



INNOVATION

&

ENTREPRENEURSHIP

DEVELOPMENT CELL (IEM)

INFRASTRUCTURE DETAILS



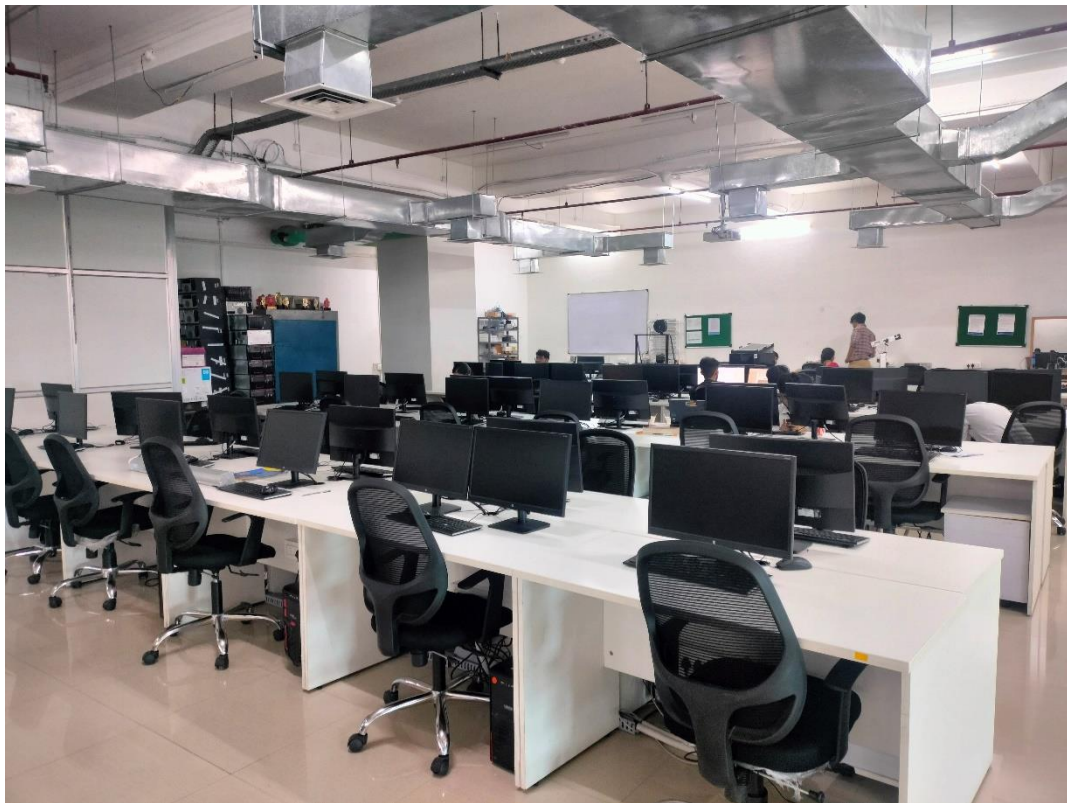
CONFERENCE ROOM



PANTRY



FACULTY & RESEARCHER'S ZONE



STUDENTS' RESEARCH ZONE



INVENTORY



GREEN ZONE



FIRE EXTINGUISHER

INSTRUMENTS



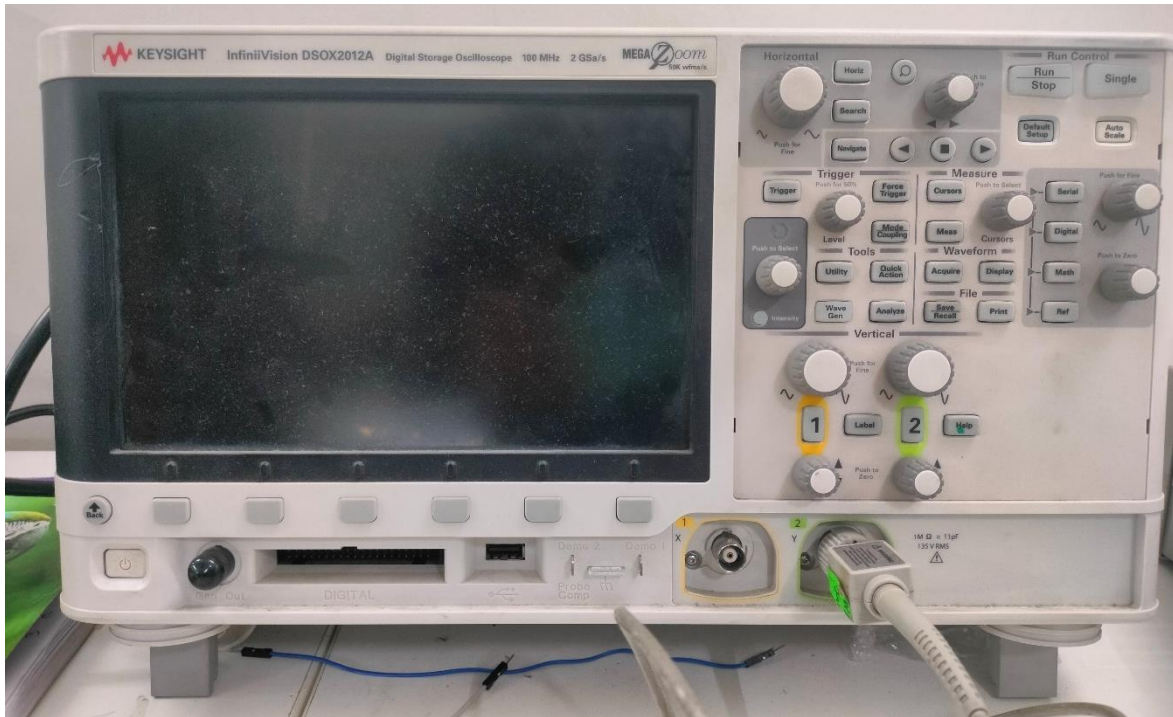
DC POWER SUPPLY

A DC power supply is a type of power supply that gives direct current (DC) voltage to power a device.



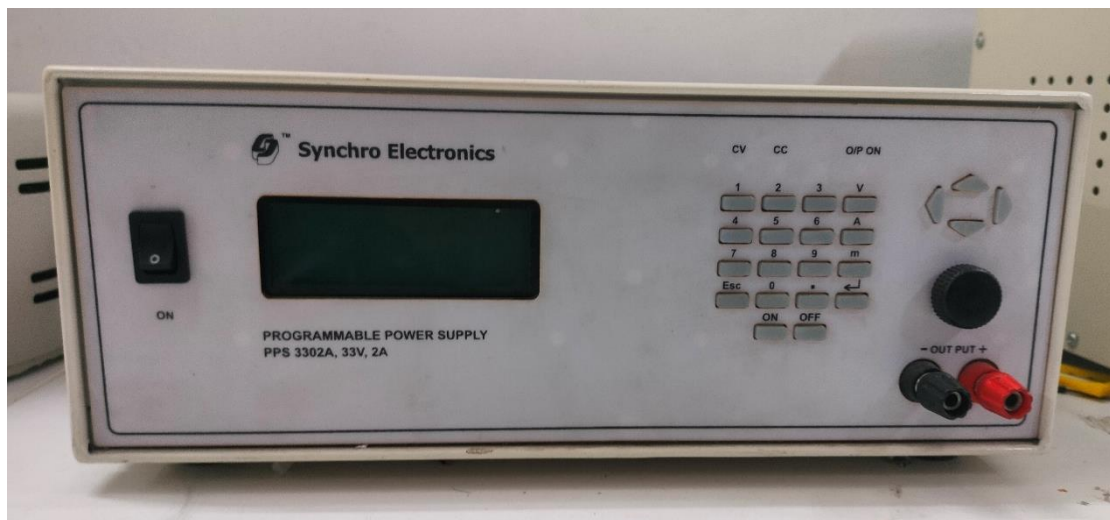
FUNCTION GENERATOR

A function generator is usually a piece of electronic test equipment or software used to generate different types of electrical waveforms over a wide range of frequencies.



DIGITAL OSCILLOSCOPE

A digital oscilloscope is an electronic device consisting of numerous software and electronic hardware modules that work together to capture, process, view and store data representing the relevant signals of an operator.



PROGRAMMABLE POWER SUPPLY

A programmable power supply (PPS) is one that allows remote control of its operation through an analog input or digital interface such as RS-232 or GPIB.



SOLDERING STATION (SMD)

A soldering station is a multipurpose power soldering device designed for electronic components soldering.



SOLDER STAND

Soldering iron stands and stand accessories are used to hold a hot iron when not in immediate use.



SOLAR CHARGE CONTROLLER

A solar charge controller or charge regulator is basically a voltage and current regulator to keep batteries from overcharging by using solar energy.



DRILL MACHINE

A Drilling Machine is a type of production machine in which works are to drill the workpiece.



SMD HEATING PLATE + BLOWER

A SMD heating plate is a device that is used for soldering SMD components to the PCB by means of heat transfer.



12V 10A POWER SUPPLY

It is a type of power supply which has its output specified as 12V and 10amp.



COPPER WOOL

Copper wool is used as heat conductive packing material, in ventilators, polishing for soft surfaces.



SMD REWORK STATION

SMD rework station is used for soldering and de-soldering of integrated circuit (IC) parts or chips and Ball Grid Array (BGA).



SLIDING POTENTIOMETER

It is potentiometer that is adjusted by sliding the wiper left or right (or up and down, depending on the installation), usually with a finger or thumb.



ELECTRIC SCREW DRIVER

Electric screwdrivers are portable electric devices used for driving (and removing) screws effortlessly.



3D PRINTER

A 3D printer is a type of material design printer that designs and builds 3D models and products of devices and components using an additive manufacturing process.



PROJECTOR

Projector is a device that is used to project rays of light, especially an apparatus with a system of lenses for projecting slides or film on to a screen.

Project Title: IOT BASED FIRE EXTINGUISHER

Description: This is a smart fire extinguisher which can be triggered automatically from any location using the help of internet. Preventing the spread of fire.

Image:



Project Cost: 1500/-

Project Duration: Jan 2022- Feb 2022

Faculty Pi: Souhridya Bhattacharjee, Dibakar Roy Choudhury

Project Title: LAKSHMAN REKHA SHEILD

Description: This is made for defence purpose. This sheild is electrically charged giving an output voltage of 2500v. This sheild is designed for controlling huge crowds and riots while keeping police officials safe.

Image:



Project Cost: 1000/-

Project Duration: Sep 2022- Oct 2022

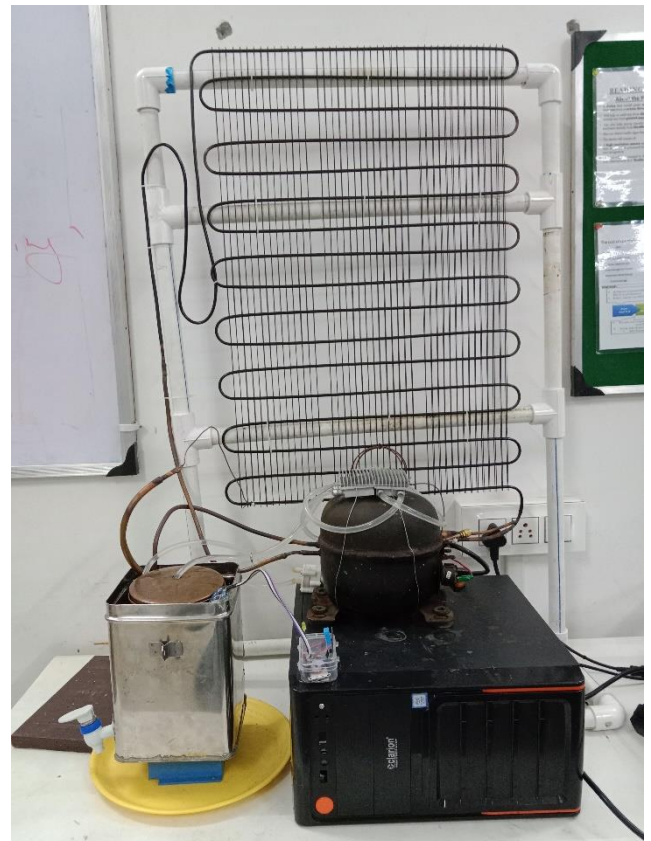
Faculty Pi: Dibakar Roy Choudhury, Souhridya Bhattacharjee

Project Title: ATMOSPHERIC WATER GENERATOR

Description: This is a system which produces water from air using compressor. This system can produce water in remote areas depending upon the humidity and weather condition of the specific area.

Link: <https://youtu.be/rxJzqLHSnc>

Image:



Project Cost: 3000/-

Project Duration: Jul 2022- Oct 2022

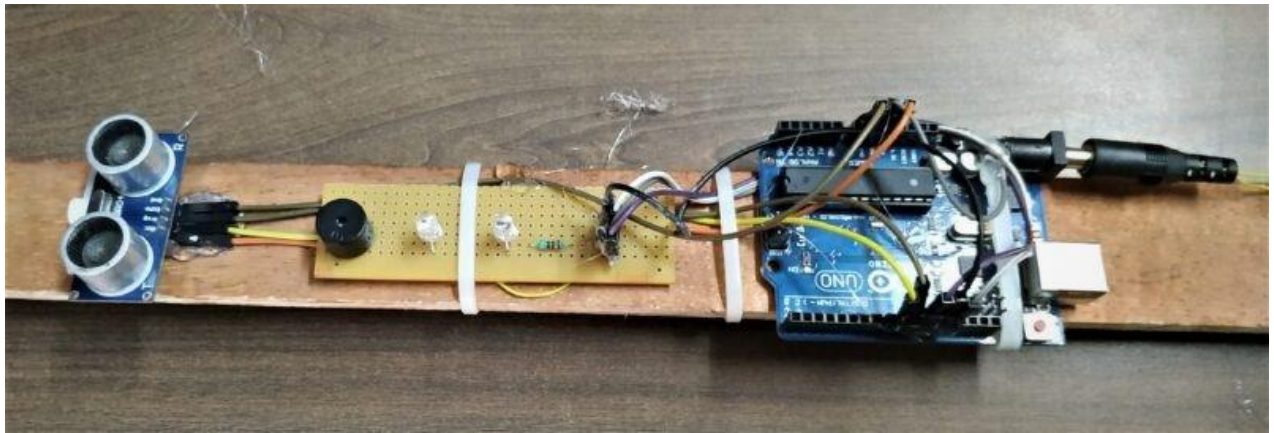
Faculty Pi: Souhridya Bhattacharjee, Dibakar Roy Choudhury

Project Title: DEVELOPMENT OF SMART ARDUINO BLIND STICK

Description: It is an Arduino-based stick that uses ultrasonic sensors to warn a blind person of upcoming obstacles; it has GPS and GSM modules incorporated for emergency message calling and a water sensor to detect water. It can enhance the protection and enhance the lives of blind people.

Link: <https://youtu.be/JXvOXV-MEts>

Image:



Project Cost: 1000/-

Project Duration: Jan 2022- Feb 2022

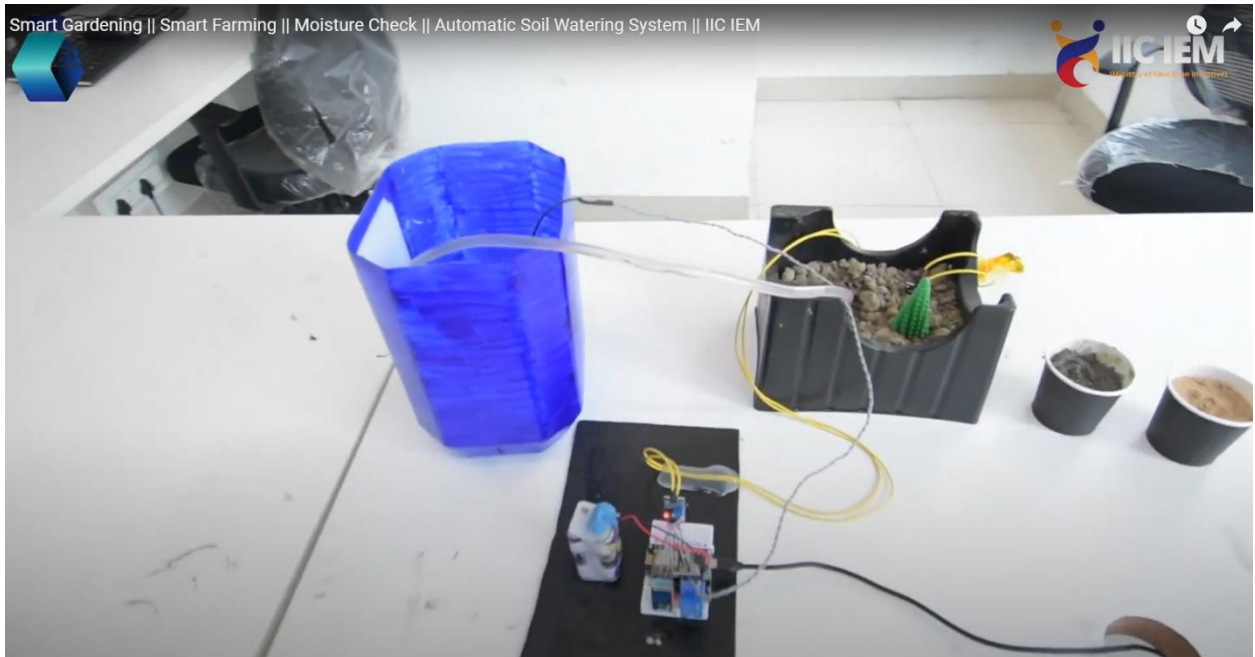
Faculty Pi: Dibakar Roy Choudhury

Student Pi: Sayak Sarkar

Project Title: SMART GARDENING

Description: We can check soil moisture, Temperature and humidity by this device and get all this information in our mobile phone and control the water flow to our plants via our mobile.

Image:



Project Cost: 1500/-

Project Duration: Feb 2022- Mar 2022

Faculty Pi: Dibakar Roy Choudhury

Student Pi: Debanjan Dhara

Project Title: ANTI-TREMOR BAND WITH TREMOR STAGE PREDICTION

Description: This device/model thus created is a significant development over the conventional means of controlling tremors and identifying the stage of the tremor according to the patient's nervous system. The primary purpose of this band is to stabilize the handshaking and detect the stage of the tremor using a machine learning algorithm.

Image:



Project Cost: 3000/-

Project Duration: Sep 2022- Nov 2022

Faculty Pi: Asmita Biswas, Souhridya Bhattacharjee, Dibakar Roy Choudhury

Project Title: HUMANOID ROBOT

Description: Our project is in the first Phase of humanoid robot. It is an interactive AI based robot, which has the feature of locomotion and greet people with user detection. Here we have used embedded system and Computer vision with machine learning.

Image:



Project Cost: 50,000/-

Project Duration: Sep 2022- Nov 2022

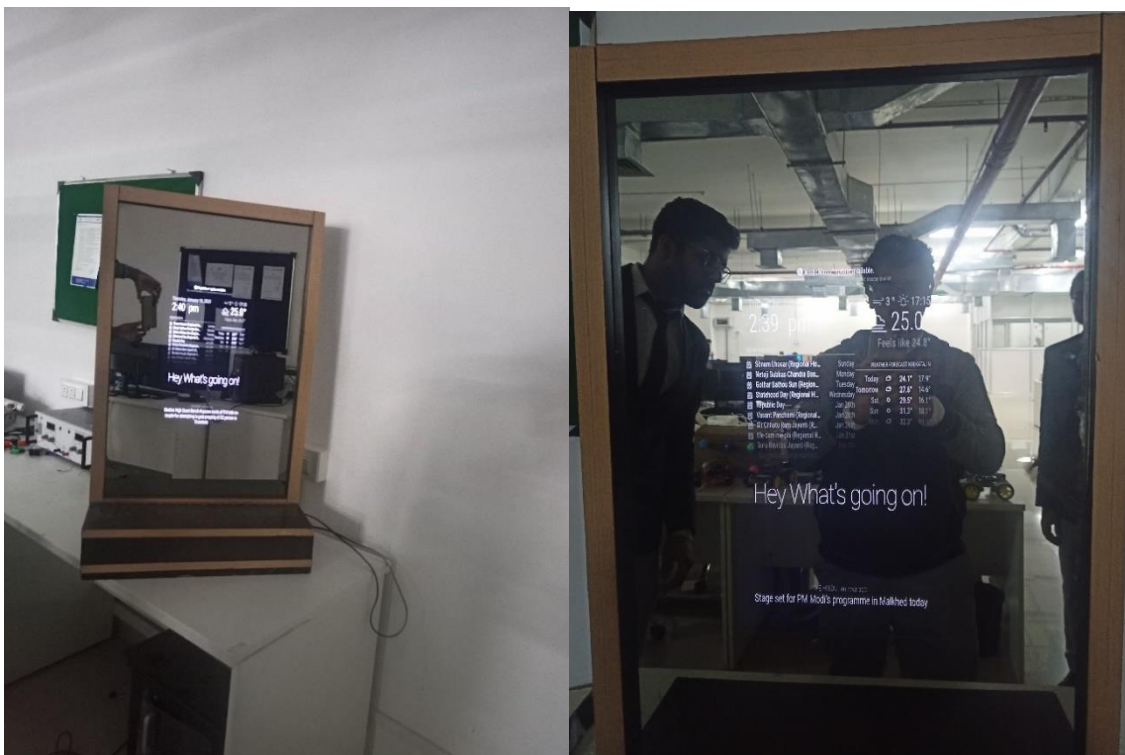
Faculty Pi: Souhridya Bhattacharjee, Dibakar Roy Choudhury

Student Pi: Arpan Goswami, Saptarshi Sen

Project Title: **SMART MIRROR**

Description: A smart mirror is a mirror with integrated technology such as a screen, and internet connectivity. The screen can display a variety of information, such as the time, news, weather, and upcoming holidays. With the ability to connect to the internet, the mirror can also display information from other sources, like social media updates or calendar events. The smart mirror can be used in various settings, such as homes, hotels, and offices, to provide useful and convenient information at a glance.

Image:



Project Cost: 25,000/-

Project Duration: Sep 2022- Nov 2022

Faculty Pi: Sourab Ghosh

Student Pi: **Uday Shankar Mukherjee**

Project Title: ELECTRIC CYCLE

Description: E-bikes are categorized based on the amount of power that its electric motor is capable of producing and the control system, or when and how the motor's power is applied. Rechargeable batteries, electric motors, and some kinds of control are all included in e-bikes. There are several types of battery systems in use, including sealed lead-acid (SLA), nickel-cadmium (NiCd), nickel-metal hydride (NiMH), and lithium-ion polymer batteries (Li-ion).

Image:



Project Cost: 20,000/-

Project Duration: Sep 2022- Nov 2022

Faculty Pi: Souhridya Bhattacharjee

Student Pi: **Spandan Sarkar**

Project Title: **HYBRID MODULAR TREE FOR GREEN ENERGY GENERATION**

Description: The presented structure is a low-cost hybrid modular tree that can be used for generating electrical energy. The presented tree can be fitted to the rooftop of any skyscraper and countryside locations pertained by nominal wind speed and solar irradiation. Initially, it has the capacity to generate 25 W DC and it can be further enhanced using more efficient solar modules. Moreover, the vertical structure of the wind turbine makes it more reliable to produce wind power irrespective of the wind direction. As a future scope, this structure can be further modified and widely manufactured to generate more green energy at a large scale.

Image:



Project Cost: 50,000/-

Project Duration: Nov 2022- Present

Faculty Pi: Priti Das, Arghya Roy

Project Title: MACHINE OVERHEAT DETECTOR WITH ALERT

Description: This proposed system is used to detect temperature of devices that are overheated. This project is very beneficial, especially in places like factories or industries consisting of big machines where it is very necessary to take some action in case the machine is overheated. The system uses a digital temperature sensor in order to detect temperature and pass on the data to the microcontroller. The Atmega 328 microcontroller processes data and sends the temperature to be displayed on an LCD screen. The system uses a 12VDC adaptor to supply power to the system. We can set a limit to the temperature and in case if the system exceeds the temperature limit, an alarm rings to indicate that the system has exceeded the set temperature.

Image:



Project Cost: 8,000/-

Project Duration: Dec 2022- Jan 2023

Faculty Pi: Asmita Biswas

Student Pi: **Sayan Bardhan**

Project Title: AERIAL FOREST RANGER

Description: A new drone technology has been developed to aid in conservation efforts and forest fire detection. The drone is equipped with cameras and sensors that can capture live video feeds of animals and detect forest fire signs such as smoke and high temperatures. In case of a fire, the drone can quickly locate the source and transmit the information to the authorities. This technology makes it an efficient tool for monitoring wildlife and protecting natural habitats while providing an early warning system for forest fires.

Image:



Project Cost: 20,000/-

Project Duration: Dec 2022- Jan 2023

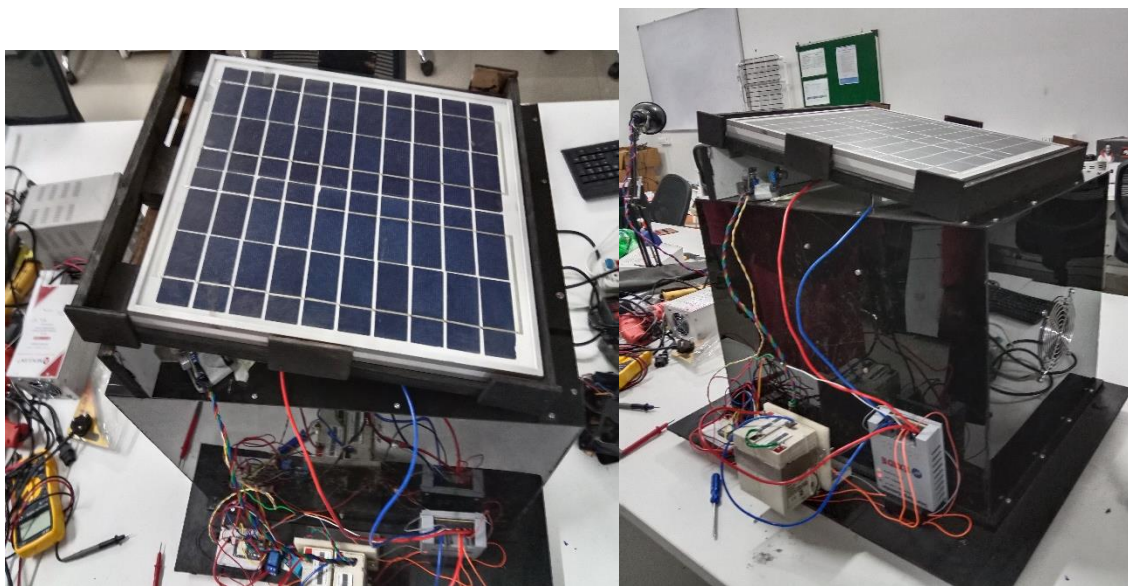
Faculty Pi: Sourab Ghosh

Student Pi: **Nirban Roy**

Project Title: AIR QUALITY REGULATOR

Description: The air is sucked into the air chamber where the gas sensors detect the parameters of the atmospheric air. The parameters are displayed on the Blynk-IOT app with the help of the data streams. The air is then filtered and then again, an MQ135 sensor measures its quality. The air is then sucked out of the air chamber. The voltmeter measures the voltage at all times so as to monitor the voltage. Thus, it is to ensure that the voltage does not surpass the limit upto which the components can work efficiently.

Image:



Project Cost: 15,000/-

Project Duration: Nov 2022- Jan 2023

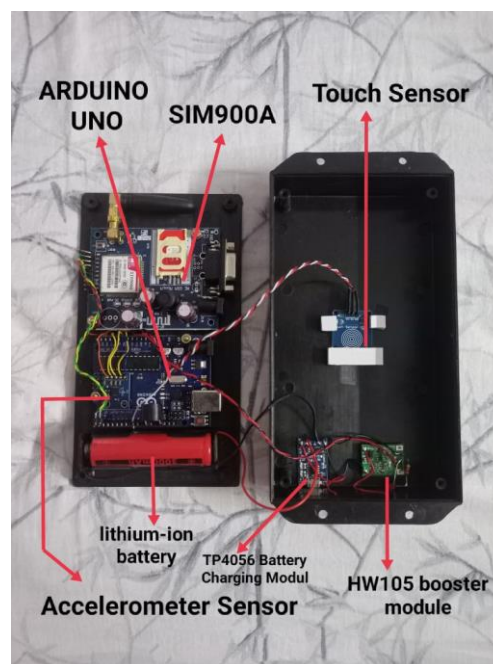
Faculty Pi: Ayan Kumar Ghosh

Student Pi: **Soumanka Sarkar**

Project Title: EMERGENCY PROTECTION FOR WOMEN'S SAFETY

Description: Women are less safe and face several security-related difficulties in the modern world. They must endure a variety of trying circumstances and consistently demonstrate their mettle under pressure. Therefore, the government has given social security through laws and regulations for their security and safety purposes. Despite the fact that there are many systems already in place for security purposes, the need for sophisticated smart security systems is growing. A smart security system for women is created to address these issues. This project uses an Arduino controller and sensor to create a safe and secure electronic system for women. In this project, an accelerometer, GSM, and GPS are utilized. The gadget uses an accelerometer to detect movement when the ladies are in danger. The gadget activates when the sensor exceeds the threshold limit and uses the GPS module to determine where the victim is. The victim's location is sent to the registered contact number via the GSM module.

Image:



Project Cost: 7000/-

Project Duration: Jan 2023

Faculty Pi: **Trisha Paul**

Student Pi: **Siddhartha Bhattacharjee**

Project Title: MOTORIZED SKATEBOARD

Description: A motorized skateboard, also known as an electric skateboard, is a cutting-edge personal transportation device that combines the thrill of skateboarding with the convenience and efficiency of electric propulsion. It is equipped with an electric motor and a rechargeable battery pack, which powers the skateboard and eliminates the need for pushing or kicking off the ground. Motorized skateboards offer a thrilling and eco-friendly alternative for short-distance commuting and recreational riding. They provide the freedom and excitement of traditional skateboarding while adding the convenience and ease of electric power, making them a popular choice for urban commuters, adventure enthusiasts, and skateboarders looking for an electrifying twist.

Image:





Project Cost: 22000/-

Project Duration: Feb 2023- Mar 2023

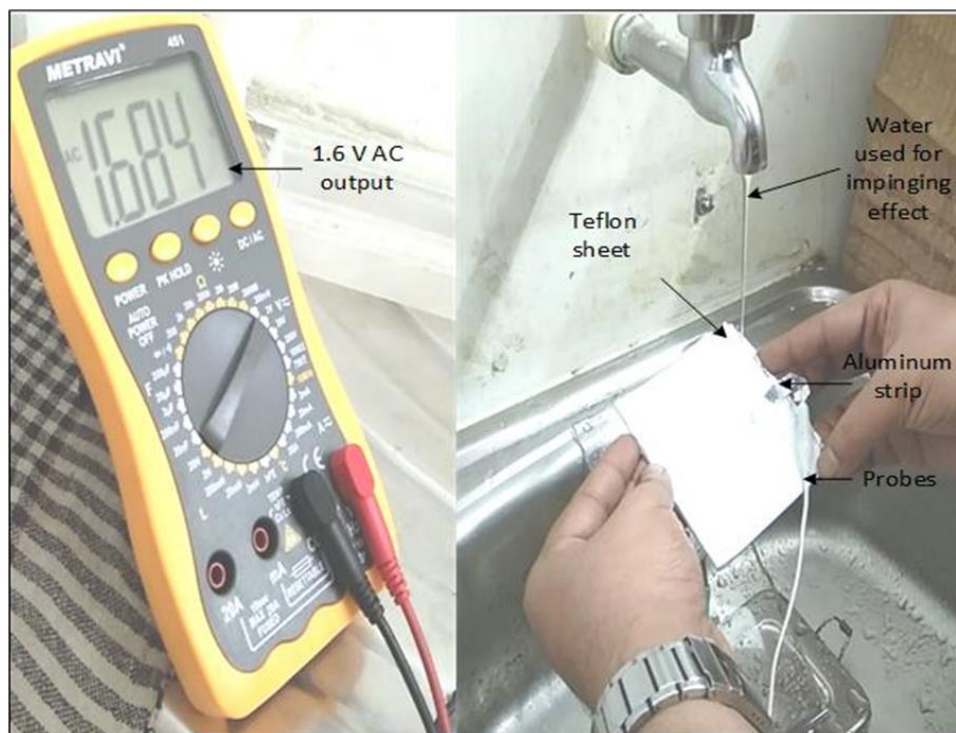
Faculty Pi: Souhridya Bhattacharjee

Student Pi: Arghya Roy

Project Title: FABRICATION OF A TRIBOELECTRIC ENERGY CELL EMPLOYING VARIOUS SOURCES OF WATER

Description: Research and development efforts are being carried out to harvest energy from water in the forms of rain, river tides, and ocean waves. Traditional power generation systems are inefficient and cost-consuming to achieve a high density of electrical energy. As an alternative, utilizing the triboelectric energy generation principle, a device comprising of three components: the upper electrode layer, polymer film (insulating layer), and the lower electrode layer is fabricated to harvest energy from impinging water droplets by using an architecture that comprises a polymer film (insulating layer) on a lower electrode layer plus an upper electrode layer. The impinged water droplet bridges the disconnected components into a closed-circuit electrical system on spreading. The water-droplet-based energy cell works following the principle of contact electrification and electrostatic induction between water droplets and polymer film (insulating layer).

Image:



Project Cost: 5000/-

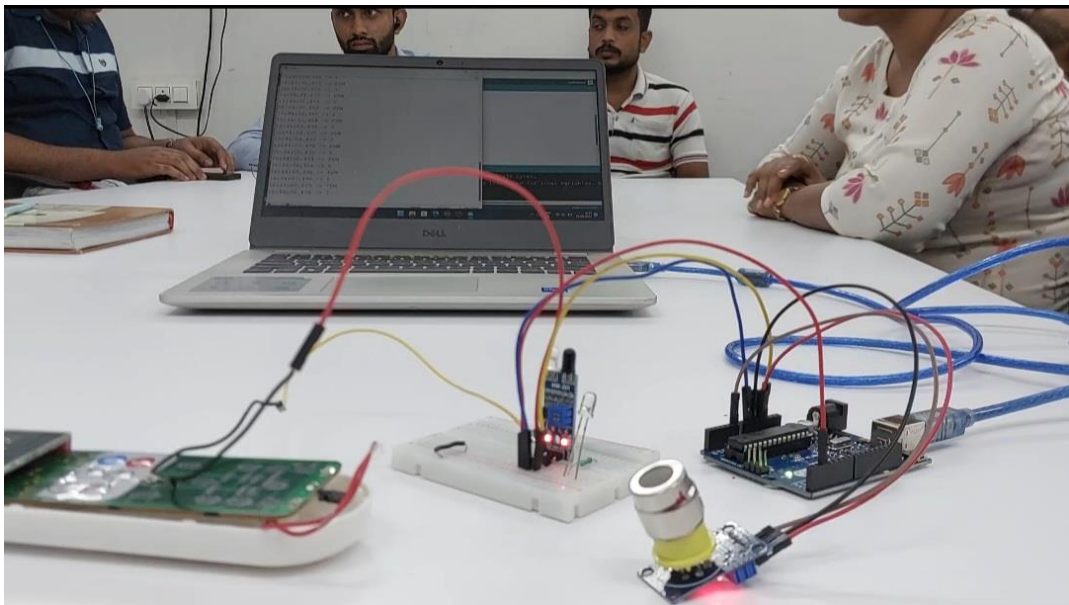
Project Duration: Feb 2023- April 2023

Faculty Pi: Ayan Kumar Ghosh, Priti Das, Sourab Ghosh

Project Title: CROWD-BASED AIR TEMPERATURE AND VENTILATION CONTROL USING A SMART DEVICE

Description: The present invention is designed and implemented as a smart device to operate an air conditioner's cooling system automatically. By using this device, the proper ventilation of a closed surface area can be maintained. The device can ventilate and monitor the air quality of a room by evaluating the PPM value of at least one noxious gas in the air. The smart device integrates different control units to obtain the desired output. In the present device, the air-quality sensing unit controls the temperature modulation unit and further activates the signaling unit that is used for transmitting the electric pulse to the air conditioner. This sensor-based smart device can keep the air in the closed room clean, and it can also be used to eliminate stuffiness and discomfort. The smart device is also cost-efficient, power savers, portable, and lightweight.

Image:



Project Cost: 6000/-

Project Duration: April 2023

Faculty Pi: Trisha Paul, Priti Das

Student Pi: Arpan Goswami

Project Title: WI-FI-BASED SMART PROJECTOR SCREEN

Description: In this modern era, technological advancement has taken a great leap forward in the field of education. People prefer the use of technologies for information sharing rather than books themselves. The projector and its screen are the most used devices for such purposes. As per the project's requirement, the team was required to design and calculate a smart motorized projector screen. Different concepts and ideas were generated and individually analyzed for their reasonability, feasibility, ease of use practicality. At last, an idea was selected among many, and design calculations were done. The final outcome was the Wi-Fi-based motorized projector screen, which was easier to operate. The main advantage was that the mechanism could be used in older projector screens, making it motorized with Wi-Fi control to help users operate through a smartphone.

Image:



Project Cost: 15000/-

Project Duration: May 2023

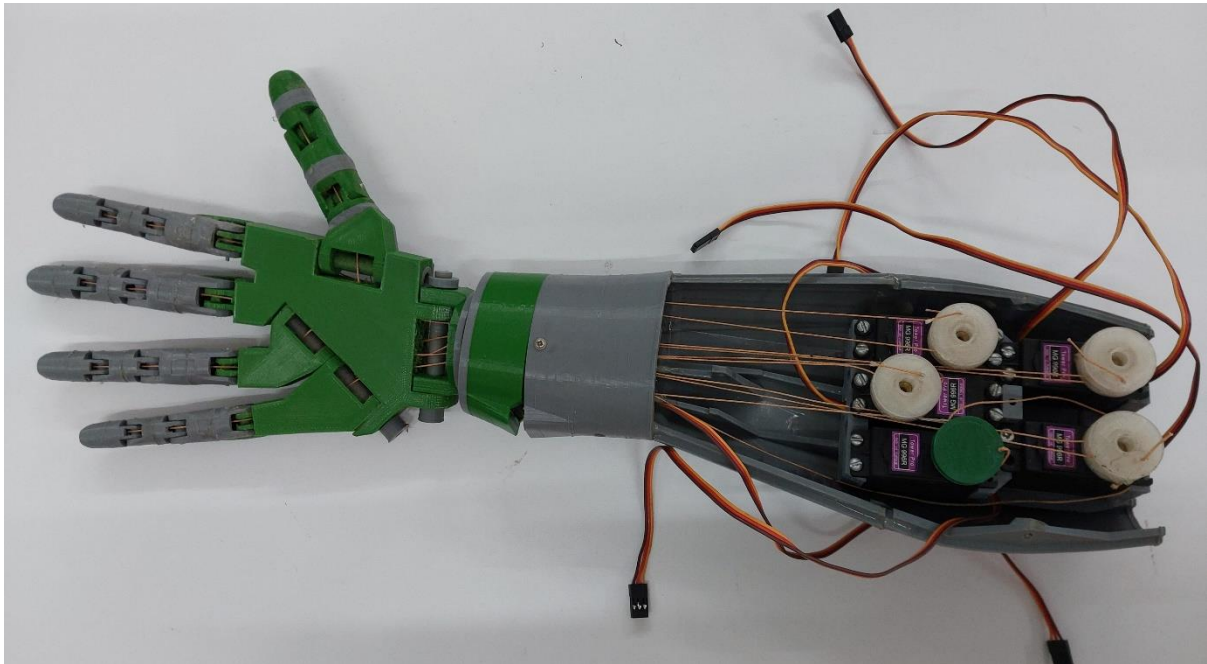
Faculty Pi: Trisha Paul, Souhridya Bhattacharjee, Somnath Hazra, Dibakar Roychoudhury

Student Pi: Aritri Das, Nilava Kundu, Agamani Roy Chowdhury, Pallabi Debnath, Akash Paul, Kaustav Ghosh

Project Title: PROSTHETIC ARM

Description: A prosthetic arm is an artificial limb designed to replace a missing or non-functional arm. It is a prosthetic device used to restore upper limb functionality and mobility for individuals who have undergone amputation or have congenital limb differences. Prosthetic arms significantly improve the quality of life for amputees by restoring their ability to perform everyday tasks, such as eating, dressing, and carrying objects. They also enhance independence and confidence in individuals with limb loss, allowing them to engage in work, hobbies, and recreational activities. All the parts of the prosthetic arm, like sockets, joint parts, grippers, hooks etc, are printed using our 3D printer. We will use bio-sensors to control our prosthetic arm.

Image:



Project Cost: 35,000/-

Project Duration: May 2023

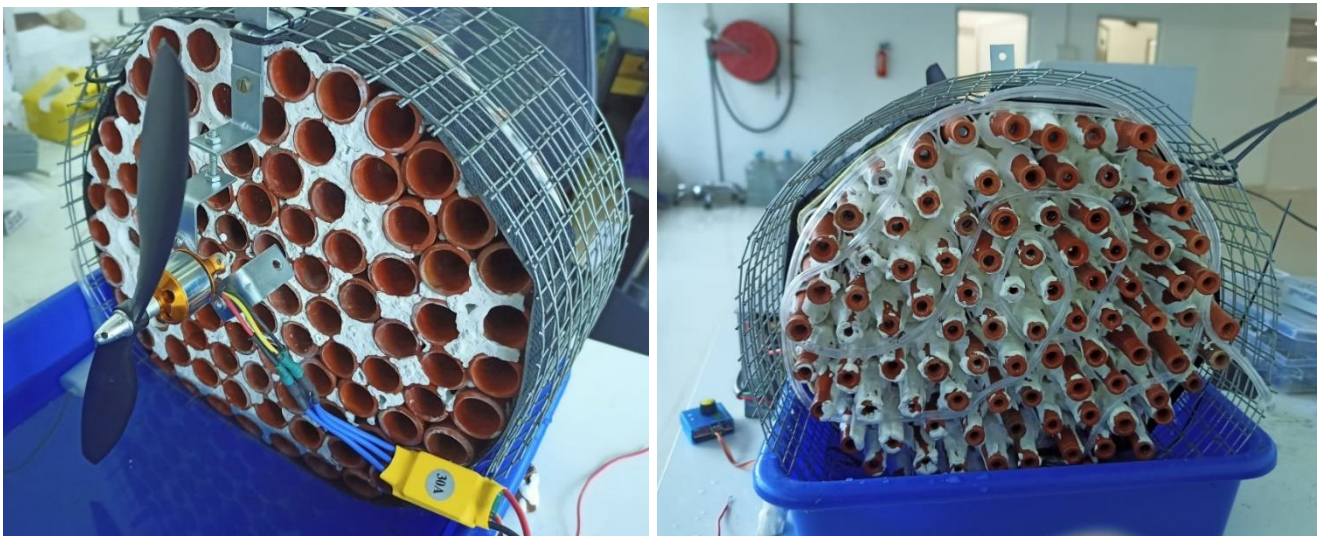
Faculty Pi: Trisha Paul, Dibakar Roy Choudhury

Student Pi: Md. Mustafa Abdulla, Nirban Roy

Project Title: TERRACOTTA-BASED AIR COOLER SYSTEM

Description: The Terracotta-based air cooler system is an innovative and sustainable solution for cooling indoor spaces. It utilizes the natural properties of terracotta, a porous clay material, to provide effective and energy-efficient cooling. The system consists of a terracotta body with a water reservoir, an air inlet, and an exhaust. As hot air passes through the wet terracotta, it undergoes evaporative cooling, resulting in a pleasant and refreshing indoor environment. The terracotta's porous structure facilitates the evaporation process, and the system operates without the need for harmful refrigerants or high energy consumption. With its eco-friendly design and ability to provide affordable cooling, the terracotta-based air cooler system is a sustainable alternative to traditional cooling methods.

Image:



Project Cost: 3500/-

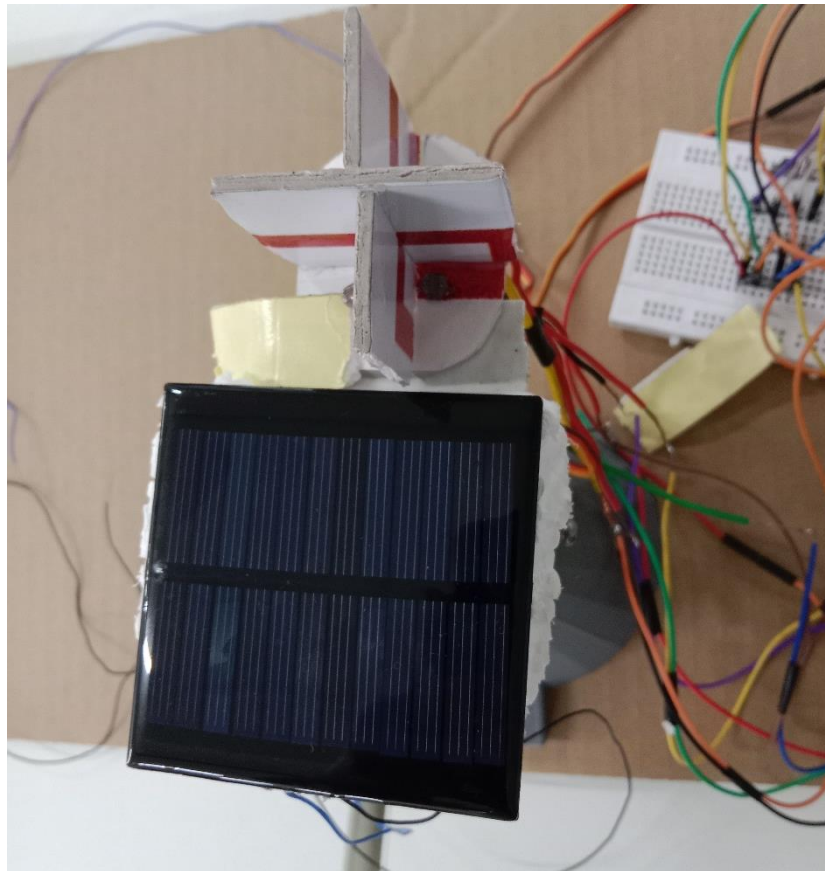
Project Duration: May 2023

Faculty Pi: Souhridya Bhattacharjee, Dibakar Roy Choudhury

Project Title: SUNFLOWER: A SOLAR TRACKING SYSTEM

Description: A sunflower solar tracking system is designed to optimize solar panels' efficiency by aligning them with the sun's position throughout the day. The name "sunflower" derives from how sunflowers naturally turn their heads to face the sun. The primary purpose of a solar tracking system is to maximize the amount of sunlight falling onto the solar panels. By tracking the sun's movement from east to west, the system ensures that the panels always face the most direct sunlight, which results in increased energy generation.

Image:



Project Cost: 1000/-

Project Duration: July 2023 – August 2023

Faculty Pi: Asmita Biswas, Dibakar Roy Choudhury

Student Pi: Avhishek Nandi, Barnali Paul, Sayan Bardhan

Project Title: MULTITASKING SPIDER ROBOT

Description: The Multitasking Spider Robot is an innovative and versatile robotic system designed to mimic the characteristics and movements of a spider while incorporating various sensors for enhanced environmental awareness. This product is suitable for a wide range of applications, including search and rescue operations, environmental monitoring, and industrial automation. It incorporates a comprehensive array of sensors to effectively perceive and interact with its surroundings. Various types of sensors include temperature, humidity, ultrasonic, gas, and LiDAR. The robot is equipped with onboard processing capabilities to analyze sensor data in real time. It uses advanced algorithms to interpret the sensory inputs, make decisions, and adapt its movements accordingly. The Multitasking Spider Robot has numerous applications across various domains, including search and rescue, environmental monitoring, surveillance, and security. As technology continues to advance, the Multitasking Spider Robot holds immense potential for further development and integration with emerging technologies like artificial intelligence and wireless communication.

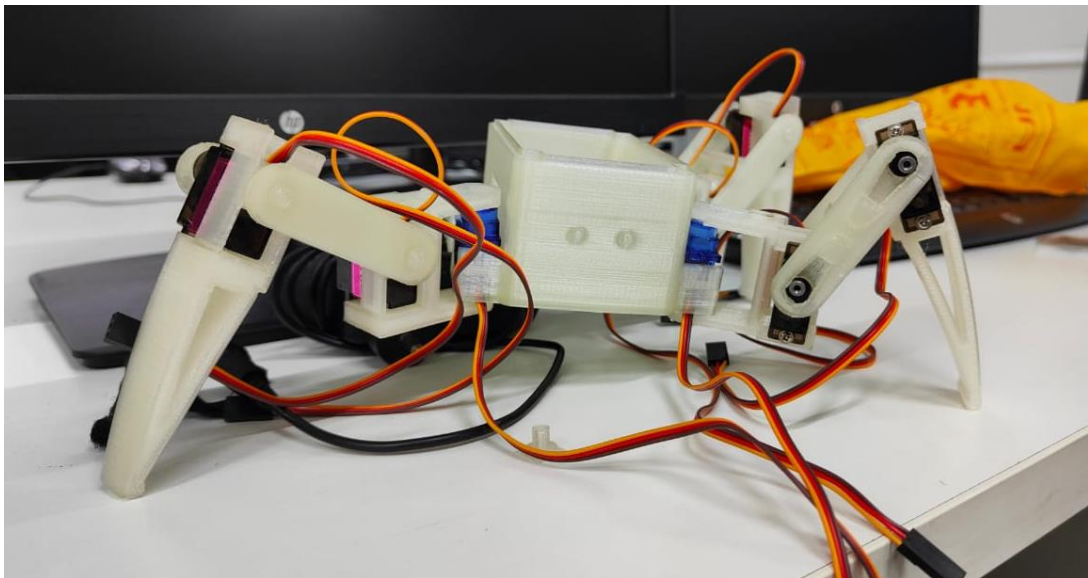


Image:

Project Cost: 7000/-

Project Duration: August 2023

Faculty Pi: **Trisha Paul**

Student Pi: **Subham das, Rajdip Biswas**

Project Title: UNMANNED AIR VEHICLE ASSEMBLY

Description: Unmanned Air Vehicle (UAV) assembly integrates electric motors, power electronics, and propellers into the aircraft structure. Electric and servo motors, driven by batteries, provide propulsion without traditional fuel. The lightweight design enhances flight efficiency, extends endurance, and reduces environmental impact. Electric UAVs offer quieter operation and simplified maintenance, making them ideal for various applications, such as surveillance, mapping, and cargo delivery. Integrating electric motors enables eco-friendly, cost-effective, and versatile UAV platforms, revolutionizing aerial missions and fostering sustainable aviation advancements.

Image:



Project Title: FACEBOOK OPEN-REDIRECTION VULNERABILITY WITH LINKSHIM HASH CAPTURING

Description: For example, the url is something like this:

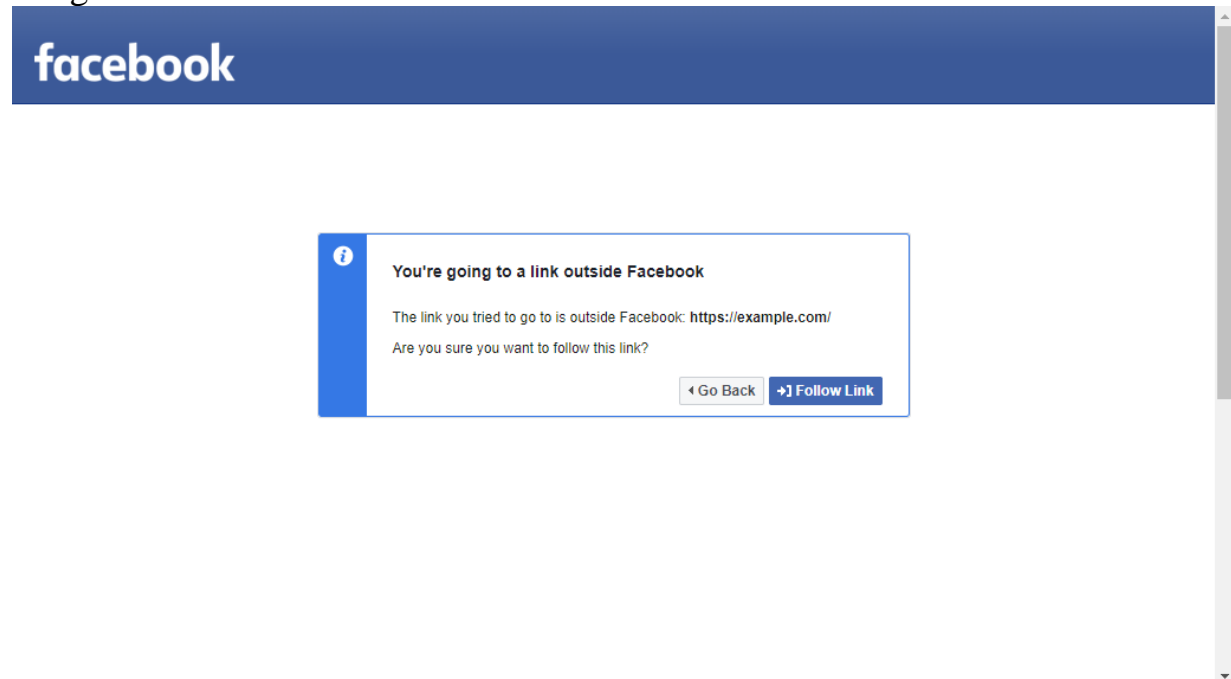
<https://facebook.com/l.php?u=https://example.com/>

When one tries to visit the link, a redirection notice is issued by the browser which is notifying the user about the redirection. The redirection notice looks something like this. For example, the url is something like this:

<https://facebook.com/l.php?u=https://example.com/>

When one tries to visit the link, a redirection notice is issued by the browser which is notifying the user about the redirection. The redirection notice looks something like this.

Image:



Project Cost: Nil

Project Duration: Mar 2022- April 2022

Faculty Pi: Dibakar Roy Choudhury



Student Pi: Arjun Ghoshal, Rittik Lal

Project Title: POWERSHELL TROJAN THAT CAN EVADE WINDOWS DEFENDER

Description: A Trojan horse is any malware that misleads users of its true intent. The trojan developed by me consists of a PowerShell payload, which on execution on the victim system, triggers a reverse shell back to the attacker system's IP address, giving the attacker full access to the victim system. Trojans are a common form of malware found in today's society. However, the following trojan holds the power to evade Windows Defender (built-in windows antivirus). This attack can be used for penetration testing and further practices like privilege escalation, reconnaissance, etc. Downloading and executing the v.bat file will automatically download and execute the trojan, i.e., the rs.exe file. The trojan has been obfuscated in such a way that Windows Defender is not able to detect it and hence, allows it to run on the victim machine.

Image:

Index of /

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 rs.exe	2022-10-16 18:56	130K	
 v.bat	2022-10-16 18:56	144	

Project Cost: Nil

Project Duration: April 2022- May 2022

Faculty Pi: Dibakar Roy Choudhury

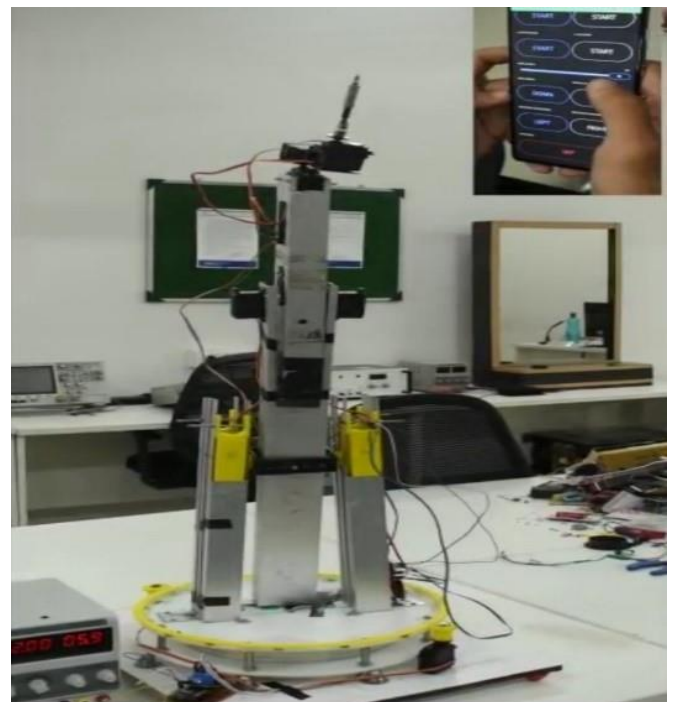
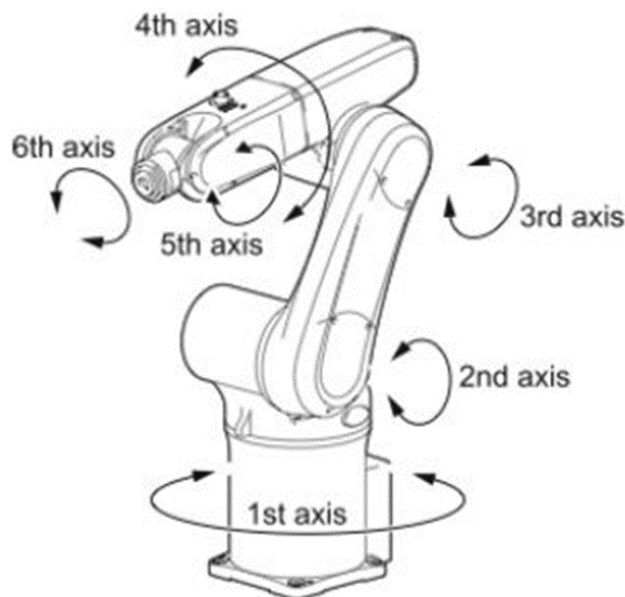
Student Pi: **Arjun Ghoshal, Rittik Lal**

Project Title: DUMM-E

Description: It is a type of articulated 6 axis robots and the most common for industrial manufacturing. They provide the flexibility, strength, and reach needed to complete most applications. Six-axis robots can move in the x, y, and z planes. In addition, they can perform roll, pitch, and yaw movements. This makes the movements of these robots like that of the human arm. Our robot will be able to perform pick and drop, Welding, Soldering, Drilling, and screwing and unscrewing; with manual command as well as voice command.

Link: <https://youtu.be/hdJXvbDt2Hk>

Image:



Project Cost: 15,000/-

Project Duration: Sep 2022- Nov 2022

Faculty Pi: Dibakar Roy Choudhury

Student Pi: **Shouryam Dutta**

Projects for Software Domain (IIC-IEM):

Project Title: IIC Management Website

Description: A Development project for IIC to resolve the ID issues, automated email system, membership proof, and security check-in and out. In addition to this, it will provide a certificate issued by the admin users, which will be a proof of Internship Certificate for MAR Points.

Working Layout:

Firstly, we will concentrate on the users' hierarchy and privilege. The hierarchy (Top to Bottom) follows:

a) Super-User-

The top heads, who will issue an offer letter to the selected candidates after the approval request from the mentor/ admin. These users will have the authority to remove any member or accept any member after the approval of admin users.

The database lists will be provided to the super-users, including admin users, faculty mentors, student users and security user with its unique id and role.

b) Mentor (Faculty Members)-

These users do not have any role basically but can see the list of admin users & student user.

They can view the dashboard & specialists of particular users for future project planning. We will provide a temporary timing chatbot (notified in emails) for project acceptance/approval.

c) Admin User-

These users who played the major role from interviews to project session. These users have unique features:

- Sending aid of advice for any member approval request to the super-user.
- Can view the mentor (Faculty Members)
- Can also send a removal of membership request.
- Can make project groups along with student users for particular team.
- Can issue direct certificates to the student user, which will be notified to the super user immediately via mail.
- Any research project send to the student user, the admin user will get the notification of the 'send project request'.

d) Student User-

They are the normal users having id and dashboard with full details. They will be able to log in & log out at their time and also give attendance through the portal.

** Functionalities are still user maintenance.

e) Security User-

**Functionalities not decided yet

Image:

(To be made yet)

Project Duration: **Jan 2023 – Present**

Faculty Pi: Trisha Paul

Student Pi:

- 1. Mriganka Paul**
- 2. Arpan Ghosh**
- 3. Bishal Ghosh**
- 4. Sumana Karmakar**
- 5. Dipta Karar**
- 6. Bareesh Chatterjee**
- 7. Rituparna Debnath**
- 8. Portia Basak**
- 9. Proshant Mondal**
- 10. Arijit Paul**
- 11. Anirban Mitra**
- 12. Sandip Sain**

Project Title: IIC RESOURCE APP (INITIAL PHASE)

Description: This app will act as a study material supplier for freshers at IIC-IEDC. Multiple courses will enable students to learn at their own pace (the technology of their choice).

Super-users/admins will have access to add the best possible materials so that everyone can access them. There will be course materials available in doc, pdf, and word format & also, there will be multiple YouTube playlist links for added benefits. Admins can also add/remove members on joining/leaving the organization.

Image:

https://drive.google.com/drive/folders/1Y8rGm-D8ETBwnS7BS6Zi0jEicIrw3gvr?usp=share_link

Project Duration: **Jan 2023 - Present**

Faculty Pi: Dibakar Roy Choudhury

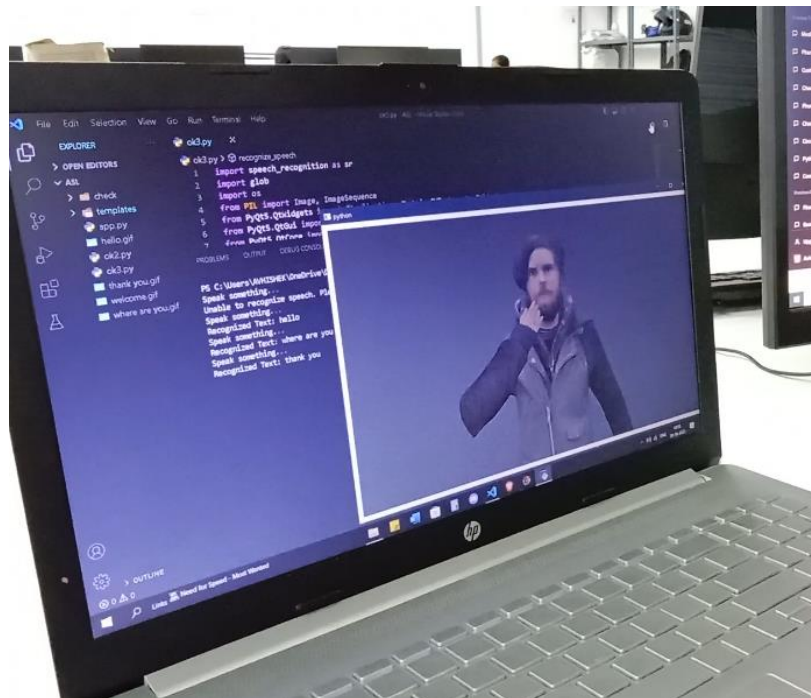
Student Pi:

- 1. Mriganka Paul**
- 2. Arpan Ghosh**
- 3. Dipta Karar**
- 4. Bareesh Chatterjee**
- 5. Sumana Karmakar**
- 6. (More Team Members will be added as the project is still in the formation phase)**

Project Title: SIGN COMPANION: A REAL-TIME SPEECH TO SIGNED LANGUAGE CONVERSION SYSTEM

Description: The sign companion: a real-time speech-to-signed language conversion system designed for converting speech into signed language in real time. The system also provides the implementation of a website or Android application. For those who are deaf or hard of hearing, a speech-to-signed language conversion technology encourages inclusion, accessibility, and successful communication. Bridging the communication gap between spoken and signed language promotes comprehension and equitable participation in various social, academic, and professional situations.

Image:



Project Duration: April 2023 - Present

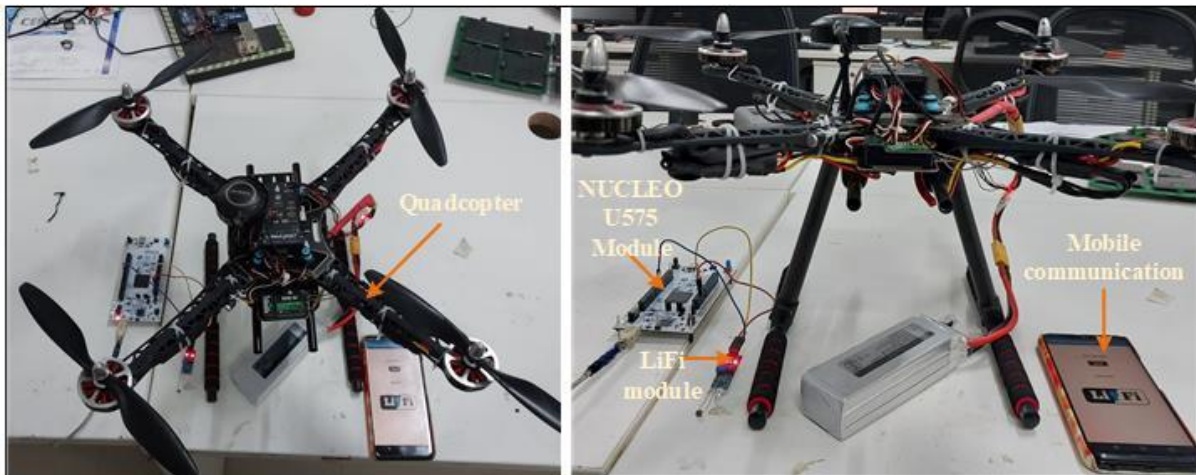
Faculty Pi: Asmita Biswas, Dibakar Roy Choudhury

Student Pi: Avhishek Nandi, Barnali Paul, Sayan Bardhan

Project Title: LiDAR– LiFi COMMUNICATION SYSTEM FOR DEVELOPMENT IN DISASTER MANAGEMENT

Description: Climate change and disaster mitigation are some of the G20 goals. In the project work, the integration of LiDAR-LiFi technology has great potential to handle disaster management concerns by providing precise data gathering, rapid communication, early warning systems, effective response, and sustainable planning. Here, the Search and rescue, damage assessment, and infrastructure planning are aided by LiDAR-created 3D maps. This project proposes a robust LiDAR-LiFi integrated communication architecture for SAR response to natural disasters using VTOL drones. Using NUCLEO-U575ZI-Q with a GIS database enhances LiDAR area mapping for aerial surveillance and remote monitoring. Here, each network server's availability function determines LiFi's viability. A fixed-wing quadcopter drone is designed for the entire surveillance. The system detects the optimal route for reaching disaster-affected individuals.

Image:



Project Cost: 20,000/-

Project Duration: Present

Faculty Pi: Priti Das

Student Pi: Kaustav Laskar, Debmalya Das, Rajdeep Biswas, Subham Das

Projects Duration: 2022-2023

Sl. No.	Project Name	Faculty Pi	Student Pi
1.	IoT Based Fire Extinguisher	Souhridya Bhattacharjee	Uday Shankar Mukherjee
2.	Lakshman Rekha Shield	Dibakar Roy Choudhury	Souhridya Bhattacharjee
3.	Atmospheric Water Generator	Souhridya Bhattacharjee	Uday Shankar Mukherjee
4.	Development Of Smart Arduino Blind Stick	Dibakar Roy Choudhury	Sayak Sarkar
5.	Smart Gardening	Souhridya Bhattacharjee	Uday Shankar Mukherjee
6.	Anti-Tremor Band with Tremor Stage Prediction	Asmita Biswas & Souhridya Bhattacharjee	Uday Shankar Mukherjee
7.	Humanoid Robot	Sourab Ghosh	Arpan Goswami, Saptarshi Sen
8.	Facebook Open-Redirection Vulnerability with Linkshim Hash Capturing	Dibakar Roy Choudhury	Arjun Ghoshal, Rittik Lal
9.	Powershell Trojan That Can Evade Windows Defender	Dibakar Roy Choudhury	Arjun Ghoshal, Rittik Lal
10.	Dumm-E	Dibakar Roy Choudhury	Shouryam Dutta
11.	Electric Cycle	Souhridya Bhattacharjee	Spandan Sarkar
12.	Electric Bike	Souhridya Bhattacharjee	NIL
13.	Machine Overheat Detector with Alert	Asmita Biswas	Sayan Bardhan
14.	Aerial Forest Ranger	Sourab Ghosh	Nirban Roy
15.	Remote Controlled Wheel Shoe	Souhridya Bhattacharjee	Aritra Biswas
16.	Hybrid Modular Tree for Green Energy Generation	Priti Das	Arpan Goswami, Aritra Naskar
17.	Smart Mirror	Sourab Ghosh	Uday Shankar Mukherjee
18.	Air Quality Regulator	Ayan Kumar Ghosh	Soumanka Sarkar
19.	Solar Concentrator	Ayan Kumar Ghosh, Souhridya Bhattacharjee	NIL

20.	Emergency Protection for Women's Safety	Trisha Paul	Siddhartha Bhattacharjee
21.	Motorized Skateboard	Souhridya Bhattacharjee	Arghya Roy
22.	Fabrication of a Triboelectric Energy Cell Employing various of water	Ayan Kumar Ghosh, Priti Das, Sourab Ghosh	NIL
23.	Crowd-based air temperature and ventilation control using a smart device	Trisha Paul, Priti Das	Arpan Goswami
24.	Multitasking Spider Robot	Trisha Paul	Subham Das, Rajdip Biswas
25.	Sunflower: A Solar tracking system	Asmita Biswas, Dibakar Roy Choudhury	Avhishek Nandi, Barnali Paul, Sayan Bardhan
26.	Unmanned Air Vehicle Assembly	Trisha Paul, Priti Das, Asmita Biswas	Shouryam Dutta
27.	Sign Companion: A Real-time speech to sign language conversion system	Asmita Biswas, Dibakar Roy Choudhury	Avhishek Nandi, Barnali Paul, Sayan Bardhan
28.	Prosthetic Arm	Trisha Paul, Dibakar Roy Choudhury	Md. Mustafa Abdulla, Nirban Roy
29.	Terracotta-based air cooler system	Souhridya Bhattacharjee, Dibakar Roy Choudhury	NIL
30.	LiDAR– LiFi communication system for development in disaster management	Priti Das	Kaustav Laskar, Debmalya Das, Rajdeep Biswas, Subham Das

Applied Materials Research Laboratory

<u>Members</u>	<u>Research Area</u>
<u>Dr. G. S. Taki</u>	<u>ECR Ion Source Technology, nano-materials synthesis and modification</u>
<u>Dr. S. R. Bhattacharyya</u>	<u>(i) Sputtering and Sputter-induced surface morphology (ii) Ion beam mixing of metallic thin films (iii) Swift heavy ion interaction on solid surfaces (iv) Deposition of nanocluster thin films and the effect of ion irradiation on it</u>
<u>Prof. Soumik Kr. Kundu</u>	<u>g-C₃N₄ synthesis by Magnetron Sputtering for photo-catalytic application.</u>
<u>Prof. Samit Karmakar</u>	<u>Graphene synthesis by ECR PE-CVD method for bio-sensing & energy storage device application</u>



<u>Experimental Facilities</u>	• <u>2.45 GHz ECR-PECVD system operating during graphene growth</u>	<u>Indigenously developed</u>	<u>IEI-IEM Funded</u>
	• <u>Magnetron Sputtering Setup</u>	<u>Indigenously developed</u>	<u>IEI-IEM Funded</u>
	• <u>Quadrupole Mass Analyzer</u>	<u>Pfeiffer Vacuum</u>	<u>AICTE-RPS-IEM Funded</u>
	• <u>De-Ionized Water Plant</u>	<u>TN10HITD</u>	<u>AICTE-RPS-IEM Funded</u>
	• <u>Automatic Spin Coater</u>	<u>EZspinA1</u>	<u>AICTE-RPS-IEM Funded</u>
	• <u>Compound Microscope with Camera</u>	<u>ESAW</u>	<u>AICTE-RPS-IEM Funded</u>
<u>Computational Facilities</u>	• <u>Silvaco TCAD</u>		<u>IEM Funded</u>
	• <u>CST Microwave Studio</u>	<u>Dassault</u>	<u>IEM Funded</u>

<u>Grant-in-Aid</u>					
<u>Ongoing Projects</u>					
<u>Funding Organization</u>	<u>Project Investigator</u>	<u>Scheme/Proposal</u>	<u>Department</u>	<u>Sanction No. & Date</u>	<u>Sanctioned Amount</u>
<u>AICTE (2020)</u>	<u>Dr. G. S. Taki</u>	<u>RESEARCH PROMOTION SCHEME (RPS)</u>	<u>AMRL Lab, EC E Dept.</u>	<u>File No. 8-235/RIFD/RPS (POLICY-1)/2018-19</u>	<u>Rs. 16,00,000/-</u>

<u>UGC-DAE-CSR</u> (2022)	<u>Dr. G. S. Taki</u>	<u>Collaborative Research Scheme (CRS) Project of UGC DAE CSR</u>	<u>AMRL Lab, EC E Dept.</u>	<u>Ref: CRS/2021-22/02/519</u>	<u>Rs. 45,000/- per year</u>
<u>Institute of Engineering and Management</u> (2022)	<u>Prof. Samit Karmakar</u>	<u>IEM Grant-in-Aid Project Scheme</u>	<u>AMRL Lab, EC E Dept.</u>	<u>Ref: IEM NOTICE/13 - April-2022</u>	<u>Rs. 1,50,000/-</u>
<u>Institute of Engineering and Management</u> (2022)	<u>Prof. Soumik Kumar Kundu</u>	<u>IEM Grant-in-Aid Project Scheme</u>	<u>AMRL Lab, EC E Dept.</u>	<u>Ref: IEM NOTICE/13 - April-2022</u>	<u>Rs. 50,000/-</u>



Prof. Dr. Arun Kumar Bar
Principal



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