- To mould innovative business model that supports production and marketing.
- To strengthen GADIFEM brand and create lasting impression on the customer

Start-up-102: Plantango



1. **Name of the Company/Start-up:** Plantango

2. **Highlights of the Company/Start-up:**

Product/Service	: Usefulness of Banana waste in Manufacturing Value added Bio-products
Investment	: Rs. 02.50 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. **Impact it will create (including social impact, if any)**

- Nil

4. **Current Status of the Company/Start-up**

- DPIIT Registration Under Process

5. **Student team Details**

- i. Likhitha K K
- ii. Dharanishvar R

6. **Establishment date of the Company/Start-up/Commercialization:**

- 09.05.2022

7. **One paragraph on the Company/Start-Up covering all the points.**

Banana is one of the important fruit crops grown almost in every state of India. After harvesting it generates huge quantity of waste in the form of pseudostem, which are cut in and Left in the Fields. On an average about 60 to 80 tones/ha of pseudostem are thrown away annually. Disposal of pseudostem in a routine ways causing environmental problems and making ecosystem imbalance. Therefore, an effective and economic way of reducing environmental problem by extraction of fibre and production of value added products like nursery trays and fertilizer from banana waste (pseudo stem) is ideal. In connection with this, fibre based seedling tray, vermicompost and fertilizers will be prepared and that could be effectively marketed due to its consistent size, easily degradable and it wont produce objectionable odour.

Vision:

- To assist the people by manufacturing the sustainable environment friendly organic products from waste that serves and safeguards Mother Nature.

Mission:

- To broaden the concept of green technology.
- To uplift the future of organic products around the cluster area

Start-up-103: Prakenav's



1. **Name of the Company/Start-up:** Prakenav's

2. **Highlights of the Company/Start-up:**

Product/Service	: Bioenzymatic Healthcare Products
Investment	: Rs. 03.50 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. **Impact it will create (including social impact, if any):** Nil

4. **Current Status of the Company/Start-up:** DPIIT Registration Under Process

5. **Student team Details**

- i. Karthika S P
- ii. Dixith K A
- iii. Gokul S

6. **Establishment date of the Company/Start-up/Commercialization:**

- 09.05.2022

7. **One paragraph on the Company/Start-Up covering all the points.**

Enzymes are essential components of animals, plants, and microorganisms, due to the fact that they catalyze and co-ordinate the complex reactions of cellular metabolism. Up until the 1970s, most of the commercial applications of enzymes involved animal and plant sources. Bulk enzymes were generally only used within the food-processing industry, and enzymes from animals and plants were preferred, as they were considered to be free from the problems of toxicity and contamination that were associated with enzymes of microbial origin. Bio-enzymatic production is the fermented product of organic substances (solid fruit wastes) yielding by the secondary metabolites known as bioactive compounds or phytochemicals. This leads to an innovative approach to the production of enzymes over the conventional methods that require costly solvents and possible degradation of heat-labile compounds.

Vision:

- To create a better life for people and to make the earth a better place to live.

Mission:

- To produce and sell high quality household healthcare products that will be cherished and will make life healthy without using any chemicals.

Start-up-104: Musa Foods



1. Name of the Company/Start-up: Musa Foods

2. Highlights of the Company/Start-up:

Product/Service	: Incorporation of raw banana peel powder in the preparation of Healthy Millet Bar
Investment	: Rs. 04.20 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any): Nil

4. Current Status of the Company/Start-up: MSME Registration Under Process

5. Student team Details

- i. Mahalakshmi G
- ii. Liberna B
- iii. Kousiga A
- iv. Sivasankari B

6. Establishment date of the Company/Start-up/Commercialization:

- 11.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

Our start up idea is to develop a new product based upon millets in which raw banana peel powder is added. This product is a healthy bar in which calcium, fiber can be supplemented to the customers. Apart from new product development, this product also has one advantage, where waste to wealth concept has been applied.

Vision:

- To make our customers friendly and to fulfill their tasty needs.

Mission:

- To reduce the wastage of food from the country.
- To control the environmental issues and establish waste to wealth concept

Start-up-105: Geoxu



1. Name of the Company/Start-up: Geoxu

2. Highlights of the Company/Start-up:

Product/Service	: Enzyme Production for degrading plastic Bag
Investment	: Rs. 04.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any): Nil

4. Current Status of the Company/Start-up: MSME Registration Under Process

5. Student team Details

- i. Hiba
- ii. Rasiya Sulthana.A
- iii. Abhinandini.J

6. Establishment date of the Company/Start-up/Commercialization:

- 28.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

GEOXU, is the company planned to launch on the basis production of enzyme PETase extracted from the microorganism Ideonella sakaiensis by the process of culturing and centrifugation to degrade the polythene to MHET that will later hydrolysed into the monomers. Moreover, this start up emphasizes on the ability of insects gut microbial consortium to degrade synthetic plastic wastes.

Vision:

- To be a vehicle of consciousness in the global market by creating a holistic, sustainable business modality, which inspires, promotes and supports true wellness and respect for all beings and for mother's nature.

Mission:

- To comprehensively highlight the role of microbes, with special emphasis on algae, on the entire plastic biodegradation process focusing on the depolarization of various synthetic plastic types.

Start-up-106: The Solar



1. Name of the Company/Start-up: The Solar

2. Highlights of the Company/Start-up:

Product/Service	: Helical Windmill
Investment	: Rs. 03.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any): Nil

4. Current Status of the Company/Start-up: DPIIT Registration Under Process

5. Student team Details

i. Fowsiya P A

6. Establishment date of the Company/Start-up/Commercialization:

- 28.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

Company deals with the fabrication of a power generation system using wind mill with magnetic levitation. This project is a combination of electrical engineering and sustainable development in developing countries. The goal has been to build a windmill driven to produce power. The turbines convert wind energy into rotary mechanical energy. The wind mill blade is coupled to the gear arrangement and it rotates according to the wind speed. Important point throughout the project that has been kept in thought is to minimize cost and to only use materials that local farmers can get hold of.

Vision:

- To build the best renewable energy company.

Mission:

- Lead the energy transition by providing innovative solutions to our customers.
- Build a culture of excellence by efficient and safe execution of all our projects.
- Maintain the highest standards of quality and sustainability and act responsibly at all times.

Start-up-107: MR Innovations



1. Name of the Company/Start-up: MR Innovations

2. Highlights of the Company/Start-up:

Product/Service	: Smart body temperature, Mask and Facial Recognition detector
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any): Nil

4. Current Status of the Company/Start-up: MSME Registration Under Process

5. Student team Details

i. R. Raghul Prasad

6. Establishment date of the Company/Start-up/Commercialization:

- 02.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

Our start-up idea is to craft a device that is technologically advanced and easily usable for any present or upcoming pandemic period. It is developed to record an employee's face, status of facial mask & body temperature and upload the data to the cloud that will be easily accessible to the company. The main goal is to produce a completely safe automated environment.

Vision:

- To create the MR Innovations aspire to be a preferred value creator for the customers through innovative and efficient electronic manufacturing services.

Mission:

- Committed to provide innovative, mission critical technologies that protect people and communities.
- To create a better everyday life for many people by offering a wide range of well designed, functional products and steadily upgrade the technology and infrastructure so as to meet the customer expectations

Start-up-108: IOTECH



1. **Name of the Company/Start-up:** IOTECH

2. **Highlights of the Company/Start-up:**

Product/Service	: IOT based Smart Water Monitoring System
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. **Impact it will create (including social impact, if any):** Nil

4. **Current Status of the Company/Start-up:** DPIIT Registration Under Process

5. **Student team Details**

- i. Ashik K V
- ii. Praveen G V
- iii. Harindranath G
- iv. Athulya N

6. **Establishment date of the Company/Start-up/Commercialization:**

- 02.05.2022

7. **One paragraph on the Company/Start-Up covering all the points.**

IOTECH focuses on Smart Water Monitoring System (SWMS) which is a cost effective and efficient system designed to monitor and manage quality and quantity of drinking water which makes use of Internet of Things (IoT) technology. The proposed system consists of several sensors to monitor various parameters of water such as Water level, pH, Oxygen level, Turbidity, Temperature, Humidity, etc. This Smart Water Monitoring System (SWMS) is connected to internet using WiFi , so that it can be controlled by its user from anywhere in the world using mobile application or web application, each and every updates are notified to the user.

Vision:

- To become one of the global leaders of providing unique IOT solutions that contribute to make people's lives easier.

Mission:

- To be a fast and flexible partner reflects our needs to be closer to all our clients.
- Collaboration with experienced experts, reliable supply chain, highest technology process models.

Start-up-109: Smart Agrolla



1. Name of the Company/Start-up: Smart Agrolla

2. Highlights of the Company/Start-up:

Product/Service	: Automatic analysis of soil
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Manufacturing Process

5. Student team Details

- i. Kaviya S
- ii. Vennila S
- iii. Dominic Sepastin A
- iv. Jeswin Nijoes A J

6. Establishment date of the Company/Start-up/Commercialization:

- 08.04.2021

7. One paragraph on the Company/Start-Up covering all the points.

Automatic analysis of soil for plant growth: Our start up idea is to design and manufacture a smart soil analysis kit. The product will help farmers to analyze all the important parameters of soil required for planning the cultivation practices and also it will give the recommendations for improving the field conditions. This will help to increase the yield in the farmland. A smart kit which is suitable for all types of soil, so it can be used in all places

Start-up-110: A S Enterprises



1. Name of the Company/Start-up: A S Enterprises

2. Highlights of the Company/Start-up:

Product/Service	: Floor Cleaning Cyborg Wiper
Investment	: Rs. 04.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Unit Development Process

5. Student team Details

- Aiswaryalakshmi M.B
- Salman A

6. Establishment date of the Company/Start-up/Commercialization:

- 06.05.2021

7. One paragraph on the Company/Start-Up covering all the points.

Floor Cleaning Cyborg Wiper: Our start up idea is to design and fabricate product like floor cleaning robot with automatic and vision guided mode that are used in daily purpose and used in developing technology. The proposed cleaner is specially designed for cleaning hospitals, industries, Shopping malls etc. The Cyborg Wiper is an intelligent enough to clean itself using sanitizer. The Cyborg Wiper will detect the obstacles and redirect itself. A robot which is compact in size and low cost, so that it can suitable into hospital and industries

Start-up-111: We care Technologies



1. **Name of the Company/Start-up:** We care Technologies

2. **Highlights of the Company/Start-up:**

Product/Service	: Smart Health Monitor
Investment	: Rs. 03.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. **Impact it will create (including social impact, if any)**

- Nil

4. **Current Status of the Company/Start-up**

- Manufacturing Process

5. **Student team Details**

- Julie Christina
- Tharanish
- Amirtha
- Subha Sarmila

6. **Establishment date of the Company/Start-up/Commercialization:**

- 04.06.2021

7. **One paragraph on the Company/Start-Up covering all the points.**

Smart Health Monitor: The idea is to monitor the patient's health without interfering their everyday activities and without restricting their mobility. This product is used to check **blood pressure, body temperature, ECG, blood oxygen level** and **pulse rate** using **sensors** on a single unit that transfers the data to the cloud servers which can be viewed anytime by the users as well as health care professionals via our health care app instantly. All Analysis will be done and displayed in the **Android App**.

Start-up-112: Lans Flooring



1. Name of the Company/Start-up: Lans Flooring

2. Highlights of the Company/Start-up:

Product/Service	: Manufacturing of Rubber Tile using Waste Rubber
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Manufacturing Process

5. Student team Details

- Akhilraj A R
- Sankari M N
- Ragul P
- Pandiyaraj S

6. Establishment date of the Company/Start-up/Commercialization:

- 15.04.2021

7. One paragraph on the Company/Start-Up covering all the points.

Manufacturing of tile using waste rubber (using shoes outer sole and scrap tyre): Our start up idea is to design and manufacture a rubber tile. By this method of tile making we can minimize waste rubber. It reduces the usage of sand and ceramic products. Reduction in cost of tile manufacturing .It reduces the burning of waste rubber and there by which controls the emission of Carbon-di-oxide. It also reduces the dumping of waste rubber on to the ground which helps in the control of soil pollution and hence improves ground water table

Start-up-113: SFG



1. Name of the Company/Start-up: SFG

2. Highlights of the Company/Start-up:

Product/Service	: Automated Covid 19 Monitoring System
Investment	: Rs. 06.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- PVT Ltd Registration Process

5. Student team Details

- i. K. T. Gokul
- ii. Fabina Meharban
- iii. Shanthini C.
- iv. Shibin V.

6. Establishment date of the Company/Start-up/Commercialization:

- 22.04.2021

7. One paragraph on the Company/Start-Up covering all the points.

Automated Equipment to monitor Mask-wearing, Body temperatures with automatic sanitizer dispenser for public places: Our project focuses to solve the problem of overcrowding especially in public spaces. Help maintain social distancing and allow optional contact tracing inside the workplace in an organization. Social Distancing Monitoring for public spaces and Fast Deployment Simplified Touch Tracing for faster recognising working staff or visitors who have been in touch with an infected colleague. As well as advance mask detection in public places

Start-up-114: DRAAS Global

1. Name of the Company/Start-up: DRAAS Global

2. Highlights of the Company/Start-up:

Product/Service	: Automated soup vending machine
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Manufacturing Process

5. Student team Details

- Akshai krishna S
- Abilash R
- Sourav P V
- Sudarshan G A

6. Establishment date of the Company/Start-up/Commercialization:

- 13.10.2021

7. One paragraph on the Company/Start-Up covering all the points.

Automated soup vending machine: Our start up idea is to design and manufacturing soup vending machine. The main aim of the project is to replace unhealthy soft drinks like Pepsi, coke, 7up etc. So, we planned to introduce healthy tasty soup via vending machine to crowd places like Offices, Malls, Theatres, Restaurant, School and College canteen etc. This project reduces manual work for making mass Production of soup

Start-up-115: RCC Innovations



1. **Name of the Company/Start-up:** RCC Innovations
2. **Highlights of the Company/Start-up:**

Product/Service	: Automatic Livestock Monitor
Investment	: Rs. 04.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process
3. **Impact it will create (including social impact, if any):** Nil
4. **Current Status of the Company/Start-up:** Company Registration Process
5. **Student team Details**
 - i. Chitra G.
 - ii. Chandra Prakash.K
6. **Establishment date of the Company/Start-up/Commercialization:**
 - 20.09.2021
7. **One paragraph on the Company/Start-Up covering all the points.**

Automatic Livestock Monitor: The idea of the project is to develop Automatic livestock barn monitoring system based on wireless communication networks in dairy farms to replace traditional manual data collection. To monitor the vital parameters of a livestock, the Livestock Barn Monitoring System (LBMS) with temperature detector, vital sign detector, three axis measuring device detector and wetness detector has been developed. The system can even be used for analyzing the strain level admire Thermal Humidity Index (THI). The target of this project is to develop an associate to support the Automatic Veterinary System (AVS) in monitoring each livestock and AVS could support the entire veterinary system in Tamilnadu for digital storage of acquired data for research purposes, to spot closest hospitals and to make it convenient for veterinarian. The data acquired consists of the full detail of the animal from birth, medication given to the animal so that the further consulting doctor will refer those detail for clarity and provides necessary medication and immunogenic. The projected module consists of Arduino Uno Microcontroller, Sensors, WI-FI to realize a cattle's sickness, WLAN MODULE is developed to observe the cattle's daily activities

Start-up-116: KH Electronics



1. Name of the Company/Start-up: KH Electronics

2. Highlights of the Company/Start-up:

Product/Service	: Dual Mode Dishwasher
Investment	: Rs. 06.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- PVT Ltd Registration Process

5. Student team Details

- i. Kamaleshwari V
- ii. Hariraj k
- iii. Kishore D
- iv. Hariharan. R

6. Establishment date of the Company/Start-up/Commercialization:

- 19.06.2021

7. One paragraph on the Company/Start-Up covering all the points.

Dual Mode Dishwasher: Our start up idea is to design a Dual Mode Dishwasher. This is very useful for society and Women's. We can able to save water by Dual Mode Dishwasher than normal one. It will be Portable so it can be place in house kitchen and easy to maintain

Start-up-117: SmartAgri



1. **Name of the Company/Start-up:** SmartAgri

2. **Highlights of the Company/Start-up:**

Product/Service	: Smart Agro Sprayer
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. **Impact it will create (including social impact, if any)**

- Nil

4. **Current Status of the Company/Start-up**

- PVT Ltd Registration Process

5. **Student team Details**

- Sanam Siva Krishna Raju
- Penumarthi Hema Sri
- Abbireddy Kiranmayee

6. **Establishment date of the Company/Start-up/Commercialization:**

- 07.07.2021

7. **One paragraph on the Company/Start-Up covering all the points.**

SMARTAGRI ENTERPRISES proposed the Startup idea which is to design and manufacture an intelligent product called Smart Sprayer, which was designed with Machine Learning Technologies. It will adjust its Nozzle Patterns automatically for better focusing and spraying on infected areas effectively, which leads to reduce agrochemical wastages and environmental pollution as well. This is a very useful and demanding product to farmers

Start-up-118: Purna Yesha Entrepreneurs

1. Name of the Company/Start-up: Purna Yesha Entrepreneurs

2. Highlights of the Company/Start-up:

Product/Service	: Vegetable Curry Maker
Investment	: Rs. 03.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process



3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Manufacturing Process

5. Student team Details

- Neetipudi Subash
- G. Mohan Raj

6. Establishment date of the Company/Start-up/Commercialization:

- 26.07.2021

7. One paragraph on the Company/Start-Up covering all the points.

Vegetable Curry Maker: Our start up idea is to design and manufacture products like cooking machine that are used in daily purpose and used in developing technology. To manufacture a machine that helps people cook their food in an easy way and which takes very less time of their daily life. A machine which is compact in size, so that it can fit into house hold purpose

1. Name of the Company/Start-up: Pairme Technologies

2. Highlights of the Company/Start-up:

Product/Service	: Portable Dual Screen Attachments for Laptops
Investment	: Rs. 04.00 Lakhs
Employment generated	: Nil
Commercialized or not	: Nil

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Market Feasibility Process

5. Student team Details

- i. Ujawal K Menon

6. Establishment date of the Company/Start-up/Commercialization:

- 17.04.2020

7. One paragraph on the Company/Start-Up covering all the points.

Portable Dual Screen Attachments for Laptops – A user convenient laptop attachment intended for professional designers and business purpose, proposed project implements dual screen laptop in retractable configuration to handle dual PC Streaming. It also removes the common back pain issues that many laptop users complain while using laptops for long period of time. It implements it by placing the secondary screen the normal line of sight and maintains normal sitting postures. Proposed model can be implemented as individual part compatible with latest laptop models or as a complete new computer assembly

Start-up-120: OrbcruX

1. Name of the Company/Start-up: OrbcruX

2. Highlights of the Company/Start-up:

Product/Service : Soap water filter system with advanced
Compact vessel

Investment : Rs. 04.00 Lakhs

Employment generated : Nil

Commercialized or not : Nil

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Market Feasibility Process

5. Student team Details

- i. Shahrooque Shahjahan
- ii. Midhun Headly Lawrance

6. Establishment date of the Company/Start-up/Commercialization:

- 16.06.2020

7. One paragraph on the Company/Start-Up covering all the points.

SOWAFIS (Soap Water Filtration System) – Soap Water Filtration System (SOWAFIS) provides unique way of filtration processes with clustering up of modern and traditional filtration processes in a reasonable low cost with easy implementation. The filtration methods help to recycle the soapy waste water with removing the contaminating elements and obtain water with sufficient quality to be used to wash the utensils, to reuse the swimming pool water and also for the irrigation purpose

Start-up-121: Lewenholk Technologies

1. Name of the Company/Start-up: Lewenholk Technologies

2. Highlights of the Company/Start-up:

Product/Service	: Advanced Printed Circuit Board (PCB) Printing
Investment	: Rs. 03.00 Lakhs
Employment generated	: Nil
Commercialized or not	: Nil



3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- Market Feasibility Process

5. Student team Details

- Akshay M S
- Suryakanth Shenoi R

6. Establishment date of the Company/Start-up/Commercialization:

- 20.07.2020

7. One paragraph on the Company/Start-Up covering all the points.

Advanced PCB Printing Technology without Etching – PCB is one of the base factors of electronics. Conventionally we print these by marking and etching method. But this method is highly costly, causes pollution, it takes more time to print a single piece, and it makes material wastage also. In our technology we avoid etching process and make the printing faster and cheaper. It causes less pollution and low material wastage

Start-up-122: Rizel Automotive Private Limited

1. Name of the Company/Start-up: Rizel Automotive Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Electric powertrain components including Motor, Controller, and Gearbox
Investment	: Rs. 02.25 Lakhs
Employment generated	: 10
Commercialized or not	: Under Construction Trials

3. Impact it will create (including social impact, if any)

- On a Mission to make Electric Vehicles efficient and affordable. We are developing leading edge Electric Powertrain Technologies with High Efficiency at affordable costs for the Global Automotive Market

4. Current Status of the Company/Start-up

- We have started customer trails with few marquee Indian OEMs and well established startups

5. Student team Details

- i. B. V. N. Madhu
- ii. Karthik Donthula
- iii. Shivam Bhatia

6. Establishment date of the Company/Start-up/Commercialization:

- Establishment date: 19th June 2017

7. One paragraph on the Company/Start-Up covering all the points.

- At Rizel Automotive, we work towards making the world a more efficient consumer of energy. We are a tech company focussed on the R&D of highly efficient and cost-effective electric motors and drives with superior performance for Electric Vehicles. We aspire to be a prominent Automotive supplier by 2023. Having spent 48+months on Research and Development, we have filed several key technology patents addressing the bottle neck challenges of Electric Motors

Start-up-123: Brainwaves Neurorehab Solutions Pvt. Ltd.

1. Name of the Company/Start-up: Brainwaves Neurorehab Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Virtual Reality based stroke rehabilitation for motor impairment using bio / neuro feed back
Investment	: Rs. 03.82 Lakhs
Employment generated	: 1
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- Enable stroke survivors with motor impairments to resume functional level

4. Current Status of the Company/Start-up

- Incorporated as a Startup, funding through NIDHI-Prayaas

5. Student team Details

- Mr. Bhasi Sukumaran
- Mr. Anket Sahoo

6. Establishment date of the Company/Start-up/Commercialization:

- 21/09/2021

7. One paragraph on the Company/Start-Up covering all the points.

- Brainwaves were conceptualized first at the SIIC BMOE Bootcamp held in September 2019. A team of four Engineering students joined the faculty member from the Department of Clinical Psychology, Dr Bhasi Sukumaran, who had proposed a virtual reality based stroke rehabilitation program to address motor impairment in stroke survivors. In February 2000, BrainwaveS was approved for project funding under the NewGen IEDC SRM, sponsored by DST India. Seed money amount of 1,82,853 was provided which was utilised to purchase the equipment required. , BrainwaveS was shortlisted for the Hospital Accelerated Pre-Incubation Program (HAPI) at the Healthcare Technology Incubation Cell (HTIC) of IIT Madras. In August 2021, Brain-

waves was selected for co- incubation with IIT M Incubation Cell along with SIIEC. BrainWaves Neurorehab Solutions Pvt. Ltd was incorporated in September 2021 and the company signed MoUs with IIT MIC and SIIEC regarding the incubation process. The first employee of BrainwaveS is one of the students who had first joined the startup at the time of conception at the bootcamp and who had subsequently graduated, Mr. Aniket Sahoo officially joined on 21 January 2022. BrainwaveS applied for the NIDHI PRAYAS grant under the mentoring of the incubation program and was selected in February 2022 and granted an amount of Rs 7, 00,000. The first tranche payment of Rs. 2, 00,000 was received on 29 April, 2022. Brainwaves entered into an agreement with NUER Industries on 24 May, 2022 for the development of the VR content for the project. Currently, work is ongoing for the development of the first prototype of the VR based stroke rehabilitation program, after obtaining Institutional Ethics Committee approval for the design and development of the same

Start-up-124: Climec Labs

1. Name of the Company/Start-up: Climec Labs

2. Highlights of the Company/Start-up:

Product/Service	: Air purifier
Investment	: Rs. 01.70 Lakhs
Employment generated	: 2
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- We will be helping to bring Carbon-di-Oxide (CO₂) levels in our atmosphere down in order to put a pause and in the future revert back the effect of global warming and climate change on our planet's environment.
- Our single scaled-up model can capture Carbon-di-Oxide worth of 2500 trees on a daily basis which amounts to up to 25 tonnes of CO₂ captured by one of our models.
- Initially, the domestic model will be cleaning the air by getting rid of various harmful components present in the air ranging from PM_{2.5}, PM₁₀, VOC to other harmful bacteria by using a unique and customisable combination of inorganic filters(this can be selected by the customer on the basis of their needs and includes HEPA, Activated Carbon, Zirconium, and Bio filter) and then capturing 2.8 grams of Carbon-di-Oxide on a daily basis(when placed in a room with CO₂ air) and producing 25 trees worth of oxygen for the users. We have calculated the efficiency of this model to be 82.01 per cent. The domestic model will assist us in creating awareness regarding climate change among people and helping them take a step in the direction of climate conservation while using our product, and also sequestering excess CO₂ accumulated in rooms and offices while providing oxygen-rich air for themselves and their loved ones.
- We are yet to develop a prototype for the scaled-up model and study its exact impact as this might require government permission to set up in public places

4. Current Status of the Company/Start-up

- Incorporated

5. Student team Details

- i. Inderan Kannan
- ii. Atul John Abraham

6. Establishment date of the Company/Start-up/Commercialization:

- 20 June 2022

7. One paragraph on the Company/Start-Up covering all the points.

Problem we are Solving

- i. Global CO₂ emissions as of 2021 are at 1.5 Gigatonnes.
- ii. Chronic Health Hazard due to breathing polluted air and air with a high concentration of CO₂ found inside metropolitan households which were found to be as high as 3,900 parts per million (ppm)[DK1] globally
- iii. Health problems can be caused by exposure to CO₂ levels as low as 1,000 parts per million (ppm) even for an hour or two.[DK2]
- iv. Deteriorating indoor air quality, and increase in carbon emissions leading to climate change and global warming.

Solution that we offer

The domestic model of our air purifier contains a unique carbon capture technology which uses biofilters to convert carbon-di-oxide in the atmosphere into oxygen, thus solving the air quality problem for the customer base that exists.

Customer Base:

This consists of our Domestic air-purifier market.

- Financially middle class and better-to-do families (Annual income of 7000\$ and above) [DK3] and different company's offices.
- People Suffering from ailments caused by breathing polluted air.
- Residents of Urban areas which account for approximately 900million people globally.[DK4]
- Belonging to the age group of 22-65.[DK5]

The cost price of the air purifier that we are building will range between \$200-\$250 USD (one-time investment) and the annual maintenance charges will range between \$29-\$69(depending on the location of the customer and choose package of service). In the long run, we plan to have tie-ups with various industries producing concentrated Carbon-di-Oxide (for eg. cement companies and breweries) and build a strong working relationship with the central and state government of various countries to install the scaled-up model of our air purifier in public places of metropolitan cities to deliver free clean and Oxygen-rich air for everyone, all this while removing/scrubbing Carbon di Oxide from the air In India (or in the world) ?

Start-up-125: Pond Skimmer

1. Name of the Company/Start-up: Pond Skimmer

2. Highlights of the Company/Start-up:

Product/Service	: Pond Skimmer - filter
Investment	: Rs. 50,000
Employment generated	: NA
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

UAM number (UDYAM Registration Number) is UDYAM-TS-31-0000741. Water gets polluted because there is no covering material. It takes 3 hours to clean the pond by 6 workers every 15 days. Manually, it's difficult to clean the debris due to unpleasant smell, slippery nature, thorns in the pond. Filter equipment is not available. We designed a product which removes the dust particles from water and cleans the ponds. So, we can reduce the effort for the workers in cleaning the pond. It should work efficiently and satisfies the user. The main problem a pond can face is the buildup of organic material. Organic material includes leaves, sticks, grass, fish waste or anything else that can decay over time. As organic material sinks to the bottom of the pond and decays, ammonia is produced as part of the decaying process. High levels of ammonia are bad for a pond ecosystem and are highly toxic to fish. The first step in preventing ammonia build up is to trap floating organic debris before it can sink and decay. This is where a skimmer comes in.

4. Current Status of the Company/Start-up

- Will start product production and commercialization

5. Student team Details

- i. M Lakshmi
- ii. M Veda Sreshta
- iii. P Bindhu Sree

6. Establishment date of the Company/Start-up/Commercialization:

- 25/02/2020

7. One paragraph on the Company/Start-Up covering all the points.

- Water gets polluted because there is no covering material. It takes 3 hours to clean the pond by 6 workers every 15 days. Manually difficult to clean the debris due to unpleasant smell, slippery nature, thorns in the pond. Filter equipment is not available. We designed a product which removes the dust particles from water and cleans the ponds. So, we can reduce the effort for the workers in cleaning the pond. It should work efficiently and satisfies the user

Start-up-126: Eatrightly Services Private Limited

1. Name of the Company/Start-up: Eatrightly Services Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Eatrightly Services Health products
Investment	: Rs. 01.00 Lakh
Employment generated	: NA
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- The startup works in human health activities

4. Current Status of the Company/Start-up

- Will start product production and commercialization

5. Student team Details

- i. Yerabati Abhigna
- ii. M. Sravya

6. Establishment date of the Company/Start-up/Commercialization:

- 16/07/2019

7. One paragraph on the Company/Start-Up covering all the points.

Eatrightly Services Private Limited is a Private incorporated on 16 July 2019. It is classified as **Non-Govt. Company** and is registered at **Registrar of Companies, Hyderabad**. Its authorized share capital is **Rs. 5,00,000** and its **paid-up capital is Rs. 10,000**. It is involved in Business activities N.E.C. Eatrightly Services Private Limited's Annual General Meeting (AGM) was last held on N/A and as per records from **Ministry of Corporate Affairs (MCA)**, its balance sheet was last filed on N/A. Directors of Eatrightly Services Private Limited are Chandrahas Rahul Cholleti, Sri Charan Reddy Kotha, Suman Naredla, Yerabati Abhigna and Mufteen Ansaar Mohammed. Eatrightly Services Private Limited's **Corporate Identification Number is (CIN) U74999TG2019PTC134119** and its **registration number is 134119**. Its registered address is 3-9-172, Reddy Colony, Warangal TG 506001 IN.

Start-up-127: Cipher10infinity Pvt. Ltd

1. Name of the Company/Start-up: Cipher10infinity Pvt. Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Cipher Generator, 3D Solar
Investment	: Rs. 02.00 Lakhs
Employment generated	: Nil
Commercialized or not	: Under technology transfer/ investor Support

3. Impact it will create (including social impact, if any)

- N/A

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Harshit Kumar Singh

6. Establishment date of the Company/Start-up/Commercialization:

- 22 - 01 - 2019

7. One paragraph on the Company/Start-Up covering all the points.

- Cipher10infinity Industries is a Private Limited company, which was incorporated on 22nd January 2019 .Cipher10infinity Industries Private Limited is classified as Non-Govt and has recently patented two of its innovations - Cipher Generator and 3D solar.

Start-up-128: Self-cleaning Table

1. Name of the Company/Start-up: BigBlare Innovations LLP

2. Highlights of the Company/Start-up:

Product/Service	: Accelerator Enhancer for E-Bikes
Investment	: Rs. 01.00 Lakh
Employment generated	: Nil
Commercialized or not	: Expected to be commercialized by 2023

3. Impact it will create (including social impact, if any)

- N/A

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- Md Samiruddin Ansari
- Shubham Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 03-09-2021

7. One paragraph on the Company/Start-Up covering all the points.

- To carry on the business of manufacturing, uses of replacement parts, spare parts, systems assemblies, accessories, tools implements and other goods services. To designing, buying, selling, reselling, importing, exporting, exchanging, hiring, distributing, supplying, sub-contracting, altering, improving, assembling, cleaning, servicing, reconditioning, renovating. To deal in all types, varieties, models, shapes, sizes, specifications, descriptions, applications, and, articles and things for special purpose machine and all other general components and parts. For general applications and to act as stockiest, franchisers, agents, brokers, lessors, warehouses, wholesalers, retailers, job workers or developing, modifying.

Start-up-129: Testing Thermal glasses

1. Name of the Company/Start-up: Revive EV LLP

2. Highlights of the Company/Start-up:

Product/Service : Tadpole E Mobility

Investment : Rs. 01.00 Lakh

Employment generated : Nil

Commercialized or not : Expected to be Commercialized by 2023

3. Impact it will create (including social impact, if any)

- N/A

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Nidhi Sharma

6. Establishment date of the Company/Start-up/Commercialization:

- 01-09-2021

7. One paragraph on the Company/Start-Up covering all the points.

- Revive EV is a Limited Liability Partnership established on 1st September 2021 working on various business activities like innovations related to latest Electric Vehicle technologies. In second year of NewGen IEDC Ms. Nidhi Sharma, Founder and Director of Revive EV LLP has successfully make a prototype of Tadpole E Mobility(E Trike) and now is in talks for investor support.

Start-up-130: Automatic Shoe Polish machine

1. Name of the Company/Start-up: Deinococcus Technologies LLP

2. Highlights of the Company/Start-up:

Product/Service : Fully Automatic Show Polish Rack

Investment : Rs. 01.00 Lakh

Employment generated : Nil

Commercialized or not : No

3. Impact it will create (including social impact, if any)

- N/A

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- Manas Sonwane
- Subham

6. Establishment date of the Company/Start-up/Commercialization:

- 24-09-2021

7. One paragraph on the Company/Start-Up covering all the points.

Deinococcus Technologies is a Limited Liability Partnership established on 24th September 2021. It carries out business activities like manufacturing, designing, buying, exchanging, hiring, distributing, supplying, sub-contracting, altering, improving, assembling, cleaning, servicing, reconditioning, renovating, developing, modifying, finishing of automated/ semi-automated/ robotic products, as well as for general application for commercial and non-commercial use, in India and abroad.

Start-up-131: Mechro Technology LLP

1. Name of the Company/Start-up: Mechro Technology LLP

2. Highlights of the Company/Start-up:

Product/Service	: Fully Automatic Show Polish Rack
Investment	: Rs. 01.00 Lakh
Employment generated	: Nil
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- N/A

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- Yash Kumar
- Tushar Verma

6. Establishment date of the Company/Start-up/Commercialization:

- 03-12-2021

7. One paragraph on the Company/Start-Up covering all the points.

Mechro Technology LLP is a Limited Liability Partnership established on 03 December 2021. It carries out business in the field of manufacturing, assembling, selling, reselling, importing, exporting of automated/ semi-automated/ robotic products, as well as for general application for commercial and non-commercial use, in India and abroad. Yash Kaumar and Tushar Verma, Founder and Directors of Mechro Technologies LLP are in talks with investors for fund support.

Start-up-132: Smart Down Rod

1. Name of the Company/Start-up: Protovilla LLP

2. Highlights of the Company/Start-up:

Product/Service	: Milk spill control unit, Continuous Variable Generator
Investment	: Rs. 02.00 Lakhs
Employment generated	: Nil
Commercialized or not	: Expected commercialization by 2022

3. Impact it will create (including social impact, if any)

- N/A

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Jeevesh Gupta
- ii. Syed Yusuf Amin
- iii. Vaibhav Kumar Yadav

6. Establishment date of the Company/Start-up/Commercialization:

- 27-01-2022

7. One paragraph on the Company/Start-Up covering all the points.

- Protovilla is a Limited Liability Partnership established on 27th January 2022. It carries out business activities of various domains like Innovation, Engineering, Research and Development, Prototyping and carry o the business of providing solutions to industrial engineering problem, product design such as Household products and appliances, automobile Industries, Renewable Energy products.

Start-up-133: 3D solar

1. Name of the Company/Start-up: MyDigitalDudes LLP

2. Highlights of the Company/Start-up:

Product/Service	: 3D solar
Investment	: Rs. 02.00 Lakhs
Employment generated	: Nil
Commercialized or not	: Expected commercialization by 2022

3. Impact it will create (including social impact, if any)

- Increase the efficiency solar panels significantly
- Cost economic decentralized micro rooftop solar plants

4. Current Status of the Company/Start-up

- MVP in process and soon Pilot Project will start

5. Student team Details

- i. Dilip Thakur
- ii. Ayushi Agarwal

6. Establishment date of the Company/Start-up/Commercialization:

- 01 April 2021

7. One paragraph on the Company/Start-Up covering all the points.

3D solar is an innovative method to enhance the efficiency of solar panels. The sunlight passes through the fresnel lens in a concentrated form in a decahedral box, where the solar panels are placed inside. By refracting and reflecting from one to another panel the entire system gives the efficiency more than 40%.

Start-up-134: Biodegradable coating based solution

1. Name of the Company/Start-up: Sun Tree LLP

2. Highlights of the Company/Start-up:

Product/Service	: Biodegradable coating based solution
Investment	: Rs. 02.00 Lakhs
Employment generated	: Nil
Commercialized or not	: Expected commercialization by 2022

3. Impact it will create (including social impact, if any)

- This solution can be used many times upon the devices in order to make them non-sticky.
- This solution can be used many times upon the devices in order to make them non-sticky again

4. Current Status of the Company/Start-up

- First Prototype Developed, Second Prototype in Progress

5. Student team Details

- i. Vivek Singh
- ii. Nitesh Kumar Jha

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporation in process

7. One paragraph on the Company/Start-Up covering all the points.

Biodegradable coating based solution: The biodegradable coating solution is used for coating of those items which are supposed to be non sticky like pans electric iron. This solution can be used many times upon the devices in order to make them non-sticky again

Start-up-135: ECOC Private Limited

1. Name of the Company/Start-up: ECOC Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: E-Bikes
Investment	: Nil
Employment generated	: Nil
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- The social and environmental impacts of electric and hybrid vehicles include impacts on mobility and travel, electric performance, recycling of used bicycles and bicycles by transforming into electric vehicles, air pollution and road noise. It is estimated that 80% of the average annual vehicle kilo-meters can be electrified
- Transportation is a major problem that leads to congestion, also causing pollution. The startup will solve both problems at the same time by giving affordable e-bikes to all, which can also be used on a rental basis or by subscription

4. Current Status of the Company/Start-up

- We have 5 pilot customers and currently we are in the stage of product development and planning for Go-To-Market at TBI-IIT Mandi
- The prototype was built and exhibited. However, further analysis of the project discovered increasing the capacity of the e-bike which is being currently carried out

5. Student team Details

- i. Guguloth Vijay Nayak
- ii. Irfan Irshad

6. Establishment date of the Company/Start-up/Commercialization:

- 12th January, 2021

7. One paragraph on the Company/Start-Up covering all the points.

The startup is developing e-bikes that can be subscribed on a rental basis, especially suited for the tourism sector where tourists primarily intent to visit places which can be eased out by the use of e-bikes

Start-up-136: Suresh Saint Pvt. Ltd.

1. Name of the Company/Start-up: Suresh Saint Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Disinfectant Tunnels
Investment	: 11.5 Lac required
Employment generated	: 05
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any)

Our company product moto is to develop and market new design of disinfectant tunnels

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

i. Ms. M. N. Prathima



6. Establishment date of the Company/Start-up/Commercialization:

Under Process

Start-up-137: Livelihood

1. Name of the Company/Start-up: Livelihood

2. Highlights of the Company/Start-up:

Product	: Personal care health management
Investment	: 11.5 Lac required
Employment generated	: 05
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any)

So many people in the society suffering with various health problems, Our company develops a app and product marketing by assisting the patient

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. Bhargav Raj
- ii. Gayathri
- iii. Harshith
- iv. Sai Mounika
- v. Abhaya Dattu

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

- Develop a app
- Establishment of incubation centre
- Tie up with farmers
- Purchase processing and packing machineries
- Create awareness in society

Start-up-138: Bio science & solutions industries Pvt Ltd

1. Name of the Company/Start-up: Bio science & solutions industries Pvt Ltd

2. Highlights of the Company/Start-up:

Product	: Company focus to develop bio treated Washing machines
Investment	: 25 Lac required
Employment generated	: 12
Commercialized or not	: Applied for Patent and Applied for fund

3. Impact it will create (including social impact, if any)

Our product and technology creates impact on entire society and washing machines market; we are launching the new advanced technology washing machines

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. M. Tulasi Venkata Sai
- ii. G. Kiran Nagendra
- iii. M. Gowtham Phanindra Sai

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

- Patent grant
- Funding from banks and financiers
- Collaboration with Component manufacturers
- Establishment of assembly unit
- Marketing and Tie up with dealers

Annexure-III

Details of Enterprise/Business Commercialized

Start-up-01: DAMASMART Pvt. Ltd.

1. Name of the Company/Start-up: DAMASMART Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Food and beverage service
Investment	: Rs. 03.00 Lakhs
Employment generated	: 05
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Our mission is to act as an Bridge Between Company and Customer
- It will reduce the burden of customers.
- It will reduce their dependence on food preparation.
- We collect the vegetables and fruits from Farmers and we supply the Fresh vegetables and fruits to the customers, so that there is no middlemen

4. Current Status of the Company/Start-up

- Registered and Running (UAN: AP02D0008765)

5. Student team Details

- i. K. V. Sanjana
- ii. S. Rachana
- iii. M. NirmalKumar
- iv. D.Bharath

6. Establishment date of the Company/Start-up/Commercialization:

- Establishment Date: 30/07/2018 (UAM - AP02D0008765)

7. One paragraph on the Company/Start-Up covering all the points.

- Dam smart is an e-commerce application which is started for food, groceries and vegetables delivery to door step. Started in September 1st 2017 in Kuppam.
- Initially we have started with 5employs in Kuppam as food delivery application.
- Now we are providing employability to 5 members and Dam smart is developed in five different branches.
- Our mission is to act as an Bridge Between Company and Customer

- Initially we have started with 5 employs in kuppam and at present 35 members are working in 5 different branches of Dam smart.
- In soon we are going to provide employability to another 50 members of both graduates and graduates to Damasmart.
- We are planning to open another 6 Branches in this coming 2 years of 2020 and 2021 can provide employability around 100 members (Tirupati, Kadapa, Kurnool, Hosur, Vellore, Nellore)

Start-up-02: Intellibin solutions Pvt. Ltd.

1. Name of the Company/Start-up: Intellibin solutions Pvt. Ltd.

2. Highlights of the Company/Start-up;

Product	: Smart Bin
Investment	: Rs. 07.00 Lakhs
Employment generated	: 02
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Efficient waste management through fully automated Smart Bin product that keeps the society clean & Disease free.
- Simplifies the Process of Waste collection, segregation & Monitoring with real-time status information.
- Creates centralized platform by adding Greenhouse gas emissions at landfill sites & Real-time Air Quality information with smart bin application that creates awareness about health effects on human beings.
- Brings Municipal authorities & Civic workers on single window through mobile applications & GUI web application for faster garbage bin clean-up, real-time monitoring and management.

4. Current Status of the Company/Start-up:

- Active

5. Student team Details

- i. R. N. Mohan
- ii. S. Prasanna Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- Establishment Date: 12-12-2018

7. One paragraph on the Company/Start-Up covering all the points.

The proposed product idea presents a new framework that enables the remote monitoring of solid waste bin in real time to, i) Assist the solid waste management process, ii) Keep the society clean, disease and pollution free environment. The main idea is to develop a low cost, low power & intelligent module, which is able to communicate with other garbage bins and/or can directly upload the individual bin status into the IoT server, based upon the application area and also monitoring all the garbage bins in Smartphone

Application. We design an intelligent garbage bin to monitor the status of garbage level in the bin in real time, So as to intimate the municipal civic workers as soon as garbage bin fills up. The user friendly mobile application notifies the municipal civic workers about the status of all the connected garbage bins in real-time. If they don't respond/serve the bin within some reminders, then a complaint message will be registered to the municipal corporation authority, for immediate action.

Start-up-03: Evezon India Private Limited

1. Name of the Company/Start-up: Evezon India Private Limited

2. Highlights of the Company/Start-up;

Product	: Evezon Agri Service
Investment	: Rs. 04.00 Lakhs
Employment generated	: 06
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Provides Direct Marketing system.
- Provides Information to farmers on crop selection.
- Provides Information on Fertilizers and pesticides and allows farmers to buy online with credit line basis.
- It is environment friendly.

4. Current Status of the Company/Start-up

- Company is on Running

5. Student team Details

- i. J. Yashwanth
- ii. J. Prasad

6. Establishment date of the Company/Start-up/Commercialization:

- Establishment date 24 September 2019

7. One paragraph on the Company/Start-Up covering all the points.

In India farmers are facing multitude problems before and after independence such as marketing, transportation, crop selection, purchasing necessary goods etc. evezon focus on those problems to eliminate them completely. We at evezon provide a single platform of direct marketing system to fulfil the requirements of farmers and customers. evezon provides different services like marketing of agriculture produce, purchasing of goods, transportation and agri-vehicle rental services under a single platform. Evezon offers a wide range of Agri consulting services with the necessary tools and expertise to help grow your Agri income. We partner with our clients from start to finish, focusing on their needs while producing new ideas, developing effective strategies and designing high quality and scalable solutions

Start-up-04: Kuppam Electro Solutions Pvt. Ltd.

1. Name of the Company/Start-up: Kuppam Electro Solutions Pvt Ltd

2. Highlights of the Company/Start-up;

Product	: Live Wire Detector
Investment	: Rs. 10.00 Lakhs
Employment generated	: 03
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- It will save the human life from electrocution.
- It will detect the livewire before 5 meters and produce sound alarm.
- is an affordable device and it is easy to carry in the hand and pocket.
- It is environment friendly.

4. Current Status of the Company/Start-up

- Company is started on 2020. Running.

5. Student team Details

- i. Rithin K T
- ii. S Nanda Kishor
- iii. P Ajay Kumar Reddy

6. Establishment date of the Company/Start-up/Commercialization:

- Establishment date is 19/02/2020.

7. One paragraph on the Company/Start-Up covering all the points.

The Kuppam Electro solutions Private Limited Company was incorporated in 19th February 2020 with an aim of providing globally acceptable solutions to our clients. We aim to conduct our business with integrity, honesty and in compliance with legal requirements. We at Kuppam Electro Solutions works on building a trusted brand. We closely work with our clients for better understanding of their needs and to provide high quality product services. Electrocution causes serious effect on human and animals and leads to dead some times. The Electrocution is one in all the main faced problems in forest areas, Building collapse due to earth quakes and floods and in agricultural fields. The Live Wire Detector (LWD) gives cautioning of uncovered high voltage AC from a protected distance. The LWD will gives audible alert of the presence of AC voltage wires without the need to contact the AC wires. The LWD will beeps with an increasing rate as the unit is closer to the AC wires. LWD is an affordable device and it is easy to carry in the hand and pocket. It is extremely valuable for frontline officers and it saves their lives.

Start-up-05: Drone sonic systems Pvt. Ltd.

1. Name of the Company/Start-up : Drone sonic systems PVt ltd

2. Highlights of the Company/Start-up;

Product	: Pesticide spraying drones
Investment	: Rs. 8.00 Lakhs
Employment generated	: 02
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any):

It will create impact in agriculture and social life

4. Current Status of the Company/Start-up:

Established and handling contracts

5. Student team Details:

i. P. Sai Harsish

6. Establishment date of the Company/Start-up/Commercialization:

26/11/2020

7. One paragraph on the Company/Start-Up covering all the points.

Drones are revolutionizing agriculture. The ability to survey crops from the air with an inexpensive unmanned aerial vehicle equipped with a variety of sensors enables a farmer to collect an unprecedented amount of useful data, including information about:

- Soil hydration
- Variations in soil composition
- Pest/fungal infestations

In addition, drone crop surveys can be taken weekly, daily, or even hourly as required. Accurate information allows for optimal crop irrigation, fertilization, and pest control. Reducing water and pesticide usage and maximizing crop yields benefits the bottom line and the environment.

Start-up-06: Chiru EV Car Accessories

1. Name of the Company/Start-up : Chiru EV Car Accessories

2. Highlights of the Company/Start-up;

Product	: EV vehicles retrofitting and accessories
Investment	: Rs. 10.00 lakhs
Employment generated	: 02
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any):

Impact will create on environment

4. Current Status of the Company/Start-up :

Established

5. Student team Details

i. G. Chiranjeevi

6. Establishment date of the Company/Start-up/Commercialization:

1/06/2020

7. One paragraph on the Company/Start-Up covering all the points:

The auto components market shares 30.66% of its contribution in the whole automotive industry in India. As the revolution of electric vehicles has started and also from the strict order of the Indian government to convert the way of commutation to all-electric till 2030, and as the existing services can't cater all the needs and requirements for the EV users it has become compulsory to work rigorously for making an E.V. friendly ecosystem in India. Now to achieve this goal many companies and startups have started investing in this electric vehicle spare parts and components firm.

The most fascinating fact about E.Vs. is that they are easy to build or maintain. The one having even basic knowledge of electric vehicles can easily replace a part or build an electric vehicle from the scratch and due to this feasibility in electric vehicles, the E.V. component market has a vast customer base with recurring product requirements.

Start-up-07: KAGN Road side assistance Private Ltd.

1. Name of the Company/Start-up: KAGN Road side assistance Private Ltd.

2. Highlights of the Company/Start-up:

Product	: Provides road assistance
Investment	: Rs. 02.50 Lakhs
Employment generated	: 03
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

Gives more support to society by assisting the peoples

4. Current Status of the Company/Start-up :

Applied for bank loan

5. Student team Details:

i. Anand Venkat Rakumar K

6. Establishment date of the Company/Start-up/Commercialization:

11/02/2022

7. One paragraph on the Company/Start-Up covering all the points:

“OnRoad Assist” is a startup related to automobile service sectors. We have recognition for DIPPT for startup India for 10 years. We have incorporation in MCA portal. We are also published the patent rights.

.Our startup is focusing on the problem like

- 1) Roadside assistance for bikes and cars
- 2) Occurrence of Minor/Major Accident
- 3) Security Threat
- 4) Difficult to find mechanic

We are going to provide the solution at one place. We have designed unique website and app for provide service. These are service we are going provide.

- a. Towing
- b. Fuel Delivery
- c. Tire Replace / Puncture Repair
- d. Battery
- e. Jump Start/ Pull Start
- f. Key Replacement Service

g. Vehicle Repair

Future Business Opportunities:

- i. Bike Renting
- ii. Electrical Charging Station
- iii. Door Step Services
- iv. Buy and selling of second handed vehicles

Start-up-08: Martek Bioscience

1. Name of the Company/Start-up: Martek Bioscience

2. Highlights of the Company/Start-up:

Product/Service	: Aqua Farming Kits
Investment	: Rs. 35.00 Lakhs
Employment generated	: 18
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- It helps aqua farmers in reducing the farming cost and production cost using intelligent farming kits.

4. Current Status of the Company/Start-up

- Running

5. Student team Details

- i. Revu Satyanarayana

6. Establishment date of the Company/Start-up/Commercialization:

- 17-07-2017

7. One paragraph on the Company/Start-Up covering all the points.

- The company is manufacturing the farming kits for shrimp growth analysis and disease recognition. It has achieved MSME recognition from Govt. of India.

Start-up-09: Think IC Labs

1. Name of the Company/Start-up: Think IC Labs

2. Highlights of the Company/Start-up:

Product/Service	: IoT products
Investment	: Rs. 10.00 Lakhs
Employment generated	: 8
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- IoT products helps in providing protection against theft and danger from unknown persons and accidents.

4. Current Status of the Company/Start-up

- Running

5. Student team Details

- i. I Naresh

6. Establishment date of the Company/Start-up/Commercialization:

- 11-04-2018

7. One paragraph on the Company/Start-Up covering all the points.

- ThinkIC labs help users to maintain home safety and road safety during harsh conditions. It is established under the vision of 'safety for citizens'. It is initially started by targeting few districts and now achieve state-wide recognition for safety devices.

Start-up-10: Kemiva Bioscience

1. Name of the Company/Start-up: Kemiva Bioscience

2. Highlights of the Company/Start-up:

Product/Service	: Aqua Farming Equipment
Investment	: Rs. 50.00 Lakhs
Employment generated	: 14
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- It helps aqua farmers in reducing the farming cost and production cost on a season basis.

4. Current Status of the Company/Start-up

- Running

5. Student team Details

Reddy Prasad

6. Establishment date of the Company/Start-up/Commercialization:

- 14-01-2019

7. One paragraph on the Company/Start-Up covering all the points.

- The company is established under the grounds of Make In India campaign and helping local material vendors to manufacture in rural environment. Products related to aqua farming are produced and helping farmers to reduce the production cost by 20% for the last 3 years.

Start-up-11: Folklore Food Private Limited

1. Name of the Company/Start-up: Folklore Food Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Condiments and Packed food
Investment	: Rs. 02.50 Lakhs
Employment generated	: 1
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- The basic idea of this company is to focus on the awareness of local food served in different states and to be able to make serve them all over the nation with authentic touch

4. Current Status of the Company/Start-up

- The products are under shelf life testing and soon will be open to the market.

5. Student team Details

- i. Aditya Thakkar
- ii. Mit Chavda

6. Establishment date of the Company/Start-up/Commercialization:

- Date of Establishment is 09/02/2022

7. One paragraph on the Company/Start-Up covering all the points.

- The main idea behind Folklore Food was to focus on the variety local and traditional cuisine consumed in all the states. Our aim is to provide that taste to other respective state with the same authenticity and recipe served. Currently we have 6 products in inline in which 2 of them are in shelf life testing and soon to be ready to launch in market. Our basic business model is launch all this products on online market as our primary focus to increase the reach as the idea mentioned above

Start-up-12: YM Intelligence Tech LLP

1. Name of the Company/Start-up: YM Intelligence Tech LLP

2. Highlights of the Company/Start-up;

Product	: Face Attendance, Visitor Management & Face Cropper
Investment	: Rs. 01.50 Lakhs
Employment generated	: 14
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- It is catering to numerous industries through its facial recognition and image processing solutions.
- One of the USP is that they have provided solutions for detection of tuberculosis.
- Also implemented this during COVID-19 for social distancing detection

4. Current Status of the Company/Start-up:

- ongoing

5. Student team Details

- i. Yakshkumar Harishbhai Thakar
- ii. Mihir Upendrabhai Bhatt

6. Establishment date of the Company/Start-up/Commercialization:

- Date of Establishment is 28/08/2019

7. One paragraph on the Company/Start-Up covering all the points.

YM INTELLIGENCE TECH LLP is an AI based Start Up Company. We offer various products for Governments, Manufacturers, Retailers, Jewellers, Real Estate business & Authorized Buildings using smart AI based innovative & unique solution in Face Recognition Technology for human authentication and authorization.

Start-up-13: TRIYAZA Healthcare Pvt. Ltd.

1. Name of the Company/Start-up: TRIYAZA Healthcare Pvt. Ltd.

2. Highlights of the Company/Start-up;

Product	: Wearable IV Care & the Patient Turner
Investment	: Rs. 01.00 Lakh
Employment generated	: 1
Commercialized or not	: Yes, commercialized

3. Impact it will create (including social impact, if any)

Wearable IV Care

- In the case of wearable IV the nursing staff does not have to go with patients anywhere anytime to handle IV bottle, as they can complete their more meaningful work.
- Easily mobile and can be worn on the wheelchair so the patient can easily get mobility with an IV bottle, for e.g going to the radiology department.
- Patients have full privacy in the restroom

In-Patient Turner:

- Nursing staff get relief from back pain as they now do not pull patients for turning them.
- Ease of diaper changing, cleaning bedsheets
- Relief from pressure ulcers or bed sores as now the patient can be turned from side to side.
- The light exercise of the patient can be done

4. Current Status of the Company/Start-up

- Scaling, reaching out to more hospitals personally
- R&D of new upcoming product/project

5. Student team Details

- i. Aayush Trivedi
- ii. Jaydeep Yadav
- iii. Meetrajsinh Zala

6. Establishment date of the Company/Start-up/Commercialization:

- Date of Establishment is 25/03/2022

7. One paragraph on the Company/Start-Up covering all the points.

Triyaza healthcare is a medical device manufacturing company where we try to solve, day-to-day problems in the lives of patients. We are focused on delivering the best medical device in the Indian market. We are trying to strengthen the healthcare of India and explore new opportunities in this industry. Our focus is to reduce the imports of medical devices and try to manufacture them in India.

Start-up-14: Karbh IT Solutions

1. Name of the Company/Start-up: Karbh IT Solutions

2. Highlights of the Company/Start-up;

Product	: Question paper generation system & IT Services
Investment	: Rs. 01.50 Lakh
Employment generated	: 15
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- It has already been in the market for over three years and has generated employment for over 10 people directly or indirectly

4. Current Status of the Company/Start-up

- Ongoing

5. Student team Details

- i. Yash Shukla

6. Establishment date of the Company/Start-up/Commercialization:

- 19/10/2019

7. One paragraph on the Company/Start-Up covering all the points.

We at Karbh IT solutions focus on providing intuitive, robust, and simple software solutions related to any field. We believe in empowering all social and business activities through technology to meet their needs. Which means we are here to solve your problems through various technologies, all you need to do is contact us.

In the last few years, Karbh IT Solutions has built various software solutions which are helping our clients in varied ways. It is really heartening to see how our work has been useful to them and we strive to contribute even more to their success.

We believe in the collective work which we can do to help you grow by solving your problems. Teamwork, Self-belief, and the motivation to give back to society is what keeps us going. 90% of our customers are recurring which shows the value we have added for them and their trust in us to take it forward. So if you are here you are at the right place to find solutions to your technological problems

Start-up-15: Resto'lution

1. Name of the Company/Start-up: Resto'lution

2. Highlights of the Company/Start-up;

One stop HR solution for Restaurants

Product : App

Investment : Rs. 01.00 Lakh

Employment generated : 135

Commercialized or not : Yes, Commercialized

3. Impact it will create (including social impact, if any) :

- Livelihoods in restaurant industry

4. Current Status of the Company/Start-up:

- Tech development

5. Student team Details

- i. Naman Patel

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 01/10/2019

7. One paragraph on the Company/Start-Up covering all the points.

We provide one-stop HR solution to restaurant industry. From searching candidates, attendance, Upskilling and Payroll Management

Start-up-16: Anywhera

1. Name of the Company/Start-up: Anywhera

2. Highlights of the Company/Start-up;

Product	: Surprise travel
Investment	: Rs. 12.00 Lakhs
Employment generated	: 100
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Catered to over 500 customers via surprise travel package

4. Current Status of the Company/Start-up :

- The company is functional

5. Student team Details

- i. Venu Rathore

6. Establishment date of the Company/Start-up/Commercialization:

- 2019

7. One paragraph on the Company/Start-Up covering all the points.

- Anywhera is not an ordinary travel agency or trip advisory but a surprising new way to relax and rejuvenate.
- We, at Anywhera challenge the concept of traditional travel planning and booking to something far more spontaneous and adventurous.
- Anywhera decides your travel destination which is revealed to you 24 hours before departure!
- We decide the destination on the basis of a questionnaire filled out by you. We plan your complete expedition, including travel bookings, accommodation, and a curated list of local recommendations.
- "We believe that as adults, we get far more excited when we know there is a surprise waiting for us!
- Our biggest motivation is to bring out the wanderlust, wonderstruck kid in you."
- Anywhera plans surprise travel trips for solo and dual travellers. We offer a vivid new experience and a whole new feeling of travel, help couples find a lover's retreat, fill enough adrenaline in the backpackers and adventure junkies, and plan the perfect getaway for friends whose vacation plans have always failed.

Start-up-17: TRI-E-CON Developers LLP

1. Name of the Company/Start-up : TRI-E-CON Developers LLP

2. Highlights of the Company/Start-up

Product : Precast Eco-Friendly Concrete Products
(Paver Blocks, Kerb Stone, Concrete Covers, Fly Ash Bricks, Elevation Jali, Home Decor Pots and Other concrete Products)
Investment : Rs. 15.00 Lakhs
Employment generated : 75
Revenue generated : 50.00 Lakhs
Commercialized or not : Yes, Commercialized

3. Impact it will create (including social impact, if any) :

- We have Upcycled more than 75 tons of Waste which was going to end up in landfills, we also reduced more than 50 tons of carbon footprints entering into atmosphere by manufacturing Eco-Friendly Products.

4. Current Status of the Company/Start-up:

- Early Growth Stage

5. Student team Details :

- i. Yash Patel
- ii. Sahej Singh Tuteja
- iii. Harshad Makwana
- iv. Nirmal Suthar
- v. Vansh Agrawal
- vi. Gaurav Mer

6. Establishment date of the Company/Start-up/Commercialization:

- Date of Establishment is 12/12/2018

7. One paragraph on the Company/Start-Up covering all the points.

Tri-e-con work on the principle of the 3 E's which are Economical, Enhanced, and Eco-Friendly. We manufacture nonstructural concrete products from industrial waste materials which are nonrecyclable and thrown in landfills. Our prime motto is to reduce carbon footprints by reducing cement consumption. As cement industry produces more than 7% of Co₂ annually.

Start-up-18: Aarkaya Solar solution Pvt Ltd

1. Name of the Company/Start-up: Aarkaya Solar solution Pvt Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Solar panels/ infrastructure
Investment	: Rs. 02.50 Lakhs
Employment generated	: 20
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Providing extended support by installing solar panels to places with little to no electricity.

4. Current Status of the Company/Start-up

- Expansion of business PAN India.

5. Student team Details

- i. Shivender Singh

6. Establishment date of the Company/Start-up/Commercialization:

- 01 March 2018

7. One paragraph on the Company/Start-Up covering all the points.

- At Aarkaya our core mission is to deploy a network of renewable energy solutions to create sustainable, green and interconnected urban infrastructures worldwide.
- We envision a world where society uses technology and clean energy to improve living conditions while preserving the planet. Everything we do is about a green future and energy efficiency.

Start-up-19: Tackyon Motorsports Pvt Ltd

1. Name of the Company/Start-up: Tackyon Motorsports Pvt Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Electric Vehicles
Investment	: Rs. 02.50 Lakhs
Employment generated	: 10
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Developing inhouse electric motors and drivetrains for indian customers

4. Current Status of the Company/Start-up

- Expansion of business PAN India.

5. Student team Details

- i. Aayush Mohan

6. Establishment date of the Company/Start-up/Commercialization:

- 31 March 2018

7. One paragraph on the Company/Start-Up covering all the points.

- Tackyon Motorsports Pvt Ltd is a startup working towards electrifying the mobility sector.
- The team has developed fast charging, and up to mark electric scooters for rental purposes. The team is also working on different variants and have developed electric utility vehicles to overtake the commercial sector.

STAGE:-

- Working on developing high voltage controllers for better performance and quick charging.
- Developing motors due to the trade cut-off between India-China.
- Consultancy to Students participating in National/International Events.

Start-up-20: TFT Industries

1. Name of the Company/Start-up: TFT Industries

2. Highlights of the Company/Start-up:

Product/Service	: Manufacturing
Investment	: Rs. 02.50 Lakhs
Employment generated	: 10
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Making jobs of movers and packers easy.

4. Current Status of the Company/Start-up

- Expansion of business PAN India.

5. Student team Details

- i. Aman Nischal

6. Establishment date of the Company/Start-up/Commercialization:

- 03rd April 2018

7. One paragraph on the Company/Start-Up covering all the points.

TFT Industries is one of the leading manufacturers of Meyer Bar Coater, Tape Making Machine, Film Applicator and much more. In their development process, we assure that only top notch material is used along with modern machinery. Besides this, we check these on a variety of grounds before finally shipping them at the destination of our customers.

Start-up-21: Thap Krida LLP

1. Name of the Company/Start-up: Thap Krida LLP

2. Highlights of the Company/Start-up:

Product/Service : Android Platform Games

Investment : Rs 02.50 Lakhs

Employment generated : 5-6

Commercialized or not : Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Gaming to improve the motor skills and intelligence of the players

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Sahil Tanwar

6. Establishment date of the Company/Start-up/Commercialization:

- 2019

7. One paragraph on the Company/Start-Up covering all the points.

Our aim is to make hyper casual games that can be played by a 6 year old kid and his 60 year old grandfather.

Stage:

For now we are working for a Canada based gaming company to gain some knowledge that can help us monetize our games.

Start-up-22: Helix Smart Labs Private Limited

1. Name of the Company/Start-up: Helix Smart Labs Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Services
Investment	: Rs 02.50 Lakhs
Employment generated	: 2-3
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- The team is providing IT support to the budding startups

4. Current Status of the Company/Start-up

- Looking for new opportunities along with product development

5. Student team Details

- i. Dhruv Rohatgi

6. Establishment date of the Company/Start-up/Commercialization:

- 02 July 2020

7. One paragraph on the Company/Start-Up covering all the points.

- At Helix Smartlabs believes in bringing change in technology which can truly impact the lives of people and make their life easier to ensure that, we have inline more than 10 products which can ease your daily life. With variants ranging from smart home appliances to security devices, get anything and everything that brings life to your home

Start-up-23: Shuttle Express LLP

1. Name of the Company/Start-up: Shuttle Express LLP

2. Highlights of the Company/Start-up:

Product/Service	: Car and Bus Rental Company
Investment	: 5 Lakhs
Employment generated	: 02 (On commission basis)
Commercialized or not	: Yes, Commercialised

3. Impact it will create (including social impact, if any)

Shuttle Express is creating an umbrella where the unorganized ground Transportation sector can fulfill the requirements of B2B Travel agents and corporate companies. By this we reduce poverty and improve health, housing, education, and overall well-being of Transport operators and Drivers.

4. Current Status of the Company/Start-up

We are a GST verified company and have been registered in MSME.
Also "Shuttle Express" brand name is registered as a Trademark.

5. Student team Details

- i. Udit Tiwari
- ii. Shubham Singh

6. Establishment date of the Company/Start-up/Commercialization:

- 01 January 2020

7. One paragraph on the Company/Start-Up covering all the points.

Shuttle Express is one of the leading company for buses and cab booking in India which offer riders a one-stop solution to book vehicles of their choice for their Intercity as well as Local travel needs. Shuttle Express aims to leverage technology as a platform to squeeze the gap in the land transportation industry to book the vehicle for their travel bookings. One can easily book the cab of their choice in just a few minutes and that too at affordable prices. Having a strong pipeline of verified cabs and drivers in major cities covering nearly every major city of India, Shuttle Express strives to provide the car of your choice Anytime & Anywhere.

Start-up-24: FIN Horse Financial Advisory Pvt. Ltd.

1. Name of the Company/Start-up: FIN Horse Financial Advisory Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Services
Investment	: Rs. 02.50 Lakhs
Employment generated	: 10-15
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- A one stop personalized financial planning startup to provide assistance to the customers.

4. Current Status of the Company/Start-up

- Working towards acquiring customers

5. Student team Details

- i. Shubham Adhlakha

6. Establishment date of the Company/Start-up/Commercialization:

- 26th April, 2022

7. One paragraph on the Company/Start-Up covering all the points.

The advisory concept is simple and clear: we provide a one-stop-shop for all aspects of financial management. Throughout the entire process of building and managing your portfolio, everything has been taken care of. As your financial doctor, we can monitor your financial health and restore it if necessary. Our idea behind this is crystal clear: to provide more and more HNI's for society. We are all geared up with trained professionals to assist our clients with their finances. Investing according to your financial needs is something we are committed to helping you achieve. With qualified and trained staff onboard, we tend to deliver according to the clients' expectations.

Start-up-25: Asset reclaimers/Oops consultancy LLP

1. Name of the Company/Start-up: Asset reclaimers/Oops consultancy LLP

2. Highlights of the Company/Start-up:

Product/Service	: Services
Investment	: Rs. 02.50 Lakhs
Employment generated	: 10-15
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- A startup with a focus to help the customers getting claims of the assets like Bonds, gold, FDs and more.

4. Current Status of the Company/Start-up

- Awaiting certificate from SEBI

5. Student team Details

- i. Vishal Gupta

6. Establishment date of the Company/Start-up/Commercialization:

- 14th July, 2022

7. One paragraph on the Company/Start-Up covering all the points.

- The Demat accounts & the paper less share trading was not always the trend. Strange but yes it's true, not that far behind rather till the previous generation, shares/ debentures were bought & sold in physical form. However, "any investor who is desirous of transferring shares (which are held in physical form) after April 1, 2019 can do so only after the shares are dematerialised," Asset Reclaimers brings to you the complete solution of any issues with the physical documents of share or debentures. Our experts assist clients in resolving doubts/ queries related to share transfer, claims by nominee, name deletion/ modification etc. We have experts to help you recover the unclaimed amount from lost or damaged share certificates as well.

Start-up-26: VIEH PVT LTD

1. Name of the Company/Start-up: VIEH PVT LTD

2. Highlights of the Company/Start-up:

Product/Service	: Cybersecurity/ National security/ IT Services and solutions
Investment	: Rs 2.50 Lakhs
Employment generated	: 10-15
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- CVMS can create a lot of impact while building a safe and secure nation, because it is a kind of a full-fledged system from which organizations will get overall security for their infrastructure. Since we have reported vulnerability on almost all big tech giant server, we feel we can do it better

4. Current Status of the Company/Start-up

- Company has been registered as a private limited and also got recognized under Startup India program, Government of India

5. Student team Details

- i. Manish Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 27 August 2020

7. One paragraph on the Company/Start-Up covering all the points.

1. Our startup is fully dedicated to Cybersecurity and National security ideas. Right now we're working on two major things
2. Here we're working on a model to provide intelligence support to the intelligence agencies of India- It include Global surveillance model, getting information about the confidential data and operation that are running in the enemy nation like Pakistan and China
3. CVMS- Centralized vulnerability management system This is a portal where we're listing out the critical vulnerabilities that are present in multiple government servers/ websites. Apart from this we'll be providing ticket and remedies support with that too.

Start-up-27: HyCube Works Pvt. Ltd.

1. Name of the Company/Start-up: HyCube Works Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: 3D Manufacturing Machine
Investment	: Rs. 02.50 Lakhs
Employment generated	: 18
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Low cost 3D printing machines

4. Current Status of the Company/Start-up

- Started in 2018 and now has a client base across India. It has been selected as one among the Top 30 of 300 Startups from all over India and was pre-incubated by Launchpad Cohort 12 at NSRCEL, IIM Bangalore. They are now a very successful startup in NSRCEL Incubation Centre. Now they are official vendors to Maruthi Suzuki India nationwide.

5. Student team Details

- i. Shreyas S P
- ii. Reethan D J

6. Establishment date of the Company/Start-up/Commercialization:

- 08/08/2018, Website : www.hycubeworks.in

7. One paragraph on the Company/Start-Up covering all the points.

- Started in 2018 and now has a client base across India. It has been selected as one among the Top 30 of 300 Startups from all over India and was pre-incubated by Launchpad Cohort 12 at NSRCEL, IIM Bangalore. They are now a very successful startup in NSRCEL Incubation Centre. Now they are official vendors to Maruthi Suzuki India nationwide.
- **HyCube Works Private Limited** is pre incubated company at BNMIT in the year 2017-18.
- **HyCube Works Private Limited** is a two-time incubated venture at NSRCEL IIMB and is also an incubated venture at Maruti Suzuki India Limited. It is an OEM for Manufactures of FDM 3D Printers and is in the process of coming with Indigenous Multi Material Metal (IMMM) 3D Printer. It is a bootstrapped company which has 7 full time employees and has 20+ interns.
- **HyCube Works** has served clients such as Indian Army, Indian Air Force, BARC, CSIR organizations, NIT's, Private companies. This company has created a pragmatic change in the field of digital manufacturing and is helping the Hardware industry in creating cost effective end products and prototypes. The founders of this company are Mr.Shreyas S P and Reethan D L who is our alumni graduated in the year 2018. They registered their company also on 8th August 2018. They have created

their own website named www.hycubeworks.in which explains more about their ventures.

ACHIEVEMENTS:

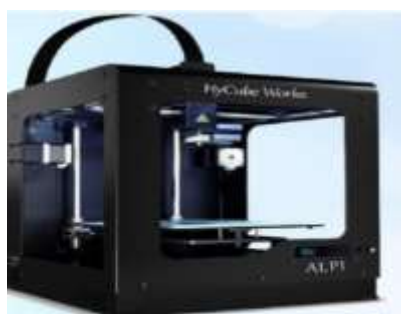


Shreyas and Rethan of VIII Semester, Mechanical Engineering Department Project titled indigenously built Prosthetic Arm using 3D Printer Participated in National Level Working Model Competition-Navadhara 2018 Organized by Dev Bhoomi Group of Institutions on 16th and 17th April 2018. They won the Third Prize with a Cash Reward of Rs. 20,000.

In Media:



GALLERY :



ALPI V2
(200mm³)



ALPI V4
(400mm³)



ALPI V6
(600mm³)

Start-up-28: SwitchKase Technologies Private Limited

1. Name of the Company/Start-up: SwitchKase Technologies Private Limited

2. Highlights of the Company/Start-up:

SwitchKase Technologies is a company focused on developing low cost medical electronic devices. They are doing their research and have been chosen for incubation at IISC, Bangalore. At present they along with their team of 2 are managing the company. At present they are having 6 interns with them to manage the company. Since the product is in the testing stage and waiting for board approval from IISc, this product has not yet been commercialized.

3. Impact it will create (including social impact, if any)

- The devices developed can reach all sectors of the society and help people solve their medical issues which are cost effective.

4. Current Status of the Company/Start-up

- They are doing their research and have been chosen for incubation at IISC, Bangalore.

5. Student team Details

- i. Mr. Brahma S P
- ii. Ms. Disha Maru

6. Establishment date of the Company/Start-up/Commercialization:

- 18 September 2020

7. One paragraph on the Company/Start-Up covering all the points.

- SwitchKase Technologies is pre incubated company at BNMIT in the year 2018-19.
- SwitchKase Technologies is a company focused on developing low cost medical electronic devices. It is founded by Brahma S P and Disha Maru our fresh alumni passed out this year in 2021. They are doing their research and have been chosen for incubation at IISC, Bangalore.
- At present they are having 6 interns with them to manage the company. Since the product is in the testing stage and waiting for board approval from IISc, this product has not yet been commercialized. The devices developed can reach all sectors of the society and help people solve their medical issues which are cost effective. They have applied for patent of this product during 2019. They have registered their company on 18th September 2020.

Start-up-29: VTRIKE Private Limited

1. Name of the Company/Start-up:

2. Highlights of the Company/Start-up:

Vtrike Private Limited is a deep tech start-up focused on providing efficient, robust edge to cloud solutions to the battery applied sectors. Vtrike is recognized by Start-up India, DPIIT and MSME. This product has not yet been commercialized. They have created their own website www.vtrike.in for more information of their company

The present disclosure provides an electric three wheeler vehicle comprising of:

- A wheel arrangement having three wheels arranged in tadpole like structure having two wheels in the front and one at the rear end.
- A chassis on which the wheel arrangement is mounted
- At least one motor mounted on the chassis
- A controller having a fuzzy logic system that provides a feedback to control at least one vehicle operation
- A power Storage device to provide power to electrical components including at least one motor and the controller in the vehicle.

The controller is configured to:

- Detect one or more obstacles in a path of the electric three wheeled vehicle
- Control Speed of at least one motor in response to the detected one or more obstacles and concurrently maintain a stability level upon turning the electric three wheeler vehicle in a speed that is greater than a threshold level. Because of its tadpole structure it increases the level of stability and thereby decreases the number of accidents. It provides the regenerative breaking and thereby increases the vehicle mileage. Moreover the vehicle is powered by an electric battery causing zero pollution compared to the vehicles that run on petrol. Due to the absence of combustion engine a large amount of space is available for the passengers using Trike.

3. Impact it will create (including social impact, if any)

- To design, develop and deploy energy efficient smart technology maintaining ecological balance that adds values to our customers. To provide world class battery management systems, promote green and safe transportation. To increase battery life, vehicle safety with technology that achieves more, consumes less and is accessible for everyone.

4. Current Status of the Company/Start-up

- Vtrike is currently incubated under **NDBI** an initiative of the **National Institute of Design, Bengaluru**.

5. Student team Details

- i. Aslesh Kumar A
- ii. Raghuveer S Bhat
- iii. Shwetha S
- iv. Alagar Krishna B

6. Establishment date of the Company/Start-up/Commercialization:

- 14th January 2020, Website : www.vtrike.in

7. One paragraph on the Company/Start-Up covering all the points.

Vtrike Private Limited is a deep tech start-up focused on providing efficient, robust edge to cloud solutions to the battery applied sectors. Vtrike is recognized by Start-up India, DPIIT and MSME. Vtrike is currently incubated under NDBI an initiative of the National Institute of Design, Bengaluru.

Start-up-30: TEDORA Technologies Private Limited

1. Name of the Company/Start-up: TEDORA Technologies Private Limited

2. Highlights of the Company/Start-up:

Tedora Technologies is a design engineering start up that is intended to provide innovative Web and Mobile application services to render the needs of the customers. Over a year of service, the startup is fruitful in developing applications for the chief customers, Ayushya Technologies and Services Pvt. Ltd and Aarna Solutions Pvt. Ltd, besides conducting workshops for 11th and 12th students across Bangalore.

The platform also aims at educating the students about the basics of web and mobile application development.

Ayushya Technologies and Services (ATAS) increases the longevity of electronic products through innovation, technology and best in class processes and controls to generate value for the customers

3. Impact it will create (including social impact, if any)

- AARNA solutions works with client from briefing stage to pilot production and tooling assistance. Throughout the idealization and concept development cycle, the company closely interacts with various relevant department, to provide faster, simpler and feasible innovations.

4. Current Status of the Company/Start-up:

5. Student team Details

- i. Shreyas G. S.
- ii. Thrupthi N.

6. Establishment date of the Company/Start-up/Commercialization:

- 13th June 2019, Website : www.tedoratech.com

7. One paragraph on the Company/Start-Up covering all the points.

Tedora Technologies is a design engineering start up that is intended to provide innovative Web and Mobile application services to render the needs of the customers. Over a year of service, the startup is fruitful in developing applications for the chief customers, Ayushya Technologies and Services Pvt Ltd and Aarna Solutions Pvt Ltd, besides conducting workshops for 11th and 12th students across Bangalore. The platform also aims at educating the students about the basics of web and mobile application development. Ayushya Technologies and Services (ATAS) increases the longevity of electronic products through innovation, technology and best in class processes and controls to generate value for the customers.

AARNA solutions works with client from briefing stage to pilot production and tooling assistance. Throughout the idealisation and concept development cycle, the company closely interacts with various relevant departments, to provide faster, simpler and feasible innovations.

The founders of this company are Shreyas G S and Thrupti N who are our alumni passed out during 2020. They have registered their company on 13th June 2019 and created a website www.tedoratech.com for more information about their company.



Website for Psychoflakes

Psychoflakes is a startup that emerged in 2020 with a motive to provide the means to build a healthy mind among all the people. We provided an online platform for the company to help people take their first steps towards a healthier mind. Through the website the company has successfully been able to provide online counselling sessions and workshops to over 100 people in a span of a month. Also, the website includes blog and video sections to help the company spread positivity among the youths.

The technology stack mainly focuses on speed, user experience and robustness of the application. The website is developed using MEAN stack, hosted using Firebase and AWS which are among the popular, present-day servers.



Grivity

Have too many ideas and want someone of your age group to guide you build that idea into a product? Or, Searching for a pre-built project on which you can implement your creativity? A mobile application to provide you easy access to the projects and ideas posted by your pals is being developed by Tedora Technologies.

'Grivity' is a mobile application, using which people can post their ideas and projects along with a short video. The projects that are posted on the platform can be bought/comprehended by querying the respective proprietor through the inbuilt anonymous query forum. The anonymous query option ensures that none of your personal information is ever shared.



DigiDisk

DigiDisk is a telegram bot that operates as your digital diary. Three simple steps and you will have all your important files in your digital secret locker.

- First, upload all your files onto DigiDisk and delete the chat, so that no one sees your text and your photos. The bot saves all your files with a password set by you.
- When you need the files type in "get all" with the password and you will receive a google drive link to all your files. Typing "get all" with no password also gives you a google drive link, but with a folder of memes.
- All your files are safe with us and will be deleted everyday at 10pm.

Start-up-31: Tosinindra Private Limited

1. Name of the Company/ Start-up: Tosinindra Private Limited (CIN: U74999AS2018PTC018912)

2. Highlights of the Company/Start-up;

Product	: Non-conventional energy solutions (Solar powered processes)
Investment	: Rs. 01.00 Lakhs
Employment generated	: 5
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any):

- The company is engaged in the agro sector with projects of solar driven irrigation devices and also associated with design and implementation of the same.

4. Current Status of the Company/Start-up:

- Functioning

5. Student team Details

- i. Paramanda Pathak
- ii. Sagar Tiwari

6. Establishment date of the Company/Start-up/Commercialization:

- 31 March 2020

7. One paragraph on the Company/Start-Up covering all the points.

The aim of this startup is to take forward the economic and environmental friendly socially acceptable product portfolio based on solar energy into the realm of agriculture, urban housing etc. The services offered includes, survey, design, procurement, installation, commissioning and annual maintenance.

Start-up-32: EF Polymer

1. Name of the Company/Start-up: EF Polymer

2. Highlights of the Company/Start-up:

Product/Service : EF polymer is an organic super absorbent polymer made by biowaste from juice shops, natural waste material like orange peels, banana peels and peepal barks with gel. It is useful to reduce the irrigation water & fertilizer requirements and help to get more yield without affecting the soil and crop. The product can enhance soil health by providing micronutrients and maintain the moisture content along with helping the growth of microbe which is almost at zero level due to the high usage of chemical fertilizer

Investment : Rs. 01.75 Lakhs

Employment generated : 04

Commercialized or not : Yes, Commercialized

3. Impact it will create (including social impact, if any)

- The team tried to create something helpful to retain water for a longer duration of time, and in the process, the team was successful to create a polymer named “Eco-Friendly Water Retention Natural Polymer”. Keeping in mind all the conditions of the country and its farmers the team designed the product at low cost with much more efficiency

4. Current Status of the Company/Start-up

- Selected for the 1-year Entrepreneur-in-Residence Program in Japan

5. Student team Details

- i. Narayan Lal Gurjar

6. Establishment date of the Company/Start-up/Commercialization:

- 13.10.2018

7. One paragraph on the Company/Start-Up covering all the points.

- Eco-Friendly Water Retention Natural Polymer works on the properties of SAP. As the team knew SAP had properties to absorb a large quantity of water. The team used properties of SAP and designed natural polymer, which has more capacity to store water for longer time.
- On testing of the product, the team found that it may retain water for 4 to 6 weeks that means crops irrigated at intervals of 2 to 4 days can now be

irrigated up to 7 to 8 days with less water consumption. Finally, farmers can get more crop production in low water consumption.

- The natural polymer was produced by using natural waste material like orange peels, banana peels and peepal barks with gel. All the ingredient used are biodegradable, the designed product is also biodegradable and completely pollution free. It can be easily mixed with soil and does not create any problem for the future. Also, the team has not used any type of chemicals, so it is harmless to crops, soil, and farmers as well.

Start-up-33: Kangaroo Rooms

1. Name of the Company/Start-up: Kangaroo Rooms

2. Highlights of the Company/Start-up:

Project: Kangaroo Rooms is a fastest Growing Rental Platform for Room, Flats, Hostel and PGs. The startup is engaged in leasing/hiring some properties in order to rent out to needy including students going to different cities for coaching or education or even for job as fresher. Also we provide one-to-one interaction through our application between property owners and seekers for rent at very nominal charges. Usually, the brokers in the market charge heavy commission, which most of the times is equal to one month rent from both parties. We offer the interaction platform at a nominal charge of Rs.100 to 500. We connect with the customer through varied online and offline channels. Prospective tenants can browse our application or website and look for the kind of homes they desire, without a broker or any third-party engagement. We are working in some cities as of now, and planning to expand the services in all major cities of the country.

End product/Prototype/Process developed along with specification and target achieved: So far, we have created three such panels in technology, with the help of which we have solved the problems of five thousand plus customers till now and we have added more than 2 thousand landlords to our platform

Studies on techno-economic viability undertaken for the commercialization of result of the project & plans for commercialization, if any: We have already commercialized the developed platform by using this for revenue generation. For the purpose, an LLP has been formed and registered with ROC in the name of 'Kangaroo Alphabet Pvt Ltd.' The company has already started as STARTUP and making revenues meeting some of the expenditures. With the growth of the client base, it is expected that the revenues will exceed the expenditures and will make profits. In cities like Kota, Bangalore, Jaipur, Ahmedabad, Pune, etc A number of people are looking for appropriate accommodation suited to their pocket; providing services to them offers a great potential for growth of the company.

Whenever a person moves to a new city, the first thing he has to do is make arrangements for his stay, during which he has to face a lot of difficulties. We

solve all these problems and get them provided according to their budget. Profitable business that we can take to a higher level

Employment generation potential, if any: So far we have a team of 16 people, all of us have got employment through the project and we are adding many more people together in this project. There is so much potential in this project that we can give employment to thousands of people and in every city, we can take this project. Right now we are providing our facilities in 4 cities. So far we have boarded more than 500 landlords and provided service to more than 5000 customers.

By making partners in various cities, we will be able to create ample earning opportunities for property owners and direct employment potential for many more in hospitality in these properties. Indirect employment and help to self – earning individuals around these will come along with these opportunities

Product/technology details developed through the project: Web development is the work involved in developing a Web site for the Internet (World Wide Web) or an intranet (a private network). Web development can range from developing a simple single static page of plain text to complex web applications, electronic businesses, and social network services. A more comprehensive list of tasks to which Web development commonly refers, may include Web engineering, Web design, Web content development, client liaison, client-side/server-side scripting, Web server and network security configuration, and e-commerce development. We have used Angular which is Type Script-based open-source web application framework led by the Angular Team at Google and by a community of individuals and corporations. Angular is a complete rewrite from the same team that built AngularJS

3. Impact it will create (including social impact, if any)

- The start-up “Kangaroo rooms” is widely being accepted in the society as it has capability to cater a common mass irrespective of one’s status breaking all the geographical boundaries, cast creed and religion. At it gets expanded, it has capability to create good scale employment in youths and a learning platform for the college students. The response witnessed in past one year is very encouraging and we are sure that it will be revealing good results in years to come

4. Current Status of the Company/Start-up

We have developed an android application and website to provide accessibility to different users of the services. Any client with property and join his property with photographs and details and the space seekers can join and search for appropriate property by paying a nominal fee. Presently we are providing our services in 4 cities viz. Kota, Udaipur, Jaipur in Rajasthan and Bangalore in Karnataka. In Kota city, we have so far added 200 plus landlord with us. Hundred plus landlords are associated with us in Udaipur and in Jaipur and Bangalore cities, we have added 50-50 landlord in each. We are moving ahead by making our presence in many more cities. Recently we have publicized our services through social media platforms through various groups of student community with which we are conversant. As a result, we have started receiving queries from other metro cities as well. Our business model is to develop partnerships with some landlord/property owners in these cities and develop the business on a profit-sharing basis.

In cities like Bangalore, Pune, Chennai, etc., many freshers are moving seeking jobs through walk-in interviews. They need accommodation for a few days only. Getting accommodation in hostels is very costly and hence they are looking for cheap solutions. We at Kangaroo Rooms provide them support in getting the accommodation in an economic way by connecting paying guest service providers or even unregistered properties

5. Student team Details

- i. Vishal Dinesh Gurjar
- ii. Dinesh Sardar Kharra
- iii. Ashish Aryan
- iv. Vikas Kamal Mehta

6. Establishment date of the Company/Start-up/Commercialization:

- 10th January 2020

7. One paragraph on the Company/Start-Up covering all the points.

The company KANGAROO ALPHABET PRIVATE LIMITED came into existence on 10th January 2020 after getting registered from Registrar of Companies, Ministry of Corporate affairs, Govt. of India. Kangaroo Rooms is a fastest Growing Rental Platform for Room, Flats, Hostel and PGs. The

startup is engaged in leasing/hiring some properties in order to rent out to needy including students going to different cities for coaching or education or even for job as fresher. The company has already started as STARTUP and making revenues meeting some of the expenditures. With the growth of the client base, it is expected that the revenues will exceed the expenditures and will make profits spreading its wings in the cities like Kota, Bangalore, Jaipur, Ahmedabad, Pune, etc. Presently we are providing our services in 4 cities viz. Kota, Udaipur, Jaipur in Rajasthan and Bangalore in Karnataka.

Start-up-34: ARCHITECTICA

1. Name of the Company/Start-up: ARCHITECTICA

2. Highlights of the Company/Start-up:

- a. Upskilling students to make them more employable.
- b. Generating employability by supporting students' start-ups.
- c. Community for intellectual discussions will be developed and free community support will be helpful to students.

End product/Prototype/Process developed along with specification and target achieved:

- Developed our community over 15 new colleges.
- Provided training to 2500+ students
- Technically supported 50+ startups.
- Mentored 500+ students on our app "Rift-Project collaboration Platform".

Studies on techno-economic viability undertaken for the commercialization of result of the project & plans for commercialization, if any: Rift- A project collaboration platform. Go through catalogue of projects and apply to work with other Students from premier Institutes. Post your own project idea - invite people to work together and develop your leadership and management skills

Employment generation potential, if any: More than 500+ students have developed their products on our platform, from more than 100+ colleges in India. More than 500+ students got mentorship and certification for free and developed more than 150 products.

Product/technology details developed through the project: Web development is the work involved in developing a Web site for the Internet (World Wide Web) or an intranet (a private network). Web development can range from developing a simple single static page of plain text to complex web applications, electronic businesses, and social network services. A more comprehensive list of tasks to which Web development commonly refers, may include Web engineering, Web design, Web content development, client liaison, client-side/server-side scripting, Web server and network security configuration, and e-commerce development. We have used Angular which is Type Script-based open-source web application framework led by the Angular Team at Google and by a community of individuals and corporations. Angular is a complete rewrite from the same team that built AngularJS.

3. Impact it will create (including social impact, if any)

The start-up "ARCHITECTICA" is widely being accepted in the society specially among students' community upskilling the students making them more employable. It is a platform which will generate employment by supporting students' start-ups. It has capability for intellectual discussions at

Community level and giving free community support to the students. As it is gradually being expanded, and has spread its wings in over 15 colleges catering over 2500 students and connecting over 70000 students across the country. The start-up has capability to create good scale employment in youths and a learning platform for the college students. The response witnessed in past one year is very encouraging and we are sure that it will be revealing good results in years to come

4. Current Status of the Company/Start-up

- Connected over 70000+ students across various activities.
- Won the zonal round of Innopreneures, Nagpur.
- Selected for the Entrepreneur in residence program of Lemon Ideas.
- 1000000+ Website visits in last one year

5. Student team Details

- i. Ashish Aryan
- ii. Abhishek Chahar
- iii. Jayant Banshiwal
- iv. Samiksha Pande

6. Establishment date of the Company/Start-up/Commercialization:

- 17 May 2019

7. One paragraph on the Company/Start-Up covering all the points.

The company **ARCHITECTICA** came into existence on 17th May 2019 after getting registered from Registrar of Companies, Ministry of Corporate affairs, Govt. of India. **ARCHITECTICA** is a fastest Growing platform very popular among college students looking for suitable niche area for employment. Main objective of this startup is Upskilling the students to make them more employable. The android based application developed is generating employability by supporting students start-ups. It has created some sort of community for intellectual discussions which will further be helpful to students. This platform has mentored over 500 students' groups and catered over 70000 students across the country

Start-up-35: Endeavours Ally Pvt. Ltd.

1. Name of the Company/Start-up: Endeavours Ally Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Health Saathi – A health diagnosing and Treatment application
Investment	: Rs. 08.50 Lakhs
Employment generated	: 14
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- It helps in early detection, understanding and prevention of diseases, helping school and collage children to understand about diseases and psychiatric condition and who we can help them, old folks to get proper and regular care, discounted meds & tests, ambulances which will reach on time and save many lives, Super specialist doctors to take care of most complicated diseases, our allied hospitals will treat you at most discounted rates.

4. Current Status of the Company/Start-up

- Pre Market Promotion and Customer Interaction

5. Student team Details

- i. Vishwajeeth Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 05.07.2020

7. One paragraph on the Company/Start-Up covering all the points.

- Endeavours Ally Pvt Ltd is a hybrid Health Start-up which focuses on both Digital and Physical aspect of rural health currently incubated at AKC. The start-up has also collected bootstrap money of Rs. 6 Lakhs. The start-up is providing services like Physical, Tele, Cloud and Text Consultation from Doctors/ Psychiatricians/ Dietitians/ Nutritionists/ Yoga Trainer, Booking Medicine/ Path Tests, SoS Ambulance Booking, Health Aide Appointments, Therapist Appointment, Home Care Assistant Booking, Child Care Support, Medical Social Workers Help. We have got recognition from DPIIT, MCA, STARTUP BIHAR



Start-up-36: Jesso Edutech LLP

1. Name of the Company/Start-up: Jesso Edutech LLP

2. Highlights of the Company/Start-up:

Product/Service	: Jesso – Education technology and Management software
Investment	: Rs. 08.50 Lakhs
Employment generated	: 1
Revenue Generated	: Rs. 1.5 Lakhs
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Digital learning especially for Education is identified to be onerous and demanding while we tried and tested But all that is required to make it as undemanding as classroom education is just a stream-lined platform that has a one stop solution for Students, Teachers and Management. . And help to solve the question of what will be the state of students who don't have access to technology?

4. Current Status of the Company/Start-up

- Traction and Development of Application

5. Student team Details

- i. Vishwajeeth Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 08/06/2021

7. One paragraph on the Company/Start-Up covering all the points.

- Jesso is an education tech company aiming to make educational activities smart, easy, error-free, accessible at any time, and monitor them at any time. We started this venture to upgrade education in the path we wished for things to happen in reality when we were students. To give a brief tour of our application, Jesso helps to bridge the connection between Management - Teacher-Student- Parents. Every group's need and expectation is met in the form of a feature modules in this software and application. Jesso is a first step to fine tune learning and experience the digitized form of learning without deviating from the curriculum or Institutions norms. Jesso won't stop students from taking up a traditional form of education rather Jesso helps you to streamline the learning process digitally and induce interest in the set curriculum adding all the factors a student seeks in his daily classroom education. We provide the students and the teacher a tablet that's going to work the magic easily.



Start-up-37: Goldnwelkin Pvt Ltd. Autowelkin

1. Name of the Company/Start-up: Goldnwelkin Pvt Ltd. Autowelkin

2. Highlights of the Company/Start-up:

Product/Service	: E-Commerce Platform for used auto parts
Investment	: Rs. 50.00 Lakhs
Employment generated	: 8
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Yes, autowelkin giving big solution for Automobile Industry where the four-wheeler mechanics facing issues.

4. Current Status of the Company/Start-up

Achievement:

- Autowelkin Serve the 10 dist in Tamilnadu.
- Currently 7 employee's workinn in our firm.
- Our technology partner is Hashroot Pvt Ltd(kochin)
- Our Revenue (2021-2022) 46 lakhs

5. Student team Details

- i. S. Shunmugasundaram

6. Establishment date of the Company/Start-up/Commercialization:

- 18.05.2018/DIPP

7. One paragraph on the Company/Start-Up covering all the points.

- GOLDNWELKIN Private Limited (www.autowelkin.com)
- **ABOUT US:** Autowelkin is E-commerce platform for used auto spare parts. We selling all kind of Autoparts through our platform. Autowelkin, an Incubatee of KR Innovation Centre, is the one and only startup in India that is organizing the unorganized aftermarket parts salvaged from automobile junkyards. We have wholly adopted Refurbish, Reuse and Recycle in the automobile sector of Tamilnadu and have achieved a lot of milestones and received a lot of accolades in our journey so far.

ACTIVITIES:

- **Circular Economy**
- Recycling
- Reuse
- Refurbish

Start-up-38: M/s RAMJI Agro Implements

1. Name of the Company/Start-up: M/s RAMJI Agro Implements

(Address: 2/81, Thoppureddiapatt, Iyarasanethaal Post, Kovilpattti -627713, Thoothukudi District, Tamilnadu)

2. Highlights of the Company/Start-up:

Product/Service	: Reversible Disc Plough, 9 Tyne Plough, 5 Tyne plough and Seed Showing Device
Investment	: Rs. 50.00 Lakhs
Employment generated	: 12
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

Present day agriculture is facing acute shortage of manpower for the agricultural tasks right from seed sowing to harvesting. Agriculture is backbone of our country and the farmers are inclined to use mechanized devices in order to resolve shortage of manpower, the seed showing device is expected to have high market potential all over India. The farmers those who are interested in cultivating Maize, Wheet, Paddy, Cotton etc., will be highly benefited by the proposed device.

Target Customers: Formers cultivating Maize, cotton, sunflower, Ground nut, and dhall throughout India. Initially the targeted customers are various districts of Tamilnadu and later will be extended to India and other countries.

- In Karnataka, Andhra Pradesh, Tamilnadu, Maharashtra, Madhya Pradesh and Gujarat are contributing around 85% per cent of India's maize production.
- Around 9.4 million hectares of land with an estimated four million farms had been involved in cotton farming.
- Hence, the farmers those who are interested in cultivating Maize, Cotton etc., will be highly benefited by the proposed device.

4. Current Status of the Company/Start-up

- Production Started in March 2020. Nearly 300 Nos of Reversible Disc Plough, 80 Nos of 9 Tyne Plough, 25 Nos of 5 Tyne plough and 300 Nos of Seed Showing Device are fabricated and sold directly to the farmers.

5. Student team Details

- i. S. Rajakumar

6. Establishment date of the Company/Start-up/Commercialization:

- 21st March 2020

7. One paragraph on the Company/Start-Up covering all the points.

- The enterprises “Ramji Agro Industries” is a registered firm under the sole proprietorship of Mr. S.Rajakumar who is an Engineering graduate from Mechanical Engineering completed his degree at National Engineering College, Kovilpatti. I am from an agricultural family and having 40 acres of land and well supported by my parents. I have already taken dealership of selling agricultural machineries of SARBAN brand and so far has made 30 lakhs turnover in six months. As I am actively involved in cultivating suitable crops in 40 acres of land using machineries and further, I started a Start-up Company for manufacturing agricultural machineries. The idea has been evolved as a result of practical experience faced in real agricultural task by me.
- The agricultural products like Reversible Disc Plough, 9 Tyne Plough, 5 Tyne plough and Seed Showing Device are manufactured. A plasma cutting machine, Hydraulic Bending machine, Hydraulic Pressbrakes, 2 Nos Drilling Machines, MIG Welding machines, Manual Metal Arc Welding Machine MMAW- 8 Nos, 5 Hp Compressor – 1 Nos, Portable cutting and Grinding Tools – 20 Nos, Impact Wrench – 3 Nos are equipped for fabrication in the industry. The present turnover for the industry will be nearly 3 Crores.

Start-up-39: Tersbyte Techno

1. Name of the Company/Start-up: Tersbyte Techno

2. Highlights of the Company/Start-up:

Product/Service	: AI Based Soil Nutrients Prediction and Plantation Device
Investment	: Rs. 0.15 Lakhs
Employment generated	: 05
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- It will promote people to setup terrace farming and start using organic vegetables

4. Current Status of the Company/Start-up

- The prototype of the product has been designed and survey based on the product is being taken

5. Student team Details

- i. Kailaash Jeevan J.

6. Establishment date of the Company/Start-up/Commercialization:

- 28/07/2021

7. One paragraph on the Company/Start-Up covering all the points.

The company was developed by focusing majorly on AI and Cloud development. It was formed during covid pandemic when a team of students decided to build an mobile application for the people who were suffering due to the pandemic and covid. Later on the application was developed, but was unable to launch it. Further we noticed about the pest sprayed vegetables and fruits in the market. Thus, we developed an IoT based product for plantation assistance so that people could set up terrace forming and sell organic vegetables. We have also planned to build our own ecommerce website for organic vegetables.

Start-up-40: VBIND Innovation Private Limited

1. Name of the Company/Start-up: VBIND Innovation Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Karthavya's& Drone
Investment	: Rs. 0.30 Lakhs
Employment generated	: 02
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Best Project in International Science Festival, Goa.

4. Current Status of the Company/Start-up

- Doing R&D works in KONE Elevators

5. Student team Details

- i. N. Pradeep Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 10/09/2021

7. One paragraph on the Company/Start-Up covering all the points.

Explore VBIND INNOVATION Products from its Developmental Stages, Hand Craft yourselves a Solution, that better Fits your Requirement and also your Pockets. Start Shaping your Future Prospects with the Ability to Empower yourselves with Automation and Power of Data. With our Products, We help you to align you on to the " Big Picture" that you have Envisioned.

Start your Journey of Growth with Our Offerings Such as

- Karthavya's Comprehensive Pandemic Combat Systems and Devices.
- Drone's with the Ability to Charter your toughest Protocols on Fighting Back this Pandemic.
- R&D Projects to start Driving Change towards a Social Cause

Start-up-41: Nveeas Labs Private Limited

1. Name of the Company/Start-up: Nveeas Labs Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Audio Interface devices (Noise cancellers, Notch Filters, Gain control devices)
Investment	: Rs. 30,000
Employment generated	: 2
Commercialized or not	: Yes Commercialized

3. Impact it will create (including social impact, if any)

- This company majorly develops Low-cost Audio interface devices to handle Noise and Gain from the Amplifiers and also users of Audio transmitting devices. They change the way audio is listened by the users.

4. Current Status of the Company/Start-up

- Start-Up

5. Student team Details

- i. N. Vijay

6. Establishment date of the Company/Start-up/Commercialization:

- 10th February 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This company works on complete Audio interface devices and communication devices. Already one of their products are listed in online Amazon selling. This company is also working on Wireless power transfer device for day to day gadgets.

Start-up-42: Clocker Olives Private Limited

1. Name of the Company/Start-up: Clocker Olives Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Portable Automatic Wire Cutter
Investment	: Self-Funded
Employment generated	: 2
Commercialized or not	: Yes Commercialize

3. Impact it will create (including social impact, if any)

- This device breaks the conventional method of cutting wires with this portable low-cost Wire Cutter

4. Current Status of the Company/Start-up

- Device ready to commercialize

5. Student team Details

- i. S. Pranathi
- ii. D. Manogna
- iii. G. Sathwika

6. Establishment date of the Company/Start-up/Commercialization:

- 14th June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This company works on handling automated tools for the Industry and locale. Their first product to solve the problem of local Cable Manufacturers and led lighting Industries.

Details of Companies/Start-ups/ Businesses Commercialized

Start-up-43: 6DOF Solutions



1. Name of the Company/Start-up: 6DOF Solutions

2. Highlights of the Company/Start-up:

Product/Service	: I. Learn O' Little Kindergarten kit II. Magic AR Coloring book
Investment	: Rs. 07.00 Lakhs
Employment generated	: 03
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- The product will change the learning methods for small children in coming days. It will save time & energy of working parents.
- The education market sector will get new dimensions in the learning material.

4. Current Status of the Company/Start-up

- The start-up is in the stage of commercialization

5. Student team Details

- i. Neha Tuli

6. Establishment date of the Company/Start-up/Commercialization:

- 22-Feb-21

7. One paragraph on the Company/Start-Up covering all the points.

- The company established in February 2021. The company has launched two products: Learn O' Little Kindergarten kit and Magic AR Coloring Book. It works on Augmented Reality technology to make classes more engaging and informative. Learn -O- Little is an interactive learning kit for kindergarten kids to help them learn the alphabet, word building and practice various interactive quizzes

Start-up-44: 80 Wash LLP



1. Name of the Company/Start-up: 80 Wash LLP

2. Highlights of the Company/Start-up:

Product/Service	: Pied Piper 80 Wash
Investment	: Rs. 23.00 Lakhs
Employment generated	: 2
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Pied Piper is an economic and human touch free trap which reduces the risk of the spreading diseases.
- It will enhance the market for the AI based autonomous products

4. Current Status of the Company/Start-up

- The Company is in pre- sales commercializing stage

5. Student team Details

- i. Rouble Gupta

6. Establishment date of the Company/Start-up/Commercialization:

- 11-Mar-21

7. One paragraph on the Company/Start-Up covering all the points.

- 80 Wash LLP has two products named - Pied Piper & 80 Wash. Pied-Piper is a trending patented trap, which is completely free from human touch. The company supports AI-based autonomous travelling to dump rats/mice outside at specified places. Pied-Piper traps multiple rats at once. E-Pinjra is also termed "The Piped Piper". The company's another product named 80 wash - washing machine that washes clothes in 80 seconds without water. 80wash LLP is a Limited Liability Partnership firm incorporated in March 2021. It is registered at Registrar of Companies, Delhi

Start-up-45: Anukai Solutions Pvt. Ltd.



1. Name of the Company/Start-up: Anukai Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Intelights
Investment	: Rs. 09.00 Lakhs
Employment generated	: 11
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- An IoT device to provide Intelligent Mobility through Artificial Intelligence and CCTV cameras and ensure smooth movement of vehicles.
- Reduces Average Wait Time (AWT) of commuters at traffic signals leads to less traffic jams and reduce pollution

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Gourav Goyal

6. Establishment date of the Company/Start-up/Commercialization:

- 01 June 2018

7. One paragraph on the Company/Start-Up covering all the points.

- Anukai Solutions Private Limited is incorporated on 01 June 2018 and classified as Non-govt. company. It is registered at Registrar of Companies, Chandigarh. Its authorized share capital is Rs. 900,000. It is involved in Hardware consultancy. This class includes consultancy on type and configuration of hardware with or without associated software application. The company is providing employment to 11 persons and generating a healthy revenue

Start-up-46: ELECTRICCA

1. Name of the Company/Start-up: ELECTRICCA

2. Highlights of the Company/Start-up:

Product/Service	: Lithium Battery
Investment	: Rs. 01.00 Lakhs
Employment generated	: 03
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Our products are affordable and long lasting ,thus more customers prefer our products

4. Current Status of the Company/Start-up

- We registered in MSME, filing GST. currently 3 employees were working.
- The generated income is enough to give the salary for the workers, thus the company is no profit/loss stage. Successfully completed a year. Now we are planning to update
- The company with advanced machineries. And planning to employ 8 staffs. So we are trying for a loan amount of 500000/-.

5. Student team Details

- i. Jijin Raj SS
- ii. Mr. Abidan J. Lal

6. Establishment date of the Company/Start-up/Commercialization:

- 15-04-2021

7. One paragraph on the Company/Start-Up covering all the points.

- We manufacture the battery for house hold appliances to Electric vehicles. We provide sales distribution and customer service in all over India. Through online and offline mode

Start-up-47: Semi Auto Tea-Enterprise

1. Name of the Company/Start-up: Semi Auto Tea-Enterprise

2. Highlights of the Company/Start-up:

Product/Service	: Tea Maker Machine
Investment	: Rs. 04.00 Lakhs
Employment generated	: 4
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Productivity & taste of the tea is increase, thus the profit of business is improved

4. Current Status of the Company/Start-up

- We registered in MSME, Currently 4 employees were working
- The generated income is enough to give the salary for the workers, Now, we are planning to update The company with advanced machineries. And planning to employ 8 staffs

5. Student team Details

- i. Mr. Abinash Elas
- ii. Mr. Alphin

6. Establishment date of the Company/Start-up/Commercialization:

- 08-01-2020

7. One paragraph on the Company/Start-Up covering all the points.

- We manufacture the Tea making machine. The tea blending machine creates Productivity & taste of the tea is increase, thus the profit of business is improved. Productivity & taste of the tea is increase, thus the profit of business is improved. Our targeted customers are tea shops and Hotels

Start-up-48: Semi Auto Tea-Entreprise

1. Name of the Company/Start-up: Semi Auto Tea-Entreprise

2. Highlights of the Company/Start-up:

Product/Service	: Future Tech
Investment	: Rs. 01.00 Lakhs
Employment generated	: 04
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- This system will give economic benefits to the farmers by reducing the feeding cost, Manual intervention and also it will increase the green fodder yield and reduce the expense of fodder production by one third, thus creating the profit.
- This system will help to reduce the requirement of cattle rearing grass land
- Using this system the farmer can able to provide high nutrient green fodder will maintain the health of the cattle and increase the yield, hence fetching more income to the farmers
- Cattle rearing are made possible even for small land holders

4. Current Status of the Company/Start-up

- We registered in MSME, Currently 3 employees were working
- The generated income is enough to give the salary for the workers. Now we are planning to update The Company with advanced machineries. And planning to employ more staffs

5. Student team Details

- i. Mr. Aromal Vijay

6. Establishment date of the Company/Start-up/Commercialization:

- 23-01-2020

7. One paragraph on the Company/Start-Up covering all the points.

- IT is like a domestic cattle farming sysyem as the farmers feel that it is a profitable. The main challenges of cattle farming is grass collection, feeding the cattle, washing the cattle's and cleaning its shed. The product of automated hydroponics cattle feeder system will help to rectify the above said challenges. Automated hydroponics cattle feeder system is a interdisciplinary project which applies Science and Technology for the easiness of feeding the cattle in farms

Start-up-49: ASK Enterprise

1. Name of the Company/Start-up: ASK Enterprise

2. Highlights of the Company/Start-up:

Product/Service	: Coconut Oil Cooker
Investment	: Rs. 03.00 Lakhs
Employment generated	: 03
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Virgin Coconut oil has medicinal properties so that this product will give economic benefits to the coconut growers
- Increase standard of living Coconut growers
- Provide value added products to the customers
- Merchants will be benefited

4. Current Status of the Company/Start-up

- ASK enterprise Situated in Melakuzhinjanvilai, Mullucode, Kanyakumari District. Pin 629153. Functioning with 3 employees, currently they have three machines, with the help of the machine they cook the milk and make virgin oil. The capacity of the machine is 7 liters and producing 21 liters per day

5. Student team Details

- i. Mr. K. S. Ajith
- ii. Mr. B. Ajil Mon
- iii. Mr. C. Vinoth
- iv. Mr. K. Sajin

6. Establishment date of the Company/Start-up/Commercialization:

- 07/05/2021

7. One paragraph on the Company/Start-Up covering all the points.

ASK enterprise established on 07/05/2021, Initial funding provided by DST/NSTEDB, NewGen IEDC. It is situated in Melakuzhinjanvilai, Mullucode, Kanyakumari -629153. Functioning with 3 employees (Mr. Ajith KS-9566560168, Mr. C. Vinoth- 7598406572, Mr. K. Sajin-9597944632) and three machines (Coconut Oil Cooker), With the help of the machine they cook

the milk and make virgin oil. The capacity of the machine is 7 liters and producing 21 liters per day. ASK Enterprise produce virgin coconut oil cooker which is an innovative product to support rural Virgin coconut oil is a new highly value added version of coconut oil in health food markets. Virgin Coconut oil has medicinal properties so that this product will give economic benefits to the coconut growers. Increase standard of living of Coconut growers

Start-up-50: Brahmastra Bio Energy



1. Name of the Company/Start-up: Brahmastra Bio Energy

2. Highlights of the Company/Start-up:

Product/Service : Recycled Hydro CHAR Generation
BIOMASS

Investment : Rs. 09.00 Lakhs

Employment generated : 07

Commercialized or not : Yes, Commercialized

3. Impact it will create (including social impact, if any)

- <https://www.brahmastraspace.org/people>

4. Current Status of the Company/Start-up

- Manufacturing Process

5. Student team Details

- i. Subhash P K

6. Establishment date of the Company/Start-up/Commercialization:

- 06.03.2020

7. One paragraph on the Company/Start-Up covering all the points.

Brahmastra Bioenergy is a futuristic Bio Renewable energy company funded by Nehru Group of Institutions New Generation Innovation Entrepreneurship Development Centre, Supported by NSTEDB, Department of Science & Technology, Government of India. Brahmastra Bioenergy mainly concentrates on the Municipality Solid Waste Management, Bio Renewable energy, Pollution control and Reduction of Greenhouse Gases emission from Landfills of the country. The Main product of the company is Bio renewable Hydrochar. Hydrochar is highly calorific value containing product equal to the brown coal. The main innovation of the company is Compact HTC Bioreactor plant, which converts Municipality Solid Waste into Hydrochar. Mr. Subash is the Founder of Brahmastra Bio Energy doing his project under NGI NewGen IEDC.

Start-up-51: Kreator 3D printer and Solutions Pvt. Ltd.

1. Name of the Company/Start-up: Kreator 3D printer and Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: 3D printer, Bio 3D printer & Prototyping Services
Investment	: Rs. 10.00 Lakhs
Employment generated	: 6
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Decentralization of manufacturing
- Our tool will facilitate development of Artificial tissues and Organs which can revolutionize in vivo testing and Organ transplant
- Our technology will make Manufacturing

4. Current Status of the Company/Start-up

- Team of 6
- Product 1 (A1 FDM) ready for launch
- Product 2 (Bioform) Being tested in hospital for development
- Prototyping Services: Running
- Looking for Investment

5. Student team Details

- i. Zeeshan Mallick
- ii. Anurag Atulya

6. Establishment date of the Company/Start-up/Commercialization:

- 16/04/2019

7. One paragraph on the Company/Start-Up covering all the points.

- Kreator3D is a deep tech start-up in the field of manufacturing. We make 3D printers, CNC, Bio Printer, and Cloud solutions for manufacturing. Recently won national innovation contest for country's first Bioprinter. We also provide prototyping solutions to industries such as the automobile, medical, and aviation sector

Start-up-052: Yogya.ai (Monkwish)

1. Name of the Company/Start-up: Yogya.ai (Monkwish)

2. Highlights of the Company/Start-up:

Product/Service	: SAAS
Investment	: Rs. 02.25 Lakhs
Employment generated	: 05
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- yogya.ai, a smart engagement, learning, and enablement platform for remote teams. A unique learning experience for businesses to enhance their employees' capabilities by identifying skill-gaps and empowering them with AI tools to full fill those gaps faster seamlessly. Website: <https://www.yogya.ai>

4. Current Status of the Company/Start-up

- In the market with six high end paying customers

5. Student team Details

- i. Sugam Malviya
- ii. Agam Malviya

6. Establishment date of the Company/Start-up/Commercialization:

- April, 2019

7. One paragraph on the Company/Start-Up covering all the points.

- Yogya.ai is a platform for upskilling an organisation's workforce. For businesses, we are the world's first end to end solution for future-ready learning and development needs with unique skill collaboration engine, state-of-the-art curation engine, and tangible ROI.

Start-up-053: Konwert India Motors

1. Name of the Company/Start-up: Konwert India Motors

2. Highlights of the Company/Start-up:

Product/Service	: EV retrofitting Kits
Investment	: Rs. 01.50 Lakhs
Employment generated	: 10
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- To make E-autos more affordable, we engineered powertrain solutions that can be retrofitted to existing vehicles. By converting existing ICE autos we reduce the upfront cost of the auto driver, keep the environment carbon negative, reduce scrapping and accelerate the adoption of EVs.

4. Current Status of the Company/Start-up

- First prototype built, Going to Market

5. Student team Details

- i. Nickendra Manikandan
- ii. Surya Rajendran
- iii. Bettula Manoj Srijan

6. Establishment date of the Company/Start-up/Commercialization:

- 22 August 2019

7. One paragraph on the Company/Start-Up covering all the points.

- Konwert India Motors was incorporated in 2019, for the sole purpose of accelerating EV adoption in India. It is clear that EVs are the solution to our concerning air quality levels, yet the premium price of an EV is a hurdle for large scale adoption. We uniquely focus on developing and retrofitting ICE 3W to battle deteriorating air quality through a techno-economic model that allows auto drivers to purchase the product. Our business model is called EVwB, where we sell the drivetrain components and lease the battery over 5 years. To be able to sustain this and increase battery life, we deploy machine learning to increase longevity by gauging the battery performance against the effects of a multitude of ambient factors and by prescribing parameter optimisation for better performance and life. We are strategically approaching the aspect of building the ecosystem too by developing market-specific charging solutions that complement the customer behaviour and usage of the vehicle. To aid owners to adopt this solution we provide a SaaS monitoring system to account for income, lease collection, vehicle tracking, performance tracking, servicing and reporting

Start-up-54: CodingForAll

1. Name of the Company/Start-up: CodingForAll

2. Highlights of the Company/Start-up:

Product/Service	: Digital Literacy learning Platform for Underprivileged students
Investment	: Rs. 01.00 Lakhs
Employment generated	: 4
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- CodingForAll runs its flagship program in government & affordable private schools to teach coding to secondary students and also equip them with other ancillary skills required for career readiness. Each of our students is part of our 'class to career pipeline' and our intervention with our students is for 8 years starting in secondary school, continuing through college, and supporting them till they land their first dream job

4. Current Status of the Company/Start-up

- It has got funding from SVP India Rs 4,00,000 as early stage funding

5. Student team Details

- i. Alahari Virinchi

6. Establishment date of the Company/Start-up/Commercialization:

- 01/10/2021

7. One paragraph on the Company/Start-Up covering all the points.

- imparts digital literacy and coding skills to those 425 million children in India who do not have access to a computer. CodingForAll is a non-profit leading the digital inclusion movement in India by teaching coding in regional Indian languages to students who do not have access to a computer. Coding For All Clubs are free after-school programs for 8-10th grade students who are not part of a Coding For All intervention school but want to join our community and access our learning material to teach and explore coding and computer science with their peers in their own school

Start-up-55: Tarana Media (Opc) Private Limited

1. Name of the Company/Start-up: Tarana Media (Opc) Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Mobile app and computer website Designing
Investment	: Rs. 10.00 Lakhs
Employment generated	: 04
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Tarana is a mobile application that provides users with music-related content. It immerse users in completely new music-related experiences with this application. The algorithm that has been developed is extremely powerful in that it provides relevant music content to the user based on his or her interests

4. Current Status of the Company/Start-up

- Its in early start-up stage

5. Student team Details

- i. Sangi Chakravarthi

6. Establishment date of the Company/Start-up/Commercialization:

- 04 May 2021

7. One paragraph on the Company/Start-Up covering all the points.

- Tarana Media (Opc) Private Limited incorporated with MCA on 04 May 2021. The Tarana Media (Opc) Private Limited is listed in the class of company and classified as Non Govt Company. This company is registered at Registrar of Companies (ROC), Telangana with an Authorized Share Capital of Rs. 10 LAC and its paid up capital is 10 LAC. The company has 1 directors/key management personal Dileep Chakravarthi Sangi. The company is into mobile application as well as in Other computer related activities [for example maintenance of websites of other firms/ creation of multimedia presentations for other firms etc.]

Start-up-56: Magic Eye

1. Name of the Company/Start-up: Magic Eye

2. Highlights of the Company/Start-up:

Product/Service	: Alcohol detector – Magic eye
Investment	: Rs. 01.00 Lakh
Employment generated	: NA
Commercialized or not	: Yes

3. Impact it will create (including social impact, if any)

UAM number (UDYAM Registration Number) is UDYAM-TS-31-0000740. Drunk and drive is a major hazard on Indian roads. Currently, police are using breathalyzers to check the menace. However, that is subject to a police force check and does not prevent a drunk person from driving a car till he is physically caught. Our magic eye ensures that the car will not start if the alcohol intake is beyond acceptable level. A new study from the Institute for Highway Safety estimates that putting alcohol detection technology in all cars has the potential to save more than 9,000 lives per year. Anyone with a driver's license knows that alcohol- or drug-impaired driving is illegal. Even mobile auto companies are including this feature to prevent accidents due to drunk and drive

4. Current Status of the Company/Start-up

- Will start product production and commercialization

5. Student team Details

- i. P. Madhurya
- ii. P. Chandana
- iii. T. Kavya
- iv. A Sri Veneela
- v. Rehana Begum

6. Establishment date of the Company/Start-up/Commercialization:

- 20/02/2020

7. One paragraph on the Company/Start-Up covering all the points.

Drunk and drive is a major hazard on Indian roads. Currently, police are using breathalyzers to check the menace. However, that is subject to a police check and does not prevent a drunk person from actually driving a car till he is physically caught. Our magic eye ensures that the car will not start if the alcohol intake is beyond acceptable level

Start-up-57: Know me – A Smart Mover

1. Name of the Company/Start-up: Know me – A Smart Mover

2. Highlights of the Company/Start-up:

Product/Service	: Smart Mover
Investment	: Rs. 01.00 Lakh
Employment generated	: 01
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

UAM number (UDYAM Registration Number) is UDYAM-TS-31-0000742. This eradicates manual power in goods transportation in fixed roots of short distance. This vehicle designed for well rooted roads of cargo warehouses where goods frequently distributed over here and there. Because to make this as an automated vehicle, here all the roots would be marked as a path, as per this path vehicle could be moved. This vehicle can be driven manually rather than automatically. Our robot moves as per a predefined path. It can carry a weight up to 150kgs

4. Current Status of the Company/Start-up

- Will start product production and commercialization

5. Student team Details

- i. Razeena Zuya
- ii. Syeda Madiha Banu
- iii. Rabia Basri
- iv. Syeda Arsheen Fathima

6. Establishment date of the Company/Start-up/Commercialization:

- 05/03/2020

7. One paragraph on the Company/Start-Up covering all the points.

- This vehicle designed for well rooted roads of cargo warehouses where goods frequently distributed over here and there. Because to make this as an automated vehicle, here all the roots would be marked as a path, as per this path vehicle could be moved. This vehicle can be driven manually rather than automatically. Our robot moves as per a predefined path. It can carry a weight up to 150kgs

Start-up-58: Mikado Curative Solutions Private Limited

1. Name of the Company/Start-up: Mikado Curative Solutions Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Human health activities
Investment	: Rs. 01.00 Lakh
Employment generated	: 01
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- MIKADO Curative Solutions Private Limited industry is involved in Human health activities

4. Current Status of the Company/Start-up

- Will start product production and commercialization

5. Student team Details

- Ananya Reddy Rajidi
- Nomula Deepthi
- Neeharika Vallabhaneni

6. Establishment date of the Company/Start-up/Commercialization:

- 19/03/2019

7. One paragraph on the Company/Start-Up covering all the points.

MIKADO CURATIVE SOLUTIONS PRIVATE LIMITED is a private company. Its registered address is H.No.6-75/65/1, DAMMANNAPET, WARANGAL, Telangana, India, 506316. It was incorporated in 19/03/2019. This company is registered under Registrar of Companies (RoC-Hyderabad) and it is classified as the Non-govt company. Its authorized capital is **Rs. 5,00,000** and its paid-up capital is **Rs. 10,000**. **MIKADO CURATIVE SOLUTIONS PRIVATE LIMITED Corporate Identification Number (CIN) is U85100TG2019PTC131364, and its registration No. is 131364.** MIKADO CURATIVE SOLUTIONS PRIVATE LIMITED industry code is **85100** and it's involved in Human health activities

Start-up-59: Siddi's Pure Chocolate

1. Name of the Company/Start-up: Siddi's Pure Chocolate

2. Highlights of the Company/Start-up:

Product/Service	: Chocolates
Investment	: Rs. 50,000
Employment generated	: 04
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Some rural BPL people were attracted and earning their livelihood

4. Current Status of the Company/Start-up

- Running

5. Student team Details

- i. Bandela Supriya

6. Establishment date of the Company/Start-up/Commercialization:

- 15/07/2018

7. One paragraph on the Company/Start-Up covering all the points.

- It produces different chocolates of shapes, flavors, and invested with Rs.50000/- with 4 employees of 3000 pm/each

Start-up-60 I: Irriclay Technologies LLP

1. Name of the Company/Start-up: Irriclay Technologies LLP

2. Highlights of the Company/Start-up:

Product/Service	: Healthy pots : smart gardening system
Investment	: Rs. 05.00 Lakhs
Employment generated	: 5
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- N/A

4. Current Status of the Company/Start-up

- Active and running

5. Student team Details

- Anuj Katiyar
- Deepak

6. Establishment date of the Company/Start-up/Commercialization:

- 11 - 02 - 2021

7. One paragraph on the Company/Start-Up covering all the points.

- IrriClay transforms ordinary buildings into Air Purifying buildings by installing a green wall vertical garden over their walls. IrriClay has developed an automated vertical garden using it's patented clay module irrigation technology which don't require any human intervention for watering the plants.

Start-up-61: Nazmehayat Enterprises Private Limited

1. Name of the Company/Start-up: Nazmehayat Enterprises Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Content WREP® (Nazmehayat Enterprises Private Limited)
Investment	: Rs. 03.00 Lakhs
Employment generated	: 01
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

Nazm-e-hayat is working on building up and creating a stronger impact in the Publication field and also working on the renewal of the website to do the content marketing in a better way. In the near future, the company is supposed to build a strong foundation in the Publication sector and with digital sales through the website. Also, the content marketing of the writers will be done in a more efficient way, improving the quality of the contents over the website, bringing more qualitative content, and do the product sales of the books and magazines through the website, different distribution channels, and other platforms as well. And so the 3-year growth plan of the company looks like, to generate revenue through the Publication of the books and magazines and through the content marketing as well

4. Current Status of the Company/Start-up

ContentWREP launched its website on 30th July 2020

- 5K Writers Connected over Social Media
- Revenue generated of 1.2 lakhs INR
- 10 Solo Books and 8 Anthologies

5. Student team Details

- i. Swapnil Singh
- ii. Anushree Goswami

6. Establishment date of the Company/Start-up/Commercialization:

- Founded Date: 1st November 2019
- Incorporated Date: 18th June 2021

Start-up-62: Camplus App, Varopro Pvt Ltd

1. Name of the Company/Start-up: Camplus App, Varopro Pvt Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Camplus App, Campus Management Application
Investment	: Actively talking to various investors Around the globe for Seed investment
Employment generated	: 10
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Camplus App creates impact in the community by easing the day to day life of the students starting from managing deliveries, unified student identification system to gym & mess slot booking and club event management. It also helps the college management save cost on manually managing campus facilities and gives detailed analytics and insights into students activities and engagement. For example, traffic insight of the gym facility, helps students avoid the gym in the crowded hours saving them time and the management understand that there is a need to manage the crowd effectively during the peak hours.

4. Current Status of the Company/Start-up

- Seed Stage

5. Student team Details

- i. Nihar Sanda
- ii. Sanchit Goel
- iii. Gourab Chakraborty
- iv. Jaynit Patel
- v. Aparna Kholia
- vi. Heni Prajapati
- vii. Ayaan Khan
- viii. Mayank Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 26th October, 2021

7. One paragraph on the Company/Start-Up covering all the points.

- App is a one stop solution to managing residential campuses effectively, giving the college administrations a wide range of features starting from managing incoming and outgoing students/faculties/delivery personelles/staffs to maintaining a unified record of student's data for the administrators. Analytics generated from the student engagement and traffic datas enable campus management to manage the facilities better in addition to the wide range of features that Camplus App provides like Mess Slot Booking, Events, Library & Notices, MyID, Meeting Room Booking

Start-up-63: Stimuler Private Limited

1. Name of the Company/Start-up: Stimuler Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Mobile Application
Investment	: First Round of \$25k
Employment generated	: 4 paid interns
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- In the next 2 years, we plan to eliminate the English communication barrier and thereby create better opportunities for 10 million people

4. Current Status of the Company/Start-up

- Currently, we are scaling the product, from speech testing to speech training with improved AI models

5. Student team Details

- i. Akshay Akash
- ii. Anesh Srivastav
- iii. Ankit Kumar Pandey
- iv. Akshat Baranwal

6. Establishment date of the Company/Start-up/Commercialization:

- 10 March 2022

7. One paragraph on the Company/Start-Up covering all the points.

- Stimuler is a speech practice and training platform to help people become confident at communicating in English. Millions of people are unable to speak confidently despite having a decent understanding of English. Stimuler combines all aspects that are needed for improving speaking skills of participants. Using AI based speech analysis algorithms and custom practice tracks, we dream of removing the barrier of English proficiency and help create better opportunities for people. Stimuler has 5k users from 140 countries

Start-up-64: MiBi

1. Name of the Company/Start-up: MiBi

2. Highlights of the Company/Start-up:

Product/Service	: Mobile App
Investment	: Rs. 02.50 Lakhs
Employment generated	: 02
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- We are projecting to impact the lives of 30M people from over 300 Tier2-3 cities in 10 states within the next 3 years by providing them jobs and financial literacy
- Tired of hassles that come in the way of finding new jobs. Don't worry we have got your back. With the new and updated android application of MiBi you can search and apply for jobs from anywhere and everywhere you want.
- The MiBi app aims to cover the gap between workers and recruiters and remove all obstacles you face in this competitive world. Whether you are a recruiter or a daily wage worker, we have covered both.
- With MiBi, you can choose a job as you like and when you like it. It allows a direct connection between the two parties with utmost ease. Most importantly we work hard to make sure that the recruiter which connects with us is legitimate and we take proper measures to verify their claims and authenticity. Workers connected with us can enjoy a seamless job finding experience because they can get a job without having to travel places in search of it.
- Notably we ensure proper documentation and worker incentives. We make sure that the workers getting jobs from our side get fixed working hours.
- We are bringing the MiBi app to you with a vision

4. Current Status of the Company/Start-up

- Have 2000+ users with 10+ recruiters and 5+ outreach partners

5. Student team Details

- i. Shiva Sharma
- ii. Niraj Saini

6. Establishment date of the Company/Start-up/Commercialization:

- 11/08/2020

7. One paragraph on the Company/Start-Up covering all the points.

- MiBi is making hiring or getting a job a simple process for the unorganised sector

Start-up-65: Glexspace

1. Name of the Company/Start-up: Glexspace

2. Highlights of the Company/Start-up:

Product/Service	: A professional counseling service for College students
Investment	: Rs. 02.50 Lakhs
Employment generated	: 02
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- The initial idea was to connect bloggers in a digital space using an AI engine that connects like-minded people. The startup did a lot of ground work and how provides counseling services to college students. The college students are increasingly coming under societal and academic pressures, while the colleges seldom have the expertise and solutions for such solutions. The startup is a one-stop solution for the problem, hugely benefiting the society

4. Current Status of the Company/Start-up

- The talks are in an advanced stage with multiple colleges

5. Student team Details

- i. Ayush Chaurasia
- ii. Aman Bhoskar

6. Establishment date of the Company/Start-up/Commercialization:

- 6 Jan 2021

7. One paragraph on the Company/Start-Up covering all the points.

- The startup initially got great success because of a blogging portal where people could share their experiences to the world. On a greater analysis the startup discovered the problem of depression and tension among the youth. Alongwith medical experts, the startup created counseling packages for the colleges to help their students with the same

Start-up-66: Comet Labs It Solutions Pvt. Ltd.

1. Name of the Company/Start-up: Comet Labs It Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: SAAS Platform for Hackathons & Hiring Interview
Investment	: Rs. 35.00 Lakhs
Employment generated	: 14
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- We're building the first-ever Automated Powered Hackathons Playgrounds in multiple Web/App frameworks where the Developers can build Web Products, Mobile Apps, and Full-Stack Applications in their browser only.
- The Playground judges their Code Solutions over product building/testing parameters building their Vetted Profile with Proof of Work for further hiring

4. Current Status of the Company/Start-up

➤ **7000 + Developers' Community**

- 35+ CodeArenas organised on COMETLABS.
- 550+ Projects built on COMETLABS.
- 19000+ Total Participation in CodeArenas.
- 1700 + Ready to hire Vetted Profile
- 570 + Interns & Jobs
- ₹ 55K MRR

➤ **Recognitions and Backing**

- Accelerated by [CIE-IIIT Hyderabad](#) with [T-Hub](#), [IIT Hyderabad](#), [TSIC](#), and [BITS](#) under [RICH's Mission 10X \(SIG\)](#).
- Backed by [SucSeed Ventures](#), as lead VC Investors.
- Incubated virtually at [NASSCOM 10000 Startups](#).
- Featured in the most reputed media sources like [Times of India](#), [The Hindu](#), [Telangana Today](#), & many more.
- Formerly incubated by [NewGen IEDC IIIT Allahabad](#).
- Recognised under Startup India by the DPIIT, Government of India.
- You can look over the [work culture](#) we established

5. Student team Details

- i. Prashant Katiyar
- ii. Rishika Kumari
- iii. Vineel Sai
- iv. Shivam Soni
- v. Manish Kumar
- vi. Chaitanya Hegde

6. Establishment date of the Company/Start-up/Commercialization:

- 20 May 2021

7. One paragraph on the Company/Start-Up covering all the points.

- COMETLABS is a Developer Tools & HR Tech Platform, where Technical Colleges and Developers Communities organise 3-5 Days Product-Building CodeArenas, Workshops, and Hackathons. Our Technology & Platform builds a complete 360° Developer Profile by judging their code quality on industry standards & proof-of-work, creating a pool of fully-vetted developers for bulk hiring

Start-up-67: ABYOM SpaceTech and Defence Pvt. Ltd.

1. Name of the Company/Start-up: ABYOM SpaceTech and Defence Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Rocket launch testing equipment, training For college students
Investment	: Rs. 02.50 Lakhs
Employment generated	: 02
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- The team has designed a model for rocket launching that is controlled by using a wifi and a testing facility, given as a DIY kits. In the long run this will revolutionize the spacetech industry by providing low cost solutions. The team bridges the educational gap by providing training and equipment to colleges

4. Current Status of the Company/Start-up

- The prototype is nearly-developed. The team continues to provide workshop, training and other services at different institutions, most recently at the propulsion lab at LPU. They have signed MOUs with a few institute for such services

5. Student team Details

- i. Jainul Abedin

6. Establishment date of the Company/Start-up/Commercialization:

- 20 May, 2021

7. One paragraph on the Company/Start-Up covering all the points.

- The team started to enter into the deep tech space, specifically into the spacetech domain. The team worked hard to create rocket launching prototypes. They later also included college training and supplying of equipment into their plans

Annexure-IV

Details of Patent Granted

Patent-1: Glass Concrete

1. Name of the Technology: Glass Concrete

2. Highlights of the Technology (innovation/uniqueness etc.):

A product that uses less concrete and still enhances the strength of the paver block

3. Impact it will create:

- Recycling glass is a costly affair and if it can be upcycled in this manner then it can impact the green house emission

4. Current Status of the Patent:

- Granted

5. Student team details

- Mr. Yash Patel
- Mr. Harshad Makwana
- Mr. Nirmal Suthar
- Mr. Gaurav Mer
- Mr. Vansh Agrawal
- Mr. Sahej Tuteja

6. Patent Filing date: 13th December, 2019

7. Patent Granted date: 20-07-2021

8. Patent Application Number: 201921051659

Patent-2: An IoT Based Portable Vaccine Cold Carrier

1. Name of the Technology: An IoT Based Portable Vaccine Cold Carrier

2. Highlights of the Technology (innovation/uniqueness etc.):

- Many vaccines must be stored at low temperatures, some below - 15°C, and others between 2 and 8°C. If vaccines are not stored correctly, they can lose their effectiveness. The ideal temperature for storing vaccines in the ILR is 30 +2 degrees to + 8 degrees.
- Many vaccines must be stored at low temperatures, some below - 15°C, and others between 2 and 8°C. If vaccines are not stored correctly, they can lose their effectiveness. The ideal temperature for storing vaccines in the ILR is 30 +2 degrees to + 8 degrees.
- There is therefore a need in the art to provide an improved, effective and efficient system. Hence the present invention provides an IoT based portable vaccine cold box for smart healthcare

3. Impact it will create:

- The invention is to improve the proper maintenance of supply cold chain. by designing a constant temperature enclosure using thermoelectric module for longer working hours and to interface it with IOT

4. Current Status of the Patent:

- Granted

5. Student team details

- i. Gaidhane Shilpa
- ii. Fulzele Punit

6. Patent Filing date: 19-03-2021

7. Patent Granted date: 28-04-2021

8. Patent Application Number: 2021101427

Patent-3: A Device for Dilation of the Cervix

1. Name of the Technology: A Device for Dilation of the Cervix

2. Highlights of the Technology (innovation/uniqueness etc.):

- Cervical dilators are the devices that are used for effective dilation of cervix. Dilation of cervix is done during childbirth, miscarriage, induced abortion or for some gynecological surgery. A dilator is used to gently open the cervix before a gynecologic procedure that requires the cervix to be open, allowing access to the uterus and fallopian tubes. Cervical dilation reduces the risk of injury to the cervix during such a procedure. The dilator can be placed much easier and more comfortably for the patient, but also one that is simple in its method of action, safe and one that can shorten the length of labor. Hence the present invention provides a device for effective dilation of the cervix

3. Impact it will create:

- Device for effective dilation of the cervix
- Reduce the time taken for dilation and to speed up the process of dilation
- Minimize the labor pain of patient during the surgery.
- Facilitate ease of sterilization ability and the ease of assembling and faster dilatation.

4. Current Status of the Patent:

- Granted

5. Student team details

- i. Khedkar Sandip Sudhakarrao
- ii. Arpita Jaiswal

6. Patent Filing date: 19-03-2021

7. Patent Granted date: 28-04-2021

8. Patent Application Number: 2021101426

Patent-4: An apparatus for stretching hamstring muscles

1. Name of the Technology: An apparatus for stretching hamstring muscles

2. Highlights of the Technology (innovation/uniqueness etc.):

There are a number of specific stretching exercises that are useful for properly conditioning the hamstrings. One of these exercises requires a person to lean forward toward a wall and to place their hands on the wall for support while keeping one leg relatively straight and stretching the other leg out behind them. These methods of stretching the hamstring, however, are difficult for many people to perform as these exercises require a relatively high degree of mobility and flexibility. We designed a portable exerciser which can be used anywhere and required minimum effort for performing exercises.

3. Impact it will create:

- invention provides a device to stretch the leg and strengthening the hamstring muscle
- portable hamstring muscles stretching exerciser apparatus so that it can be transferred from patient to patient

4. Current Status of the Patent:

- Granted

5. Student Team details

- i. Qureshi Irshad
- ii. Khedkar Sandip Sudhakar Rao

6. Patent Filing date: 03-06-2021

7. Patent Granted date: 09-07-2021

8. Patent Application Number: 2021103076

Patent-5: Forceps for IRIS Claw Lenses

1. Name of the Technology: Forceps for IRIS Claw Lenses

2. Highlights of the Technology (innovation/uniqueness etc.):

- The iris claw lens has an advantage that it can be fixated to the iris without sutures because the peripheral iris is incarcerated between the claws. Forceps are a handheld, hinged instrument used for grasping and holding objects. The available forceps presently in use in Iris claw fixation makes the surgery still more difficult as it becomes difficult to catch hold of the lenses and fix it appropriately.

3. Impact it will create:

- efficient forceps that can be used for iris-claw fixation
- simple and cost-effective forceps that is used for iris-claw fixation
- reliable and efficient forceps that is used for iris-claw fixation.

4. Current Status of the Patent:

- Granted

5. Student team details

- i. Ms. Deepika Singhal
- ii. Mr. Deepak Saxena
- iii. Ms. Nazli Khatib

6. Patent Filing date: 04-06-2021

7. Patent Granted date: 06-10-2021

8. Patent Application Number: 2021103117

Patent-6: Apparatus for treating sleep disorder

1. Name of the Technology: Apparatus for treating sleep disorder

2. Highlights of the Technology (innovation/uniqueness etc.):

- Obstructive sleep apnea (OSA) occurs when the muscles in the back of a patient's throat relaxes more than usual to allow normal breathing. These muscles support 15 structures including the back of the roof of the mouth (soft palate), the triangular piece of tissue hanging from the soft palate (uvula), the tonsils, and the tongue. When the muscles relax, the airway narrows or closes as breathe is taken in and breathing may be inadequate for 10 seconds or longer. This may lower the level of oxygen in the blood and can cause a buildup of carbon dioxide. The brain may sense this impaired breathing and briefly rouses the subject from sleep so that the subject can reopen the airway. This awakening is usually so brief that it may occur that the subject may not remember it. efforts have been made in the current invention to overcome the limitations of current modalities for OSA.

3. Impact it will create:

- It provides an apparatus for forming auxiliary airways for treating patients suffering from obstructive sleep apnea.
- simple and cost-effective apparatus for forming auxiliary airways
- reliable and efficient 20 apparatus for forming auxiliary airways

4. Current Status of the Patent:

- Granted

5. Student Team details

- i. Mr. Vikram Belkhode
- ii. Mr. Sharayu Nimonkar

6. Patent Filing date: 04-06-2021

7. Patent Granted date: 06-10-2021

8. Patent Application Number: 2021103112

Patent-7: An apparatus for facilitating Ultrasound based soft

1. Name of the Technology: An apparatus for facilitating Ultrasound based soft

2. Highlights of the Technology (innovation/uniqueness etc.):

- Apparatus for providing a deep penetrating ultrasound therapy an instrument assisted soft tissue Mobilisation (IASTM) tool operatively coupled to an ultrasound therapy transducer head configured to the ultrasound therapy transducer apparatus, and wherein diameter of the ultrasound therapy transducer head is flexible so as to adjust fixing of the IASTM tool with the transducer.

3. Impact it will create:

- An apparatus that combines 25 IASTM tool to an ultrasound apparatus
- An apparatus with a pointed end to localise and release trigger points
- Facilitate providing a deep heating effect and healing properties of ultrasound
- Facilitate helping a patient with myofascial pain syndrome, scar mobilisation, chronic pain, stiffness, and spasm

4. Current Status of the Patent:

- Granted

5. Student Team details

- i. Mr. Waqar Naqvi
- ii. Ms. Laukik Vaidya

6. Patent Filing date: 04-06-2021

7. Patent Granted date: 06-10-2021

8. Patent Application Number: 2021103109

Annexure-V

Details of Companies/Start-ups/Businesses Commercialized

Start-up-01: Abhielectrobest & Consultancy Pvt. Ltd.

1. Name of the Company/Start-up: Abhielectrobest & Consultancy Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Covid detection using Smart sensing Materials Detection of obstacles using Robot
Investment	: Rs. 10.00 Lakhs
Employment generated	: 04
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

In eluru region it will create high impact on covid detection equipment and help full to society

4. Current Status of the Company/Start-up:

Applied for approval and registration

5. Student team Details

- i. K. Abhishek
- ii. J. Prasanth kumar

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

After the first case has appeared in China, the COVID-19 pandemic continues to pose an omnipresent threat to global health, affecting more than 70 million patients and leading to around 1.6 million deaths. To implement rapid and effective clinical management, early diagnosis is the mainstay. Today, real-time reverse transcriptase (RT)-PCR test is the major diagnostic practice as a gold standard method for accurate diagnosis of this disease. On the other side, serological assays are easy to be implemented for the disease screening. Considering the limitations of today's tests including lengthy assay time, cost, the need for skilled personnel, and specialized infrastructure, both strategies, however, have impediments to be applied to the resource-scarce settings. Therefore, there is an urgent need to democratize all these practices to be applicable across the globe, specifically to the locations comprising of very limited infrastructure.



ABHI ELECTROBEST & CONSULTANCY PRIVATE LIMITED
A Unit of ABHI Group of Institutions
ABHI Group of Institutions
ABHI Group of Institutions

Start-up-02: Med Mitra Health Manger Pvt. Ltd.

1. Name of the Company/Start-up: Med Mitra Health Manger Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company produces medicine tracking System to know about patient medicine Record
Investment	: Rs. 12.00 Lakhs
Employment generated	: 03
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

Most of the patient don't have time to remind about medicine to take in time, this product will help to support health

4. Current Status of the Company/Start-up:

Applied for startup registration and office location

5. Student team Details

- i. A. Uma MaheswaraRao
- ii. Shameena Begum

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

The adoption of technology in healthcare over the years has led to better diagnosis and treatment of patients. Out of all the benefited sectors from technology adoption, healthcare is probably the most important one. Consequently, it improved the quality of life over time, and it has saved many lives. But what are some of the benefits of technology in healthcare? And what are some groundbreaking medical technologies in healthcare right now. Someone cannot argue that technology in healthcare is a new thing. Medication adherence, a growing concern to healthcare systems, usually refers to whether patients take their medications as prescribed (eg, twice daily), as well as whether they continue to take a prescribed medication. Poor adherence to prescribed regimens can result in substantial disease progression, additional medical costs and physician visits, medication changes, and leads sometimes to death. However, managing medication is

very hard. To date, measurement of patient medication adherence and use of interventions to improve adherence are rare in routine clinical practice. For people, who take medication on regular basis, organizing and remembering is a huge challenge. To address this challenge, it is proposed to develop a user-friendly medication management tool, Med-Mitra+, that tracks the medication in a simple and smart way and measure the medical adherence. The device can be designed to remind the patients or elderly parents about the medication due, effortlessly track what they have taken and instantly notify the people their health attributes and feelings that need to know, thus enabling them to live quality and independent life.



Start-up-03: KR electronic innovations Pvt. Ltd.

1. Name of the Company/Start-up: KR electronic innovations Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company planning to manufacture Automated toilet cleaning devices, only One company in this region focused on automated cleaning system manufacturing
Investment	: Rs. 06.00 Lakhs
Employment generated	: 03
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any):

It gives good support to maintain hygiene in toilets

4. Current Status of the Company/Start-up:

Under startup registration process

5. Student team Details:

- i. K Raju
- ii. M. Durga Bhavani

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points.

Moving towards our glorious goal of developed and prosperous nation, cleanliness is one of the biggest need. „Swachh Bharat Abhiyan” is our motto behind the research of „Robot Toilet Cleaner” and it is the great leap towards the cleanliness of private as well as Public Lavatories. Dirty toilets cause contagious diseases which are hazardous for human life. This system is a remedy for human health as well as our goal towards „clean and smart India”. The purpose of this system is to maintain hygiene level of toilets through cleaning the bowl in a semi automatic way. At present, cleaning system of toilets is worst and leads to health issues. This system automatically cleans the western toilet with the help of robotic arms. There is a sequential cleaning algorithm for the same. The robotic arm has a brush attached to its end that is used for the cleaning purpose. Water jets are provided. In this system there is minimum usage of water & electricity. To maintain the periodicity of cleanliness level servo motor and DC motors are used



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K. J. Somaiya Institute of Engineering & Technology

Start-up-04: FuGen Electronics Pvt. Ltd.

1. Name of the Company/Start-up: FuGen Electronics Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company targeting to grab gap of this Product in market
Investment	: Rs. 03.00 Lakhs
Employment generated	: 03
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

A product with less cost and quality, it will create to support water saving in urban and rural

4. Current Status of the Company/Start-up:

Product production is going on-Company registration is in progress

5. Student team Details:

- i. B. Pravallika
- ii. S. Jagan Mohan Rao

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-up covering all the points

When the water level in the over head tank exceeds the required level, the pump automatically turns off and stops the pumping process thus preventing the over flow of water. It uses a relay to cut off the power supply to the water pump.

- ❖ This project is based on the theme that water should be controlled to such a level that it can be utilized with proper use. With this project we not only save water but also the power consumption and running time of motor. Own designing of the circuit with ambient temperature of 0-65degC for commercial purpose, 120degC for Industrial purpose, and -50 to 120degC for Military purpose.
- ❖ For the indication of the levels we are using Magnetic Reed Sensors.
- ❖ Magnetic Reed Sensor: A reed switch is an electromagnetic switch used to control the flow of electricity in a circuit. They are made from two or more ferrous reeds encased within a small glass tube-like envelope, which become magnetised and move together or separate when a magnetic field is moved towards the switch.
- ❖ Working Specifications would be different for different purposes.

SCOPE OF MARKET

- ❖ It will help industries in saving water
- ❖ It will increase the motor running time.
- ❖ Fully automatic, saves man power.
- ❖ Avoid seepage of roofs and walls due to overflowing tanks.
- ❖ All domestic house owners
- ❖ Industries
- ❖ Railways
- ❖ Schools, Colleges, Office and Hostels etc.,

Advantage of Product

- ❖ For 1HP motor Power consumed is 746watts. It's RPM(Revolutions per Minute) is 3,450.
- ❖ It's Maximum flow rate is 80 LPM.
- ❖ If a 1HP motor runs for a minute it consumes $746 \times 0.0166667\% \times 100 = 0.1243333582$ units
- ❖ In Indian Currency 1 Unit=5.43 Rupees.
- ❖ So, if we delay a minute to turn off the motor for 60 days we can save nearly 330 rupees.
- ❖ Similarly we can save 17.904 K watts of Power and 4800 Liters of water in 60 days.
- ❖ If we can save that much of power and water in 60 days in just one place, we can save lots of energy and power if it is widely used.



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Start-up-05: PR Argo services Pvt. Ltd.

1. Name of the Company/Start-up: PR Argo services Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company manufacturing products help full To support agriculture
Investment	: Rs. 12.00 Lakhs
Employment generated	: 02
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

It gives huge support to farmers for increasing production rate

4. Current Status of the Company/Start-up:

Applied for sales and marketing approvals

5. Student team Details:

- i. S. Harish
- ii. P. Rajesh

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

Soil and field analysis- Agricultural drones can be used for soil and field analysis to help in field planning. They can be used to mount sensors that measure soil moisture content, topographical conditions, soil conditions, soil erosion, soil nutrients, and soil fertility. Crop monitoring- Crop

surveillance refers to the monitoring of a crop from seeding to harvesting. This includes applying fertilizers at the appropriate times, tracking the impact of weather conditions, and inspecting for insect infestation. When dealing with seasonal crops, crop surveillance is the only way to secure a timely harvest. Crop failure could come from any faults made at this time. Crop surveillance helps in understanding and planning for the next farming season



PR AGRO
SERVICES PRIVATE LIMITED

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NewGenEDG
Rameshchandra College of Engineering, Eluru

Start-up-06: Solar Tech Power Solutions Pvt. Ltd.

1. Name of the Company/Start-up: Solar Tech Power Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Established to manufacture different types of products based on solar energy to support agriculture and domestic usages
Investment	: Rs. 20.00 Lakhs
Employment generated	: 06
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any):

New applications of solar energy based products will be developed

4. Current Status of the Company/Start-up:

Products manufacturing started, Apply for approval

5. Student team Details:

- i. Ms. Poojitha M.
- ii. Mr. S. S. Sarma

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

This unique integrated solar device can be used as a solar water heater during the winter, a solar cooker during clear days and a solar dryer for fruits or vegetables. It can produce about 50 lt of hot water of 50-60°C utilising the low altitude position of sun during winter and food for a family can be boiled within 2-3 hours, when used as a solar cooker and that too without sun tracking. As a dryer, fruits and vegetables can be dehydrated efficiently with regulation of temperature during the day with water working as a sink regulating temperature and helps continuation of the drying process in the night through the solar heated water. Insect protection is an important component of agriculture. Solar PV duster is a novel device suitable for dusting insecticide and pesticide powder on crops. It essentially comprises a PV panel carrier, a storage battery and a specially designed compatible dusting unit.



Start-up-07: VNSR Power Tech Pvt. Ltd.

1. Name of the Company/Start-up: VNSR Power Tech Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company invested to manufacture air Purifiers
Investment	: Rs. 13.00 Lakhs
Employment generated	: 04
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any)

Heavy Capacity air purifiers for large public spaces manufacturing unit create high impact in market

4. Current Status of the Company/Start-up:

Applied for product License

5. Student team Details

- i. M. Divya jyothi
- ii. Mr. Murthy

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

Pollution has rocked the world with skyrocketing pollution levels. Though the long term solution to the pollution problem lies in finding and minimizing pollution sources, we need to bring the current pollution levels under control by the time. The best way of controlling pollution is by using air purifiers. But regular indoor air purifiers are small low power devices that don't possess enough purifying capability needed for outdoor spaces. Along with this there is also an issue of power supply in outdoor machines. So here we design a heavy duty outdoor air purifier that is made for outdoor purification along and powered by solar panels so it is energy independent. Our solar air purifier consists of a heavy duty suction fan that pulls air from the bottom of the purifier through a layer of HEPA and Carbon filters for elimination of PM 10 PM 2.5 pollutants as well as gases. The purifier uses 2 layer purification, the first one being HEPA layer and second and active carbon filter. The combination of these 2 filters leads to dual filtration using a centrifugal air force to suck large amount of air and purify it of dust particles.



Approved by
Kannur University College of Engineering, Kanna

1. Name of the Company/Start-up: Ramachandra Batteries Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Low-cost lithium phosphorus and lithium-ion Manufacturing battery unit
Investment	: Rs. 07.00 Lakhs
Employment generated	: 03
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any):

In India we have less battery production units, by establishment of company can supply the battery in this region of Andhra Pradesh

4. Current Status of the Company/Start-up:

Applying for raw material handling license and contract

5. Student team Details:

- i. Mr. J. Ranga
- ii. Mr. E. Ravi Teja

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

From the time Electric Vehicles (EV) came in to Indian market, the growth is slow but steady. This is due to huge initial cost.

- Nowadays, the most expensive part of an electric vehicle is the battery, which represents 25 ... 50 % of the price of the electric vehicle, depending of the technology used.
- A decrease in the acquisition price of the electric vehicles is mandatory until it reaches a level closer to that of the internal combustion engine vehicles.
- Which will determine a significant decrease in the acquisition price of the electric vehicles.
- The costing of batteries is reducing in recent days but still it shares the major cost
- The pricing of battery can be reduced by importing the cell of the batteries and then assembling them.

- This technology will contribute to manufacturing and marketing of battery at low cost, this accelerates the sales of EVs in the market.

So that, more customers show much willingness to buy EVs Product:

Benefits:

- i. Priority for the high performance pack with higher efficiency.
- ii. BMS will monitor all the cells and equalize the cell voltage at load.
- iii. User friendly
- iv. We can be easily carry.
- v. This technology represents the best “charge to weight” solution, fulfilling one of the most important conditions for battery used in electric vehicles, which made an easy replacement of NI-MH batteries and lead acid batteries.

Features:

- i. Cost effective
- ii. Reliable
- iii. State-of-Art Design
- iv. Effective after sales service
- v. Continuous improvement through technology development and continuous R&D.

Customers:

- i. Small-scale Industries
- ii. Public sectors
- iii. All future vehicles are works on Electricity
- iv. Future will completely depend on the EVs



Start-up-09: Aqua sustains solutions Pvt. Ltd.

1. Name of the Company/Start-up: Aqua sustains solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: In West Godavari District most of the Peoples depend up on aqua culture, this Developed technology helps to improve fish Growth rate and production rate
Investment	: Rs. 15.00 Lakhs
Employment generated	: 03
Commercialized or not	: Product released and handover to customer-Applying for aqua culture license

3. Impact it will create (including social impact, if any):

It creates high impact on social aqua culture economics

4. Current Status of the Company/Start-up:

Estimated proposal prepared for fund acquiring

5. Student team Details:

- i. Bhavanarayana K.
- ii. S. Venkat
- iii. K. Venkatesh

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

Optimal Recirculation aquaculture systems (ORAS) represent a new and unique way to farm fish. Instead of the traditional method of growing fish outdoors in open ponds and raceways, this system rears fish at high densities, in indoor tanks with a controlled environment. Recirculating systems filter and clean the water for recycling back to fish culture tanks.

This report, Recirculating Aquaculture Systems, provides an introduction to Recirculating Aquaculture Systems (RAS). This closed-loop fish farming facilities that retain and treat water within the systems. This form of aquaculture is quickly gaining popularity in the United States. Recirculating Aquaculture Systems also provides commercial case studies of existing successful RAS operations in the United States. ORAS can be of various

sizes ranging from large-scale production systems (over 1 million pounds per year) to intermediate-sized systems (500,000 pounds per year), to small systems (50,000 pounds per year). They can be used as grow-out systems to produce food fish or as hatcheries to produce eggs and fingerling sport fish for stocking and ornamental fish for home aquariums. ORAS are currently being used to grow catfish, striped bass, tilapia, crawfish, blue crabs, oysters, mussels, and aquarium pets. Indoor fish culture systems offer considerable flexibility to (1) grow a wide diversity of fish species, (2) rear a number of different species simultaneously in the same tank (polyculture) or different tanks (monoculture), (3) raise a variety of different sizes of one or several species to another depending on market demand and price.



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Start-up-10: Super Sonic Sigma Pumps Pvt. Ltd.

1. Name of the Company/Start-up: Super Sonic Sigma Pumps Pvt. Ltd.

2. Highlights of the Company/Start-up (Please include the following):

Product	: Company established to manufacture Electrically powered agriculture application Machines. Initially planned to manufacture Battery powered water pump. Trail run and Testing completed
Investment	: Rs. 16.00 Lakhs (2 Lakhs Procured)
Employment generated	: 03
Commercialized or not	: No

3. Impact it will create (including social impact, if any):

When farmer replace the exist fossil fuel pump with this electrical based pump, farmer can save 80% of money and ecofriendly. High efficiency

4. Current Status of the Company/Start-up:

Collaborating with local dealers

5. Student team Details:

- i. K. Srinivas Prabhu
- ii. Chandra Sekhar

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

Pump is a mechanical device which converts mechanical energy into hydraulic energy. Existing pumping systems are based upon conversion electrical to mechanical to hydraulic . It has less efficiency and high rate of power consumption so we need to reduce the power consumption and need to increase the efficiency save for energy conservation. In this project we aim to fabricate a pump which has high efficiency and compactable to carry and to work without any external supply. Sonic pump has less energy consumption as compared to existed pumps. It is very compactable to carry anywhere and use at any location where we don't have power availability. In some areas and in some applications power is not available so we are unable

to use existed pumps so this problem overcome by this sonic pump it has own power built assistance to work any remote areas.

- This sonic pump Runs on dc supply so no need of AC power source
- It has a self-power unit to carry any here to work
- Major advantage of this pump is it can operate in remote areasw here no power is available.
- It is also useful for agriculture nursery maintenance
- On one complete charge it will run up to 100 min and above
- It sucks water from up to 11 feet's and deliver up to 15 feet height
- It is a multipurpose pump, it can use in municipality works especially repair of leakage water pipe lines
- Produces zero emissions then compared to existed portable petrol engines
- Consumes less power and running cost is very less.
- Easy to operate and handle
- No maintenance is required as petrol or oil engines
- Operate at different speeds as per required flow rate it is not possible in existed AC water pumps
- Efficiency is high



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Start-up-11: Ramachandra Mech irrigation Pvt. Ltd.

1. Name of the Company/Start-up: Ramachandra Mech irrigation Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Company focusing to develop hydraulic and marine machines for irrigation canals and drain maintenance
Investment	: Rs. 10.56 Lakhs
Employment generated	: 4
Commercialized or not	: Company registration in Process

3. Impact it will create (including social impact, if any)

In our India no one company focused to develop machines for this application, This will help to farmers and to increase cultivation rate

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. Rama Koteswara Rao
- ii. Venkatesh.K
- iii. Bhavanarayana K.

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points.

Liquid fluid power is used by hydraulic machines to carry out the specific task. Hydraulic fluid is compressed to various hydraulic motors and hydraulic cylinders inside of this type of equipment and is then controlled by hoses using directional control valves to move pipes. The movement is managed hoses, either manually or automatically, through management valves, either pipes or tubes. The popularity of hydraulic machinery is due to the large amount of power that can be transferred through small tubes and flexible hoses, as well as the high power density and wide variety of actuators that can use this power, as well as the significant force multiplication that can be achieved by applying pressures over relatively large areas. Pumps that provide limitless flow are used in the proposed hydraulic circuits. The management valve's open centre allows the flow to be returned to the tank;

hence, once the management valve is cantered, it offers an open return path to the tank and also ensures that the fluid is not under excessive pressure. Otherwise, if the management valve is operated, fluid is sent to the nursing assistant from the nursing assistant mechanism and tank. Given that the pump has an ongoing output, any resistance will be overcome by an increase in fluid pressure. A pressure valve allows liquids to return to the tank if the pressure gets too high. Additionally, many management valves are stacked non-parallel. Constant displacement pumps with minimal costs are suitable for this type of circuit. And also hydraulic gear pump is operated by using the fluid power. By using the hydraulic gear pump along with chain cutter can remove the aquatic weeds plants.

Start-up-12: GB Mechanical Works Pvt. Ltd.

1. Name of the Company/Start-up: GB Mechanical Works Pvt. Ltd.

2. Highlights of the Company/Start-up :

Product:

- Implementation of ozone treatment mechanism in domestic washing machines and laundry machines
- Killing and eliminating the bacteria from cloths during washing in washing machine by using UV light.
- Washing machine having the UV treated water pumping system and UV water treating mechanism
- Washing machine consists of Ozone gas (O₃) pumping mechanism and UV treatment, UV water treatment system.

Investment : Rs. 13.00 Lakhs

Employment generated : 02

Commercialized or not : Applied for approval

3. Impact it will create (including social impact, if any)

Our proposed and developing technology taking the washing machine working to next level of advancement by implementing the ozone technology in washing machines.

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. M.Vimal Teja
- ii. G. Bhanu Prakash

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points.

Ozone technology gives more effectiveness in washing performance. Our technology removes bacteria/virus and manganese, Iron, Hydrogen sulphide from laundry. Ozone technology creates impact on mentioned solvents and stains of cloths and water. So that it will removes more dirt with less water consumption in less time. We are using high chemical power detergents and chemicals to clean the cloths, finally it happens to contaminate soil and air due to draining in to drainages etc. In this developed technology ozone gas is used to react with germs and dirt of cloths, after reaction of gas will converts in to oxygen. It was eco-friendly. ozone generator system consist of regulator mechanism to control the feeding rate of O₃ gas in to the rotating drum chamber. UV light is fixed to washing machine to kill microbiological bacteria on laundry cloths This designed washing machine having UV treated water pumping assisted system it helps full to eliminates water source bacteria, this implementation improves washing quality.

Start-up-13: HALIKASETHU

1. Name of the Company/Start-up : HALIKASETHU

2. Highlights of the Company/Start-up;

Product	:
Investment	: Rs. 07.58 Lakhs
Employment generated	: 02
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any)

This project is going to be the gateway between the producer and consumer that is it helps the organic products from the producer reach the consumer directly without interference of any another mediator

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. A. Sai Venkata Sandeep
- ii. U. Pavan
- iii. Ch Swathi

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

In this advancing world no producer is being paid enough for their products. Most of the producers are farmers. Farmers have never been paid enough for what they have produced because of a mediator who deals with their products. Mediator is gaining more money than the one who is producing or the one who is buying. Because of a mediator huge commission has to be given. In this case the producers are being paid less than the budget they have planned to produce the goods which makes a huge loss for them and the consumers have to buy the products at high rate from the mediators which even make a huge loss for them.

There are chances to avoid a mediator and our whole projects works on this. Avoiding a mediator benefits the producer as well as the consumer.

- We can avoid adulteration of products by direct dealing.
- Consumers can buy the goods at reasonable prices
- Producers can be benefited by getting sufficient amount of money for their valid products
- Direct access between the producer and consumer provides accountability and liability.

Start-up-14: Macpro circuits Pvt. Ltd.

1. Name of the Company/Start-up: Macpro circuits Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product	: Progressive Mechanized Air Conditioner
Investment	: Rs. 02.50 Lakhs
Employment generated	: 02
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any)

This product reduces power consumption in air conditioners and saves 15% of electricity

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

i. Chandrasekhar K.

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

In day to day life air conditioners are becoming a necessary appliance to conditioning the living space. In India lakh of air conditioners in House hold and in industry are working around a day, here cost of equipment and maintenance is on one end and power consumption, power bill on other end in thoughts before going to buy or install. People sure to vote for low power consumption high efficiency Air conditioners it seems to eco-friendly and financial safety. In this invention a truly eco-friendly Sub cooling technology with evaporative cooling mechanism is developed to fix Air conditioner for energy saving. By this technology cooling rate will increase and efficiency will be stable on all season of year-round. It Pre condition the air pass to the condenser.



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Start-up-15: Suresh Saint Pvt. Ltd.

1. **Name of the Company/Start-up:** Suresh Saint Pvt. Ltd.

2. **Highlights of the Company/Start-up:**

Product	: Disinfectant Tunnels
Investment	: 11.5 Lac required
Employment generated	: 05
Commercialized or not	: Applied for product approval

3. **Impact it will create (including social impact, if any)**

Our company product moto is to develop and market new design of disinfectant tunnels

4. **Current Status of the Company/Start-up :**

Under startup registration process

5. **Student team Details**

i. Ms. M. N. Prathima

6. **Establishment date of the Company/Start-up/Commercialization:**

Under Process



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Start-up-16: Livelihood

1. Name of the Company/Start-up: Livelihood

2. Highlights of the Company/Start-up:

Product	: Personal care health management
Investment	: 11.5 Lac required
Employment generated	: 05
Commercialized or not	: Applied for product approval

3. Impact it will create (including social impact, if any)

So many people in the society suffering with various health problems, Our company develops a app and product marketing by assisting the patient

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. Bhargav Raj
- ii. Gayathri
- iii. Harshith
- iv. Sai Mounika
- v. Abhaya Dattu

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

- Develop a app
- Establishment of incubation centre
- Tie up with farmers
- Purchase processing and packing machineries
- Create awareness in society

Start-up-17: Bio science & solutions industries Pvt Ltd

1. Name of the Company/Start-up: Bio science & solutions industries Pvt Ltd

2. Highlights of the Company/Start-up:

Product	: Company focus to develop bio treated Washing machines
Investment	: 25 Lac required
Employment generated	: 12
Commercialized or not	: Applied for Patent and Applied for fund

3. Impact it will create (including social impact, if any)

Our product and technology creates impact on entire society and washing machines market; we are launching the new advanced technology washing machines

4. Current Status of the Company/Start-up :

Under startup registration process

5. Student team Details

- i. M. Tulasi Venkata Sai
- ii. G. Kiran Nagendra
- iii. M. Gowtham Phanindra Sai

6. Establishment date of the Company/Start-up/Commercialization:

Under Process

7. One paragraph on the Company/Start-Up covering all the points:

- Patent grant
- Funding from banks and financiers
- Collaboration with Component manufacturers
- Establishment of assembly unit
- Marketing and Tie up with dealers

Start-up-18: Athritek Innovations

1. Name of the Company/Start-up: Athritek Innovations

2. Highlights of the Company/Start-up:

Product/Service	: Aqua IoT Equipment
Investment	: Rs. 2.00 Lakhs
Employment generated	: 5
Commercialized or not	: Not commercialized

3. Impact it will create (including social impact, if any)

- It helps aqua farmers in reducing the farming cost and production cost using IoT based hardware.

4. Current Status of the Company/Start-up

- Running

5. Student team Details

- i. Ramya Undavalli

6. Establishment date of the Company/Start-up/Commercialization:

- 13-09-2021

7. One paragraph on the Company/Start-Up covering all the points.

- The company is manufacturing the devices related to IoT technology for aqua farmers in identifying various farming parameters to take care. It has achieved Start-up Recognition from DPIIT, Govt. of India.

Start-up-19: TruFit Kitchen LLP

1. Name of the Company/Start-up: TruFit Kitchen LLP

2. Highlights of the Company/Start-up:

Product/Service	: Product
Investment	: Rs 2.50 Lakhs
Employment generated	: 4-5
Commercialized or not	: Not Commercialized

3. Impact it will create (including social impact, if any)

- Smart kitchen appliances

4. Current Status of the Company/Start-up

- Development of prototypes and IP

5. Student team Details

- i. Ashutosh
- ii. Pawan Dixit

6. Establishment date of the Company/Start-up/Commercialization:

- June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- We are providing all in one solution for smart kitchen automation.
- We have two products:
- Adjustable slab: we are adjusting the slab by using gestures and advanced IT features like Artificial intelligence and Machine learning.
- Smart dustbin: we segregating green and non-green waste which is helpful to segregate the waste easily and
- Our aim is to improve the quality of kitchen life and make relevant technologies accessible to all.
- The company also sets out to offer IT solutions for automating the daily needs in the kitchen.

Start-up-20: Diabetic Chocolate

1. Name of the Company/ Start-up: Diabetic Chocolate

2. Highlights of the Company/Start-up;

Product	: Herbal & Sugar-Free Chocolate
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Sugar free chocolate candy bars have more antioxidants than red wine or green tea. Chocolate contain flavonoids that is good for the heart. It thins the blood platelets and prevents clotting. In addition, flavonoids may be helpful in the prevention of cancer.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Sharvanee Borah
- ii. Mobina Ahmed

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- The product can be enjoyed by diabetic patients without any fear as it does not alleviate or fluctuate blood sugar levels. The ingredients added to this product are herbs, some simple, easily available materials.

Start-up-21: Prebiotic Food

1. Name of the Company/ Start-up: Prebiotic Food

2. Highlights of the Company/Start-up;

Product	: Prebiotic Food Supplements
Investment	: Rs. 01.00 Lakhs
Employment generated	: 10 expected to be employed within 1 year
Commercialized or not	: Under process

3. Impact it will create (including social impact, if any):

- Eating a diet rich in prebiotics and taking prebiotic supplements may benefit certain aspects of metabolic health, including blood sugar, cholesterol, and triglyceride levels.

4. Current Status of the Company/Start-up:

- Start-up process initiated

5. Student team Details

- i. Ankita Kalita
- ii. Anishmita

6. Establishment date of the Company/Start-up/Commercialization:

- In process

7. One paragraph on the Company/Start-Up covering all the points.

- Prebiotic food supplement is a mixture of healthy fibers made from raw materials found in the North East of India. These raw materials are in the dried form

Start-up-22: Meynikar Labs Pvt Ltd

1. Name of the Company/Start-up: Meynikar Labs Pvt Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Virtual Reality based Education Module
Investment	: Rs. 02.50 Lakhs
Employment generated	: 02
Commercialized or not	: Nil

3. Impact it will create (including social impact, if any)

- Allows students to learn practically more than classroom learning. Students will get live learning experience with virtual reality. Students' knowledge will improve in the aspect of real time and practical learning.

4. Current Status of the Company/Start-up

- Working on VR Modules and Customer Demo


5. Student team Details

- i. M. Ganesh Babu

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 12.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

- Meynikar Labs Pvt Ltd is a start-up Incubated at AKC which is currently working on Virtual Reality based Education Module. The Start-up is  founded by three students of MBA IEV with a vision to incorporate practical learning among the students' community especially in medicine. The start-up is under initial proof of concept development and seeking investments. Meynikar Labs is now developing the modules in VR (Virtual Reality) using animation and 3D software. Currently there is no employment has been generated and the product is not yet commercialized. The company was incorporated on 12th April 2022.

Start-up-23: Nov Influx Healthcare LLP

1. Name of the Company/Start-up: Nov Influx Healthcare LLP

2. Highlights of the Company/Start-up:

Product/Service	: Shoe sole for foot ulcer
Investment	: Rs. 02.50 Lakhs
Employment generated	: 1
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- Foot ulcer is one of the serious problems which diabetic patients face. It is caused by lack of circulation in the feet. Foot ulcer causes serious damages to the health of the patients. This project will create an impact among the diabetic population by simulating the blood circulation in the feet via vibrating shoes.

4. Current Status of the Company/Start-up

- Product Development

5. Student team Details

- i. Nabeena.N
- ii. Hamida Hana.Z

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 24/11/2021

7. One paragraph on the Company/Start-Up covering all the points.

- The startup is at present focusing on providing the good product for the society by considering the touch points. Rapport is been improving with other departments regarding the product development and technical training. Once when the product is developed, focus will be on the clinical trials by getting the ethical committee approval.

Start-up-24: Emsensing Technologies Private Limited

1. Name of the Company/Start-up: Emsensing Technologies Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Electronics, Health care
Investment	: Rs. 0.45 Lakhs
Employment generated	: Nil
Commercialized or not	: Pitching done

3. Impact it will create (including social impact, if any)

- **Functionality Validation Analysis:** We have performed on-site physical field trials with the device developed to monitor and control intravenous fluid flow rate as per the requirement even from remote locations using a mobile phone-based application programming interface. Demonstration held in the premises of Post Operative Patient wards and Orthopedics ward for the various saline capacity and different time periods from 18th July 2022 to 20th July 2022. The observation made during the trials were documented and testimonials/comments/suggestions were received from the respective duty nurses concerned.
- It is noted that the device shows the capacity to monitor and control the fluid in the IV tube as per the commands executed by the user, accurately and found to be with various functional aspects, including setting flow rate, monitoring residual capacity, setting flow based on the time period, and empty bottle warning. The prototype can also do the desired tasks such as saline drip control per minute, Saline capacity in ml, capacity to infuse, timer, room temperature, humidity, real-time drips per minute status, consumed volume, remaining volume, and battery.
- **Business Summary:** Exists the problem of manually monitored and controlled drip rate of intravenous infusion tube replaced by an autonomously monitoring and controlling utility. It is envisaged that product knowledge may be transformed to the customer in a matter of time or by showing the product as the problem is well known and still not been solved. Hospitals are the large customer base; reaching them will be performed through dealers, digital advertisements, competition, and direct marketing

4. Current Status of the Company/Start-up

- Submitted Innovation Voucher Program, Start up India Seed Grant, BIRAC BIG Grant

5. Student team Details

- i. S. Praveen Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 18/08/2021

7. One paragraph on the Company/Start-Up covering all the points.

Emsensing Technologies is an Electronic Product and Solutions offering company founded in 2021 based in Chennai, India. Our Product Development and Solution Offering Engineering Team has talented skills on industry domains and platforms such as medical & healthcare, automotive, Industrial Automation that helps to reduce development risk and offer time and cost to market advantage. We research, investigate, understand the technology, and give our clients a competitive cutting edge solution . Understanding the technology and market trends give Emsense a key advantage in helping and deciding customers in realizing their dream of new products which are successful in their launch

Start-up-25: Octo Blooms Private Limited

1. Name of the Company/Start-up: Octo Blooms Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Wire Less stethoscope
Investment	: Self-Funded
Employment generated	: 2
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- This company works on developing medical devices and tools. A wireless Low cost Electronic Stethoscope can be widely used during the spread of Contagious diseases like viral and Corona.

4. Current Status of the Company/Start-up

- Working Model Ready

5. Student team Details

- i. V. Sai Harshith
- ii. G. Pravallika Reddy

6. Establishment date of the Company/Start-up/Commercialization:

- 17th June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This Company works closely with Medical Devices and their enhancements as per the need and problem statements from the doctor. Their first product which is ready to commercialize falls in the same line .

Start-up-26: Kartomatic Technologies Private Limited

1. Name of the Company/Start-up: Kartomatic Technologies Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Grocery Lift
Investment	: Self-Funded
Employment generated	: 2
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- This company works on developing an IoT based daily collectables for senior people living in Apartments and multi-floored buildings. This will impact the live of senior citizens from climbing stairs and reduce the Knee related problems.

4. Current Status of the Company/Start-up

- Working Model Ready

5. Student team Details

- i. Y. Jeshwanth
- ii. S. Abhinav

6. Establishment date of the Company/Start-up/Commercialization:

- Company name approved Waiting for CIN.

7. One paragraph on the Company/Start-Up covering all the points.

- This company Works in solving the problems of Elderly People especially to develop something smart for their needs.their first project Grocery lift is to help elderly people to lift the groceries automatically with a switch of a button from ground floor to top floors avoiding them to climb and step down and use force to pull the bucket up and down.

Start-up-27: Threatrecon Private Limited

1. Name of the Company/Start-up: Threatrecon Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Smart Protective face shield for Municipal Workers.
Investment	: Recently selected for MSME start-up Grant for Commercialization
Employment generated	: 1
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- This company impacts the lives of municipal Workers especially in the sanitization department who are prone to harmful gases.

4. Current Status of the Company/Start-up

- Working Model Ready

5. Student team Details

- i. Sushant Tiwary

6. Establishment date of the Company/Start-up/Commercialization:

- Company name approved Waiting for CIN.

7. One paragraph on the Company/Start-Up covering all the points.

- This company works on local society problems generally associated with Municipal corporation such as waste management, waste tracking system, protective face shield to avoid exposure of harmful gases to municipal workers.

Start-up-28: Khumb Organics

1. Name of the Company/Start-up: Khumb Organics

2. Highlights of the Company/Start-up:

Product/Service	: Mushroom and its Farming
Investment	: Rs. 02.00 Lakhs
Employment generated	: 02
Commercialized or not	: In Process

3. Impact it will create (including social impact, if any)

- Mushrooms demonstrate a great impact on agriculture and the environment, and they have great potential for generating a great socio-economic impact in human welfare on local, national, and global levels

4. Current Status of the Company/Start-up

- Awaiting for ROC

5. Student team Details

- i. Karishma Baria
- ii. dhaval van
- iii. Chinmaypitroda
- iv. Ruchita Rathod

6. Establishment date of the Company/Start-up/Commercialization:

- Ongoing company registration

7. One paragraph on the Company/Start-Up covering all the points.

- Khumb organics cultivates the Mushrooms by organics farming technique since it's has been considered as a delicacy. Mushrooms are being used as food since time immemorial. From the nutrition point of view mushrooms are placed between meat and vegetables. It is rich in protein, carbohydrate and vitamins. Mushrooms are low in caloric value and hence are recommended for heart and diabetic patient

Start-up-29: IRA Medical Technology Private Limited

1. Name of the Company/Start-up: IRA Medical Technology Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Device for sleep apnoea
Investment	: Rs. 02.00 Lakhs
Employment generated	: 02
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- It will provide a unique solution to patients suffering from sleep apnoea

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Vikram Belkhode

6. Establishment date of the Company/Start-up/Commercialization:

- 31 August 2021

7. One paragraph on the Company/Start-Up covering all the points.

- IRA Medical Technology Private Limited is a start-up incorporated for the product Device for sleep apnoea by Vikram Belkhode on 31 August 2021

Start-up-30: Visgenic Analytica LLP

1. Name of the Company/Start-up: Visgenic Analytica LLP

2. Highlights of the Company/Start-up:

Product/Service	: Smartphone enabled Urinary Tract Infection detection, using colorimetric Analysis of urine dipstick
Investment	: Rs. 01.00 Lakhs
Employment generated	: 01
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- It will be point of care invitro diagnostic device for UTI screening. It will help a lot of patients suffering from UTIs & related issues

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- i. Jayalakshmi Jayakumar

6. Establishment date of the Company/Start-up/Commercialization:

- 07 June 2021

7. One paragraph on the Company/Start-Up covering all the points.

- Visgenic analytica LLP is a start-up incorporated for the product Smartphone enabled Urinary Tract Infection detection, using colorimetric analysis of urine dipstick by Jayalakshmi Jayakumar on 07 June 2021

Start-up-31: Humen Edutech LLP

1. Name of the Company/Start-up: Humen Edutech LLP

2. Highlights of the Company/Start-up:

Product/Service	: An apparatus for facilitating Ultrasound Based soft
Investment	: Rs. 01.00 Lakhs
Employment generated	: 02
Commercialized or not	: No

3. Impact it will create (including social impact, if any)

- The device will help physiotherapists to provide better treatment to the patients and better outcome

4. Current Status of the Company/Start-up

- Active

5. Student team Details

- Waqar Naqvi

6. Establishment date of the Company/Start-up/Commercialization:

- 05 August 2021

7. One paragraph on the Company/Start-Up covering all the points.

Humen Edutech LLP is a start-up incorporated for the product an apparatus for facilitating Ultrasound based soft by Waqar Naqvi on 05 August 2021

Start-up-32: Sustainergic Tech Private Limited

1. Name of the Company/Start-up: Sustainergic Tech Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Hybrid T Brewer
Investment	: Rs. 07.00 Lakhs
Employment generated	: Hired freelancer
Commercialized or not	: No



3. Impact it will create (including social impact, if any)

- Solar based wending machine will bring the revolution in the market.
- Economical and easy to operate machine, beneficial to small vendors

4. Current Status of the Company/Start-up

- The startup is in developmental stage

5. Student team Details

- i. Prateek Srivastava

6. Establishment date of the Company/Start-up/Commercialization:

- 17 Feb 2021

7. One paragraph on the Company/Start-Up covering all the points.

- Sustainergic Tech Private Limited is a Private incorporated on 17 February 2021. It is classified as Non-govt Company and is registered at Registrar of Companies. Its authorized share capital is Rs. 100,000. Prateek Srivastava is the director of Sustainergic Tech Private Limited. It is involved in hot beverage wending machines. The company is developing a Smart tea/coffee brewer which works on both electrical energy and solar energy

Start-up-33: Tronix



1. Name of the Company/Start-up: Tronix

2. Highlights of the Company/Start-up:

Product/Service	: Pro Comp Projector
Investment	: Rs. 07.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Richard R
- ii. Kamatam Krishna Kaanth
- iii. Bharath A
- iv. Chinnakotla Sreeharsha

6. Establishment date of the Company/Start-up/Commercialization:

- 21.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

Our start up idea is to design and manufacture Computer Projector. It is designed to give dual performance. It has inbuilt WIFI and Bluetooth for Wireless Connection. It won't consume high electric current like desktop and projector. A mobile adapter is enough to power up this projector. It is light weighted we can carry this product anywhere.

Vision

- To Design, Inspire and Promote PRO-COMP Projector to make Productive and Successful Business

Mission

- To have better Ads in all social Media, Free demonstration to all retailer shops and schools and colleges, Highlight and Motivate peoples to showcase the features of our product as compared with existing product.
- To have positive impact to Customers to practise for better quality of Services
- To develop lasting customer relations by providing quality PRO-COMP Projector

Start-up-34: Green D Co



1. Name of the Company/Start-up: Green D Co

2. Highlights of the Company/Start-up:

Product/Service	: Development of A Natural Soft Drink Incorporated with Betel and Sarsaparilla Extracts
Investment	: Rs. 04.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- i. Indhu.S
- ii. Deepika.A
- iii. Jeevitha.S

6. Establishment date of the Company/Start-up/Commercialization:

- 02.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

The proposed drink is a lemon-based drink incorporated with betel and sarsaparilla extracts. The addition of betel and sarsaparilla will make the drink have medicinal properties such as anti-diabetic, anti-carcinogenic, anti-inflammatory, anti-microbial, anti-diuretic, and indigestion preventive. It will be a refreshing, post/pre-meal soft drink with a well-known and acceptable taste profile suitable for all age groups. It aims to develop products for the health of society and also to preserve and document our natural traditional sources

Vision:

- Taking inspiration from our traditional way of life for the betterment of our future generations and to perceive people's fondness to create a better standard of living naturally.

Mission:

- To refresh the world naturally
- To create a healthy and refreshing life by joining hands with the nature.

Start-up-35: Pops Soup Mix



1. Name of the Company/Start-up: Pops Soup Mix

2. Highlights of the Company/Start-up:

Product/Service	: Water Melon Seed Instant Soup Mix
Investment	: Rs. 03.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Denuja S

6. Establishment date of the Company/Start-up/Commercialization:

- 10.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

Start up idea is to design and manufacture soup product which is developed from waste food, under the process of waste food management. Watermelon Seed Instant soup mix, specially made for children, soup lovers and for parents who are interested in serving their children both healthy and tasty food product. This product is prepared under all rules and regulations, without adding heavy flavourings. And By this product we are going to create awareness about reducing plastic usage by covering our product by cloth covering from our company and by attaching one seed per packet, we are going to enhance growing of plants. Innovations are utilizing the waste food product to a value added product.

Vision:

- To develop value added products from food waste thus to help in food waste management.

Mission:

- To develop good quality and healthy products from the waste and by products of food industry.
- To create awareness on planting trees and to help in reducing plastic usage

Start-up-36: Nano Waters



1. Name of the Company/Start-up: Nano Waters

2. Highlights of the Company/Start-up:

Product/Service	: Water Purification System Using Nanomaterials
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Niranjan Sahadev
- ii. Hari Krishnan S
- iii. Vishnu Biju
- iv. Don Martin V J

6. Establishment date of the Company/Start-up/Commercialization:

- 21.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

Our start up idea is to manufacture a product which desalinates as well as purifies sea water into pure drinkable water. A product which purifies water to levels that modern day purifiers could not and that to at an affordable price. Not only sea water it can purify water containing toxic substances, nuclear wastes etc. It utilizes a novel Graphene Oxide (GO) desalination technique to desalinate and purify sea water, and our aim is every household must have access to pure drinkable water.

Vision:

- To deliver pure drinking water to all households.

Mission:

- To deliver the quality water through modern technology.
- To create awareness on energy resources available

Start-up-37: Resilient Organic Facemask



1. Name of the Company/Start-up: Resilient Organic Facemask

2. Highlights of the Company/Start-up:

Product/Service	: Organic face mask with silver nano Particles
Investment	: Rs. 02.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- Akhil Ajay
- Nafath M.

6. Establishment date of the Company/Start-up/Commercialization:

- 27.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

Resilient Organic Facemask is a startup company founded by Mr. Nafath M in 2022. It is a organic mask manufacturing company. Our motive is to develop the best quality of organic masks maintaining the highest quality and hygienic standards.

Vision:

- To see a world enhanced production against pandemic situations.

Mission:

- To prepare reusable and eco-friendly face mask with advanced microbial resistant technic by using silver nano particles and to deliver quality masks on every time at competitive prices.

Goals:

- To manufacture and distribute of reusable and safe face mask.
- To provide quality products and excellent customer service.

Start-up-38: Gadifem



1. Name of the Company/Start-up: Gadifem

2. Highlights of the Company/Start-up:

Product/Service	: Women Safety Watches
Investment	: Rs. 05.50 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- Gayathri L
- Divya Bharathi K

6. Establishment date of the Company/Start-up/Commercialization:

- 22.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

In our Country, even though it has super power and an economic development, but still there are many crimes against women. The atrocities against the women can be brought to an end with the help of our product “GADIFEM” This watch device is a security system, specially designed for women in distress. This watch is specially made with camera, Alarm, transmitters for sending messages, sharing photos; sharing location just in one button to crime and nearby police station and it is also specially made for handicaps. We can also add pepper spray and needle in one button for girl’s safety. Finally it’s an “ALL IN ONE” security device which has all the features in one click

Vision:

- To design and manufacture a world class smart wearable product with high quality trend setting watches.

Mission:

- To develop and launch new models of smart watches with contemporary styling.
- To mould innovative business model that supports production and marketing.
- To strengthen GADIFEM brand and create lasting impression on the customer

Start-up-39: Plantango



1. **Name of the Company/Start-up:** Plantango

2. **Highlights of the Company/Start-up:**

Product/Service	: Usefulness of Banana waste in Manufacturing Value added Bio-products
Investment	: Rs. 02.50 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. **Impact it will create (including social impact, if any)**

- Nil

4. **Current Status of the Company/Start-up**

- DPIIT Registration Under Process

5. **Student team Details**

- i. Likhitha K K
- ii. Dharanishvar R

6. **Establishment date of the Company/Start-up/Commercialization:**

- 09.05.2022

7. **One paragraph on the Company/Start-Up covering all the points.**

Banana is one of the important fruit crops grown almost in every state of India. After harvesting it generates huge quantity of waste in the form of pseudostem, which are cut in and Left in the Fields. On an average about 60 to 80 tones/ha of pseudostem are thrown away annually. Disposal of pseudostem in a routine ways causing environmental problems and making ecosystem imbalance. Therefore, an effective and economic way of reducing environmental problem by extraction of fibre and production of value added products like nursery trays and fertilizer from banana waste (pseudo stem) is ideal. In connection with this, fibre based seedling tray, vermicompost and fertilizers will be prepared and that could be effectively marketed due to its consistent size, easily degradable and it wont produce objectionable odour.

Vision:

- To assist the people by manufacturing the sustainable environment friendly organic products from waste that serves and safeguards Mother Nature.

Mission:

- To broaden the concept of green technology.
- To uplift the future of organic products around the cluster area

Start-up-40: Prakenav's



1. Name of the Company/Start-up: Prakenav's

2. Highlights of the Company/Start-up:

Product/Service	: Bioenzymatic Healthcare Products
Investment	: Rs. 03.50 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Karthika S P
- ii. Dixith K A
- iii. Gokul S

6. Establishment date of the Company/Start-up/Commercialization:

- 09.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

Enzymes are essential components of animals, plants, and microorganisms, due to the fact that they catalyze and co-ordinate the complex reactions of cellular metabolism. Up until the 1970s, most of the commercial applications of enzymes involved animal and plant sources. Bulk enzymes were generally only used within the food-processing industry, and enzymes from animals and plants were preferred, as they were considered to be free from the problems of toxicity and contamination that were associated with enzymes of microbial origin. Bio-enzymatic production is the fermented product of organic substances (solid fruit wastes) yielding by the secondary metabolites known as bioactive compounds or phytochemicals. This leads to an innovative approach to the production of enzymes over the conventional methods that require costly solvents and possible degradation of heat-labile compounds.

Vision:

- To create a better life for people and to make the earth a better place to live.

Mission:

- To produce and sell high quality household healthcare products that will be cherished and will make life healthy without using any chemicals.

Start-up-41: Musa Foods



1. Name of the Company/Start-up: Musa Foods

2. Highlights of the Company/Start-up:

Product/Service	: Incorporation of raw banana peel powder in the preparation of Healthy Millet Bar
Investment	: Rs. 04.20 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- i. Mahalakshmi G
- ii. Liberna B
- iii. Kousiga A
- iv. Sivasankari B

6. Establishment date of the Company/Start-up/Commercialization:

- 11.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

Our start up idea is to develop a new product based upon millets in which raw banana peel powder is added. This product is a healthy bar in which calcium, fiber can be supplemented to the customers. Apart from new product development, this product also has one advantage, where waste to wealth concept has been applied.

Vision:

- To make our customers friendly and to fulfill their tasty needs.

Mission:

- To reduce the wastage of food from the country.
- To control the environmental issues and establish waste to wealth concept

Start-up-42: Geoxu



1. Name of the Company/Start-up: Geoxu

2. Highlights of the Company/Start-up:

Product/Service	: Enzyme Production for degrading plastic Bag
Investment	: Rs. 04.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- i. Hiba
- ii. Rasiya Sulthana.A
- iii. Abhinandini.J

6. Establishment date of the Company/Start-up/Commercialization:

- 28.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

GEOXU, is the company planned to launch on the basis production of enzyme PETase extracted from the microorganism Ideonella sakaiensis by the process of culturing and centrifugation to degrade the polythene to MHET that will later hydrolysed into the monomers. Moreover, this start up emphasizes on the ability of insects gut microbial consortium to degrade synthetic plastic wastes.

Vision:

- To be a vehicle of consciousness in the global market by creating a holistic, sustainable business modality, which inspires, promotes and supports true wellness and respect for all beings and for mother's nature.

Mission:

- To comprehensively highlight the role of microbes, with special emphasis on algae, on the entire plastic biodegradation process focusing on the depolarization of various synthetic plastic types.

Start-up-43: The Solar



1. Name of the Company/Start-up: The Solar

2. Highlights of the Company/Start-up:

Product/Service	: Helical Windmill
Investment	: Rs. 03.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Fowsiya P A

6. Establishment date of the Company/Start-up/Commercialization:

- 28.04.2022

7. One paragraph on the Company/Start-Up covering all the points.

Company deals with the fabrication of a power generation system using wind mill with magnetic levitation. This project is a combination of electrical engineering and sustainable development in developing countries. The goal has been to build a windmill driven to produce power. The turbines convert wind energy into rotary mechanical energy. The wind mill blade is coupled to the gear arrangement and it rotates according to the wind speed. Important point throughout the project that has been kept in thought is to minimize cost and to only use materials that local farmers can get hold of.

Vision:

- To build the best renewable energy company.

Mission:

- Lead the energy transition by providing innovative solutions to our customers.
- Build a culture of excellence by efficient and safe execution of all our projects.
- Maintain the highest standards of quality and sustainability and act responsibility at all times.

Start-up-44: MR Innovations



1. Name of the Company/Start-up: MR Innovations

2. Highlights of the Company/Start-up:

Product/Service	: Smart body temperature, Mask and Facial Recognition detector
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- MSME Registration Under Process

5. Student team Details

- i. R. Raghul Prasad

6. Establishment date of the Company/Start-up/Commercialization:

- 02.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

Our start-up idea is to craft a device that is technologically advanced and easily usable for any present or upcoming pandemic period. It is developed to record an employee's face, status of facial mask & body temperature and upload the data to the cloud that will be easily accessible to the company. The main goal is to produce a completely safe automated environment.

Vision:

- To create the MR Innovations aspire to be a preferred value creator for the customers through innovative and efficient electronic manufacturing services.

Mission:

- Committed to provide innovative, mission critical technologies that protect people and communities.
- To create a better everyday life for many people by offering a wide range of well designed, functional products and steadily upgrade the technology and infrastructure so as to meet the customer expectations

Start-up-45: IOTECH



1. Name of the Company/Start-up: IOTECH

2. Highlights of the Company/Start-up:

Product/Service	: IOT based Smart Water Monitoring System
Investment	: Rs. 05.00 Lakhs
Employment generated	: Under Process
Commercialized or not	: Under Process

3. Impact it will create (including social impact, if any)

- Nil

4. Current Status of the Company/Start-up

- DPIIT Registration Under Process

5. Student team Details

- i. Ashik K V
- ii. Praveen G V
- iii. Harindranath G
- iv. Athulya N

6. Establishment date of the Company/Start-up/Commercialization:

- 02.05.2022

7. One paragraph on the Company/Start-Up covering all the points.

IOTECH focuses on Smart Water Monitoring System (SWMS) which is a cost effective and efficient system designed to monitor and manage quality and quantity of drinking water which makes use of Internet of Things (IoT) technology. The proposed system consists of several sensors to monitor various parameters of water such as Water level, pH, Oxygen level, Turbidity, Temperature, Humidity, etc. This Smart Water Monitoring System (SWMS) is connected to internet using WiFi , so that it can be controlled by its user from anywhere in the world using mobile application or web application, each and every updates are notified to the user.

Vision:

- To become one of the global leaders of providing unique IOT solutions that contribute to make people's lives easier.

Mission:

- To be a fast and flexible partner reflects our needs to be closer to all our clients.
- Collaboration with experienced experts, reliable supply chain, highest technology process models.

Start-up-46: Brainwaves Neurorehab Solutions Pvt. Ltd.

1. Name of the Company/Start-up: Brainwaves Neurorehab Solutions Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Virtual Reality based stroke rehabilitation for motor impairment using bio / neuro feed back
Investment	: Rs. 03.82 Lakhs
Employment generated	: 1
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- Enable stroke survivors with motor impairments to resume functional level

4. Current Status of the Company/Start-up

- Incorporated as a Startup, funding through NIDHI-Prayaas

5. Student team Details

- Mr. Bhasi Sukumaran
- Mr. Anket Sahoo

6. Establishment date of the Company/Start-up/Commercialization:

- 21/09/2021

7. One paragraph on the Company/Start-Up covering all the points.

- Brainwaves were conceptualized first at the SIIC BMOE Bootcamp held in September 2019. A team of four Engineering students joined the faculty member from the Department of Clinical Psychology, Dr Bhasi Sukumaran, who had proposed a virtual reality based stroke rehabilitation program to address motor impairment in stroke survivors. In February 2000, BrainwaveS was approved for project funding under the NewGen IEDC SRM, sponsored by DST India. Seed money amount of 1,82,853 was provided which was utilised to purchase the equipment required. , BrainwaveS was shortlisted for the Hospital Accelerated Pre-Incubation Program (HAPI) at the Healthcare Technology Incubation Cell (HTIC) of IIT Madras. In August 2021, Brainwaves was selected for co- incubation with IIT M Incubation Cell along with SIIEC. BrainWaves Neurorehab Solutions Pvt. Ltd was incorporated in September 2021 and the company

signed MoUs with IIT MIC and SIIEC regarding the incubation process. The first employee of BrainwaveS is one of the students who had first joined the startup at the time of conception at the bootcamp and who had subsequently graduated, Mr. Aniket Sahoo officially joined on 21 January 2022. BrainwaveS applied for the NIDHI PRAYAS grant under the mentoring of the incubation program and was selected in February 2022 and granted an amount of Rs 7, 00,000. The first tranche payment of Rs. 2, 00,000 was received on 29 April, 2022. Brainwaves entered into an agreement with NUER Industries on 24 May, 2022 for the development of the VR content for the project. Currently, work is ongoing for the development of the first prototype of the VR based stroke rehabilitation program, after obtaining Institutional Ethics Committee approval for the design and development of the same

Start-up-47: Climec Labs

1. Name of the Company/Start-up: Climec Labs

2. Highlights of the Company/Start-up:

Product/Service	: Air purifier
Investment	: Rs. 01.70 Lakhs
Employment generated	: 2
Commercialized or not	: Not

3. Impact it will create (including social impact, if any)

- We will be helping to bring Carbon-di-Oxide (CO₂) levels in our atmosphere down in order to put a pause and in the future revert back the effect of global warming and climate change on our planet's environment.
- Our single scaled-up model can capture Carbon-di-Oxide worth of 2500 trees on a daily basis which amounts to up to 25 tonnes of CO₂ captured by one of our models.
- Initially, the domestic model will be cleaning the air by getting rid of various harmful components present in the air ranging from PM_{2.5}, PM₁₀, VOC to other harmful bacteria by using a unique and customisable combination of inorganic filters(this can be selected by the customer on the basis of their needs and includes HEPA, Activated Carbon, Zirconium, and Bio filter) and then capturing 2.8 grams of Carbon-di-Oxide on a daily basis(when placed in a room with CO₂ air) and producing 25 trees worth of oxygen for the users. We have calculated the efficiency of this model to be 82.01 per cent. The domestic model will assist us in creating awareness regarding climate change among people and helping them take a step in the direction of climate conservation while using our product, and also sequestering excess CO₂ accumulated in rooms and offices while providing oxygen-rich air for themselves and their loved ones.
- We are yet to develop a prototype for the scaled-up model and study its exact impact as this might require government permission to set up in public places

4. Current Status of the Company/Start-up

- Incorporated

5. Student team Details

- i. Inderan Kannan
- ii. Atul John Abraham

6. Establishment date of the Company/Start-up/Commercialization:

- 20 June 2022

7. One paragraph on the Company/Start-Up covering all the points.

Problem we are Solving

- i. Global CO₂ emissions as of 2021 are at 1.5 Gigatonnes.
- ii. Chronic Health Hazard due to breathing polluted air and air with a high concentration of CO₂ found inside metropolitan households which were found to be as high as 3,900 parts per million (ppm)[DK1] globally
- iii. Health problems can be caused by exposure to CO₂ levels as low as 1,000 parts per million (ppm) even for an hour or two.[DK2]
- iv. Deteriorating indoor air quality, and increase in carbon emissions leading to climate change and global warming.

Solution that we offer

The domestic model of our air purifier contains a unique carbon capture technology which uses biofilters to convert carbon-di-oxide in the atmosphere into oxygen, thus solving the air quality problem for the customer base that exists.

Customer Base:

This consists of our Domestic air-purifier market.

- Financially middle class and better-to-do families (Annual income of 7000\$ and above) [DK3] and different company's offices.
- People Suffering from ailments caused by breathing polluted air.
- Residents of Urban areas which account for approximately 900million people globally.[DK4]
- Belonging to the age group of 22-65.[DK5]

The cost price of the air purifier that we are building will range between \$200-\$250 USD (one-time investment) and the annual maintenance charges will range between \$29-\$69(depending on the location of the customer and choose package of service). In the long run, we plan to have tie-ups with various industries producing concentrated Carbon-di-Oxide (for eg. cement companies and breweries) and build a strong working relationship with the central and state government of various countries to install the scaled-up model of our air purifier in public places of metropolitan cities to deliver free clean and Oxygen-rich air for everyone, all this while removing/scrubbing Carbon di Oxide from the air In India (or in the world) ?

Annexure-VI

Details of Enterprise/Business Commercialized

Start-up-01: Folklore Food Private Limited

1. Name of the Company/Start-up: Folklore Food Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Condiments and Packed food
Investment	: Rs. 02.50 Lakhs
Employment generated	: 1
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- The basic idea of this company is to focus on the awareness of local food served in different states and to be able to make serve them all over the nation with authentic touch

4. Current Status of the Company/Start-up

- The products are under shelf life testing and soon will be open to the market.

5. Student team Details

- i. Aditya Thakkar
- ii. Mit Chavda

6. Establishment date of the Company/Start-up/Commercialization:

- Date of Establishment is 09/02/2022

7. One paragraph on the Company/Start-Up covering all the points.

- The main idea behind Folklore Food was to focus on the variety local and traditional cuisine consumed in all the states. Our aim is to provide that taste to other respective state with the same authenticity and recipe served. Currently we have 6 products in inline in which 2 of them are in shelf life testing and soon to be ready to launch in market. Our basic business model is launch all this products on online market as our primary focus to increase the reach as the idea mentioned above

Start-up-02: TRIYAZA Healthcare Pvt. Ltd.

1. Name of the Company/Start-up: TRIYAZA Healthcare Pvt. Ltd.

2. Highlights of the Company/Start-up;

Product	: Wearable IV Care & the Patient Turner
Investment	: Rs. 01.00 Lakh
Employment generated	: 1
Commercialized or not	: Yes, commercialized

3. Impact it will create (including social impact, if any)

Wearable IV Care

- In the case of wearable IV the nursing staff does not have to go with patients anywhere anytime to handle IV bottle, as they can complete their more meaningful work.
- Easily mobile and can be worn on the wheelchair so the patient can easily get mobility with an IV bottle, for e.g going to the radiology department.
- Patients have full privacy in the restroom

In-Patient Turner:

- Nursing staff get relief from back pain as they now do not pull patients for turning them.
- Ease of diaper changing, cleaning bedsheets
- Relief from pressure ulcers or bed sores as now the patient can be turned from side to side.
- The light exercise of the patient can be done

4. Current Status of the Company/Start-up

- Scaling, reaching out to more hospitals personally
- R&D of new upcoming product/project

5. Student team Details

- i. Aayush Trivedi
- ii. Jaydeep Yadav
- iii. Meetrajsinh Zala

6. Establishment date of the Company/Start-up/Commercialization:

- Date of Establishment is 25/03/2022

7. One paragraph on the Company/Start-Up covering all the points.

Triyaza healthcare is a medical device manufacturing company where we try to solve, day-to-day problems in the lives of patients. We are focused on delivering the best medical device in the Indian market. We are trying to strengthen the healthcare of India and explore new opportunities in this industry. Our focus is to reduce the imports of medical devices and try to manufacture them in India.

Start-up-03: FIN Horse Financial Advisory Pvt. Ltd.

1. Name of the Company/Start-up: FIN Horse Financial Advisory Pvt. Ltd.

2. Highlights of the Company/Start-up:

Product/Service	: Services
Investment	: Rs. 02.50 Lakhs
Employment generated	: 10-15
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- A one stop personalized financial planning startup to provide assistance to the customers.

4. Current Status of the Company/Start-up

- Working towards acquiring customers

5. Student team Details

- i. Shubham Adhlakha

6. Establishment date of the Company/Start-up/Commercialization:

- 26th April, 2022

7. One paragraph on the Company/Start-Up covering all the points.

The advisory concept is simple and clear: we provide a one-stop-shop for all aspects of financial management. Throughout the entire process of building and managing your portfolio, everything has been taken care of. As your financial doctor, we can monitor your financial health and restore it if necessary. Our idea behind this is crystal clear: to provide more and more HNI's for society. We are all geared up with trained professionals to assist our clients with their finances. Investing according to your financial needs is something we are committed to helping you achieve. With qualified and trained staff onboard, we tend to deliver according to the clients' expectations.

Start-up-04: Asset reclaimers/Oops consultancy LLP

1. Name of the Company/Start-up: Asset reclaimers/Oops consultancy LLP

2. Highlights of the Company/Start-up:

Product/Service	: Services
Investment	: Rs. 02.50 Lakhs
Employment generated	: 10-15
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- A startup with a focus to help the customers getting claims of the assets like Bonds, gold, FDs and more.

4. Current Status of the Company/Start-up

- Awaiting certificate from SEBI

5. Student team Details

- i. Vishal Gupta

6. Establishment date of the Company/Start-up/Commercialization:

- 14th July, 2022

7. One paragraph on the Company/Start-Up covering all the points.

- The Demat accounts & the paper less share trading was not always the trend. Strange but yes it's true, not that far behind rather till the previous generation, shares/ debentures were bought & sold in physical form. However, "any investor who is desirous of transferring shares (which are held in physical form) after April 1, 2019 can do so only after the shares are dematerialised," Asset Reclaimers brings to you the complete solution of any issues with the physical documents of share or debentures. Our experts assist clients in resolving doubts/ queries related to share transfer, claims by nominee, name deletion/ modification etc. We have experts to help you recover the unclaimed amount from lost or damaged share certificates as well.

Start-up-05: VIEH PVT LTD

1. Name of the Company/Start-up: VIEH PVT LTD

2. Highlights of the Company/Start-up:

Product/Service	: Cybersecurity/ National security/ IT Services and solutions
Investment	: Rs 2.50 Lakhs
Employment generated	: 10-15
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- CVMS can create a lot of impact while building a safe and secure nation, because it is a kind of a full-fledged system from which organizations will get overall security for their infrastructure. Since we have reported vulnerability on almost all big tech giant server, we feel we can do it better

4. Current Status of the Company/Start-up

- Company has been registered as a private limited and also got recognized under Startup India program, Government of India

5. Student team Details

- i. Manish Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 27 August 2020

7. One paragraph on the Company/Start-Up covering all the points.

1. Our startup is fully dedicated to Cybersecurity and National security ideas. Right now we're working on two major things
2. Here we're working on a model to provide intelligence support to the intelligence agencies of India- It include Global surveillance model, getting information about the confidential data and operation that are running in the enemy nation like Pakistan and China
3. CVMS- Centralized vulnerability management system This is a portal where we're listing out the critical vulnerabilities that are present in multiple government servers/ websites. Apart from this we'll be providing ticket and remedies support with that too.

Start-up-06: Tosinindra Private Limited

1. Name of the Company/ Start-up: Tosinindra Private Limited (CIN: U74999AS2018PTC018912)

2. Highlights of the Company/Start-up;

Product	: Non-conventional energy solutions (Solar powered processes)
Investment	: Rs. 01.00 Lakhs
Employment generated	: 5
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any):

- The company is engaged in the agro sector with projects of solar driven irrigation devices and also associated with design and implementation of the same.

4. Current Status of the Company/Start-up:

- Functioning

5. Student team Details

- Paramanda Pathak
- Sagar Tiwari

6. Establishment date of the Company/Start-up/Commercialization:

- 31 March 2020

7. One paragraph on the Company/Start-Up covering all the points.

The aim of this startup is to take forward the economic and environmental friendly socially acceptable product portfolio based on solar energy into the realm of agriculture, urban housing etc. The services offered includes, survey, design, procurement, installation, commissioning and annual maintenance.

Start-up-07: Jesso Edutech LLP

1. Name of the Company/Start-up: Jesso Edutech LLP

2. Highlights of the Company/Start-up:

Product/Service	: Jesso – Education technology and Management software
Investment	: Rs. 08.50 Lakhs
Employment generated	: 1
Revenue Generated	: Rs. 1.5 Lakhs
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Digital learning especially for Education is identified to be onerous and demanding while we tried and tested But all that is required to make it as undemanding as classroom education is just a stream-lined platform that has a one stop solution for Students, Teachers and Management. . And help to solve the question of what will be the state of students who don't have access to technology?

4. Current Status of the Company/Start-up

- Traction and Development of Application

5. Student team Details

- i. Vishwajeeth Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- Incorporated on 08/06/2021

7. One paragraph on the Company/Start-Up covering all the points.

- Jesso is an education tech company aiming to make educational activities smart, easy, error-free, accessible at any time, and monitor them at any time. We started this venture to upgrade education in the path we wished for things to happen in reality when we were students. To give a brief tour of our application, Jesso helps to bridge the connection between Management - Teacher-Student- Parents. Every group's need and expectation is met in the form of a feature modules in this software and application. Jesso is a first step to fine tune learning and experience the digitized form of learning without deviating from the curriculum or Institutions norms. Jesso won't stop students from taking up a traditional form of education rather Jesso helps you to streamline the learning process digitally and induce interest in the set curriculum adding all the factors a student seeks in his daily classroom education. We provide the students and the teacher a tablet that's going to work the magic easily.



Start-up-08: Tersbyte Techno

1. Name of the Company/Start-up: Tersbyte Techno

2. Highlights of the Company/Start-up:

Product/Service	: AI Based Soil Nutrients Prediction and Plantation Device
Investment	: Rs. 0.15 Lakhs
Employment generated	: 05
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- It will promote people to setup terrace farming and start using organic vegetables

4. Current Status of the Company/Start-up

- The prototype of the product has been designed and survey based on the product is being taken

5. Student team Details

- i. Kailaash Jeevan J.

6. Establishment date of the Company/Start-up/Commercialization:

- 28/07/2021

7. One paragraph on the Company/Start-Up covering all the points.

The company was developed by focusing majorly on AI and Cloud development. It was formed during covid pandemic when a team of students decided to build an mobile application for the people who were suffering due to the pandemic and covid. Later on the application was developed, but was unable to launch it. Further we noticed about the pest sprayed vegetables and fruits in the market. Thus, we developed an IoT based product for plantation assistance so that people could set up terrace forming and sell organic vegetables. We have also planned to build our own ecommerce website for organic vegetables.

Start-up-09: VBIND Innovation Private Limited

1. Name of the Company/Start-up: VBIND Innovation Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Karthavya's& Drone
Investment	: Rs. 0.30 Lakhs
Employment generated	: Nil
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Best Project in International Science Festival, Goa.

4. Current Status of the Company/Start-up

- Doing R&D works in KONE Elevators

5. Student team Details

- i. N. Pradeep Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 10/09/2021

7. One paragraph on the Company/Start-Up covering all the points.

Explore VBIND INNOVATION Products from its Developmental Stages, Hand Craft yourselves a Solution, that better Fits your Requirement and also your Pockets. Start Shaping your Future Prospects with the Ability to Empower yourselves with Automation and Power of Data. With our Products, We help you to align you on to the " Big Picture" that you have Envisioned.

Start your Journey of Growth with Our Offerings Such as

- Karthavya's Comprehensive Pandemic Combat Systems and Devices.
- Drone's with the Ability to Charter your toughest Protocols on Fighting Back this Pandemic.
- R&D Projects to start Driving Change towards a Social Cause

Start-up-10: Clocker Olives Private Limited

1. Name of the Company/Start-up: Clocker Olives Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Portable Automatic Wire Cutter
Investment	: Self-Funded
Employment generated	: 2
Commercialized or not	: Yes Commercialize

3. Impact it will create (including social impact, if any)

- This device breaks the conventional method of cutting wires with this portable low-cost Wire Cutter

4. Current Status of the Company/Start-up

- Device ready to commercialize

5. Student team Details

- i. S. Pranathi
- ii. D. Manogna
- iii. G. Sathwika

6. Establishment date of the Company/Start-up/Commercialization:

- 14th June 2022

7. One paragraph on the Company/Start-Up covering all the points.

- This company works on handling automated tools for the Industry and locale. Their first product to solve the problem of local Cable Manufacturers and led lighting Industries.

Start-up-11: ELECTRICCA

1. Name of the Company/Start-up: ELECTRICCA

2. Highlights of the Company/Start-up:

Product/Service	: Lithium Battery
Investment	: Rs. 01.00 Lakhs
Employment generated	: 03
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Our products are affordable and long lasting ,thus more customers prefer our products

4. Current Status of the Company/Start-up

- We registered in MSME, filing GST. currently 3 employees were working.
- The generated income is enough to give the salary for the workers, thus the company is no profit/loss stage. Successfully completed a year. Now we are planning to update
- The company with advanced machineries. And planning to employ 8 staffs. So we are trying for a loan amount of 500000/-.

5. Student team Details

- i. Jijin Raj SS
- ii. Mr. Abidan J. Lal

6. Establishment date of the Company/Start-up/Commercialization:

- 15-04-2021

7. One paragraph on the Company/Start-Up covering all the points.

- We manufacture the battery for house hold appliances to Electric vehicles. We provide sales distribution and customer service in all over India. Through online and offline mode

Start-up-12: CodingForAll

1. Name of the Company/Start-up: CodingForAll

2. Highlights of the Company/Start-up:

Product/Service	: Digital Literacy learning Platform for Underprivileged students
Investment	: Rs. 01.00 Lakhs
Employment generated	: 4
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- CodingForAll runs its flagship program in government & affordable private schools to teach coding to secondary students and also equip them with other ancillary skills required for career readiness. Each of our students is part of our 'class to career pipeline' and our intervention with our students is for 8 years starting in secondary school, continuing through college, and supporting them till they land their first dream job

4. Current Status of the Company/Start-up

- It has got funding from SVP India Rs 4,00,000 as early stage funding

5. Student team Details

- i. Alahari Virinchi

6. Establishment date of the Company/Start-up/Commercialization:

- 01/10/2021

7. One paragraph on the Company/Start-Up covering all the points.

- imparts digital literacy and coding skills to those 425 million children in India who do not have access to a computer. CodingForAll is a non-profit leading the digital inclusion movement in India by teaching coding in regional Indian languages to students who do not have access to a computer. Coding For All Clubs are free after-school programs for 8-10th grade students who are not part of a Coding For All intervention school but want to join our community and access our learning material to teach and explore coding and computer science with their peers in their own school

Start-up-13: Tarana Media (Opc) Private Limited

1. Name of the Company/Start-up: Tarana Media (Opc) Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Mobile app and computer website Designing
Investment	: Rs. 10.00 Lakhs
Employment generated	: 04
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Tarana is a mobile application that provides users with music-related content. It immerse users in completely new music-related experiences with this application. The algorithm that has been developed is extremely powerful in that it provides relevant music content to the user based on his or her interests

4. Current Status of the Company/Start-up

- Its in early start-up stage

5. Student team Details

- i. Sangi Chakravarthi

6. Establishment date of the Company/Start-up/Commercialization:

- 04 May 2021

7. One paragraph on the Company/Start-Up covering all the points.

- Tarana Media (Opc) Private Limited incorporated with MCA on 04 May 2021. The Tarana Media (Opc) Private Limited is listed in the class of company and classified as Non Govt Company. This company is registered at Registrar of Companies (ROC), Telangana with an Authorized Share Capital of Rs. 10 LAC and its paid up capital is 10 LAC. The company has 1 directors/key management personal Dileep Chakravarthi Sangi. The company is into mobile application as well as in Other computer related activities [for example maintenance of websites of other firms/ creation of multimedia presentations for other firms etc.]

Start-up-14: Nazmehayat Enterprises Private Limited

1. Name of the Company/Start-up: Nazmehayat Enterprises Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Content WREP® (Nazmehayat Enterprises Private Limited)
Investment	: Rs. 03.00 Lakhs
Employment generated	: 01
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

Nazm-e-hayat is working on building up and creating a stronger impact in the Publication field and also working on the renewal of the website to do the content marketing in a better way. In the near future, the company is supposed to build a strong foundation in the Publication sector and with digital sales through the website. Also, the content marketing of the writers will be done in a more efficient way, improving the quality of the contents over the website, bringing more qualitative content, and do the product sales of the books and magazines through the website, different distribution channels, and other platforms as well. And so the 3-year growth plan of the company looks like, to generate revenue through the Publication of the books and magazines and through the content marketing as well

4. Current Status of the Company/Start-up

ContentWREP launched its website on 30th July 2020

- 5K Writers Connected over Social Media
- Revenue generated of 1.2 lakhs INR
- 10 Solo Books and 8 Anthologies

5. Student team Details

- i. Swapnil Singh
- ii. Anushree Goswami

6. Establishment date of the Company/Start-up/Commercialization:

- Founded Date: 1st November 2019
- Incorporated Date: 18th June 2021

Start-up-15: Camplus App, Varopro Pvt Ltd

1. Name of the Company/Start-up: Camplus App, Varopro Pvt Ltd

2. Highlights of the Company/Start-up:

Product/Service	: Camplus App, Campus Management Application
Investment	: Actively talking to various investors Around the globe for Seed investment
Employment generated	: 10
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- Camplus App creates impact in the community by easing the day to day life of the students starting from managing deliveries, unified student identification system to gym & mess slot booking and club event management. It also helps the college management save cost on manually managing campus facilities and gives detailed analytics and insights into students activities and engagement. For example, traffic insight of the gym facility, helps students avoid the gym in the crowded hours saving them time and the management understand that there is a need to manage the crowd effectively during the peak hours.

4. Current Status of the Company/Start-up

- Seed Stage

5. Student team Details

- i. Nihar Sanda
- ii. Sanchit Goel
- iii. Gourab Chakraborty
- iv. Jaynit Patel
- v. Aparna Kholia
- vi. Heni Prajapati
- vii. Ayaan Khan
- viii. Mayank Kumar

6. Establishment date of the Company/Start-up/Commercialization:

- 26th October, 2021

7. One paragraph on the Company/Start-Up covering all the points.

- App is a one stop solution to managing residential campuses effectively, giving the college administrations a wide range of features starting from managing incoming and outgoing students/faculties/delivery personelles/staffs to maintaining a unified record of student's data for the administrators. Analytics generated from the student engagement and traffic datas enable campus management to manage the facilities better in addition to the wide range of features that Camplus App provides like Mess Slot Booking, Events, Library & Notices, MyID, Meeting Room Booking

Start-up-16: Stimuler Private Limited

1. Name of the Company/Start-up: Stimuler Private Limited

2. Highlights of the Company/Start-up:

Product/Service	: Mobile Application
Investment	: First Round of \$25k
Employment generated	: 4 paid interns
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- In the next 2 years, we plan to eliminate the English communication barrier and thereby create better opportunities for 10 million people

4. Current Status of the Company/Start-up

- Currently, we are scaling the product, from speech testing to speech training with improved AI models

5. Student team Details

- i. Akshay Akash
- ii. Anesh Srivastav
- iii. Ankit Kumar Pandey
- iv. Akshat Baranwal

6. Establishment date of the Company/Start-up/Commercialization:

- 10 March 2022

7. One paragraph on the Company/Start-Up covering all the points.

- Stimuler is a speech practice and training platform to help people become confident at communicating in English. Millions of people are unable to speak confidently despite having a decent understanding of English. Stimuler combines all aspects that are needed for improving speaking skills of participants. Using AI based speech analysis algorithms and custom practice tracks, we dream of removing the barrier of English proficiency and help create better opportunities for people. Stimuler has 5k users from 140 countries

Start-up-17: Glexspace

1. Name of the Company/Start-up: Glexspace

2. Highlights of the Company/Start-up:

Product/Service	: A professional counseling service for College students
Investment	: Rs. 02.50 Lakhs
Employment generated	: 02
Commercialized or not	: Yes, Commercialized

3. Impact it will create (including social impact, if any)

- The initial idea was to connect bloggers in a digital space using an AI engine that connects like-minded people. The startup did a lot of ground work and how provides counseling services to college students. The college students are increasingly coming under societal and academic pressures, while the colleges seldom have the expertise and solutions for such solutions. The startup is a one-stop solution for the problem, hugely benefiting the society

4. Current Status of the Company/Start-up

- The talks are in an advanced stage with multiple colleges

5. Student team Details

- i. Ayush Chaurasia
- ii. Aman Bhoskar

6. Establishment date of the Company/Start-up/Commercialization:

- 6 Jan 2021

7. One paragraph on the Company/Start-Up covering all the points.

- The startup initially got great success because of a blogging portal where people could share their experiences to the world. On a greater analysis the startup discovered the problem of depression and tension among the youth. Alongwith medical experts, the startup created counseling packages for the colleges to help their students with the same