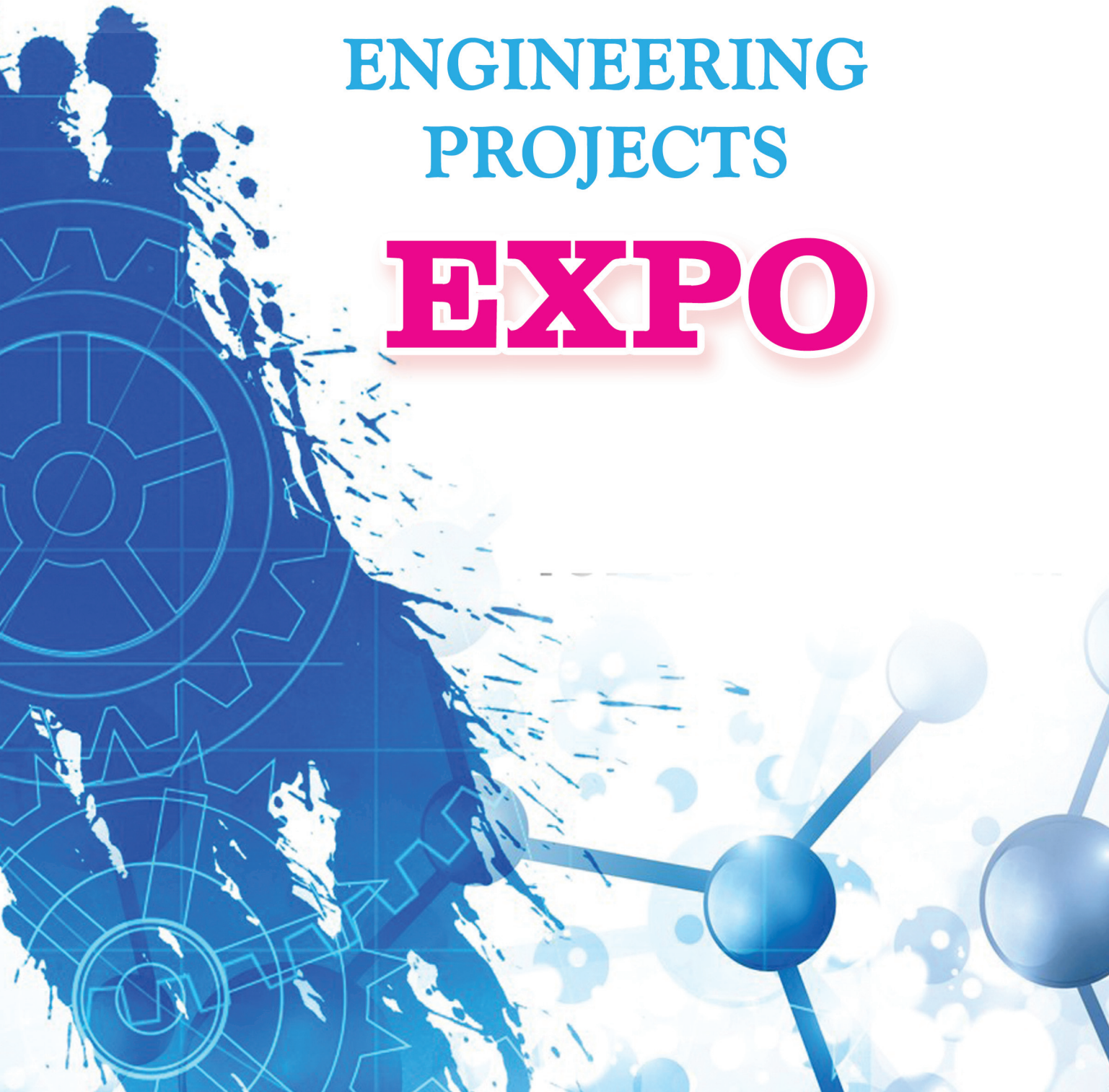# MUFFAKHAM JAH

COLLEGE OF ENGINEERING AND TECHNOLOGY

(SULTAN-UL-ULOOM EDUCATION SOCIETY)

ADSOPHOS 2019

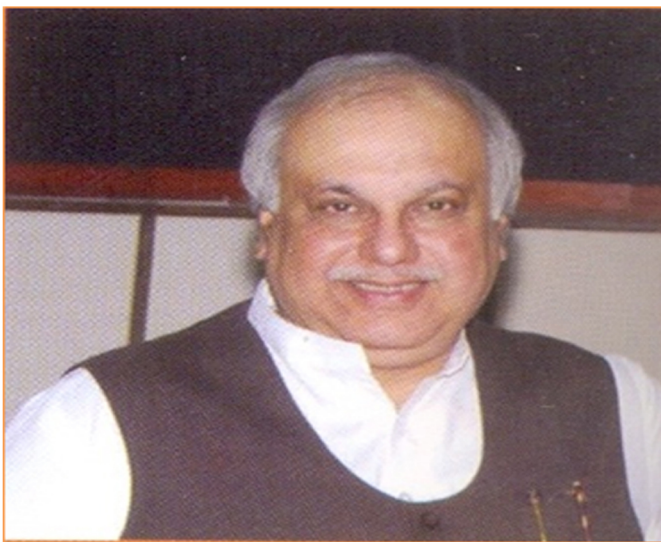# ENGINEERING PROJECTS

EXPO

Janab Khan Lateef Khan Sahab
Chairman, SUES

Hearty congratulations to the students of MJCET and the entire team of ADSOPHOS 2019 for the successful accomplishment of the event. It was indeed a fruitful experience to be amongst the young minds who with their new and innovative ideas coupled with current technology tried to provide some plausible solution to the contemporary problems. I wish them success in their future endeavors.

Janab Zafar Javeed Sahab
Honorary Secretary, SUES

I am glad to know that MJCET is bringing out ADSOPHOS project magazine showcasing the innovative solutions for the most pressing problems faced by society. This adds one more feather in the cap of MJCET. In my view publications of this kind not only throw light at the academic excellence of our students but also showcase their practical abilities in applying the same to common problems. It also encourages the other students towards such activities and builds in them a sense of responsibility towards the society. I congratulate the students, faculty and college   administration   for   this   work   of theirs.

Dr.Basheer Ahmed
Advisor cum Director , MJCET

It was a pleasure attending the ADSOPHOS 2019 project display event organized yearly by MJCET. Such events provide a common platform to the students to show case their innovative ideas, talents, use of cutting-edge technology for providing solutions to the most common but contemporary problems faced by the society. This apart it provides interaction with different professionals in the field. And for the students a chance to display as well as enhance their skills and exhibit their good qualities. My best wishes to all concerned for the future endeavors.

MJCET TECHNO SHOWCASE

ADSOPHOS INAUGURATION (2019)

Janab Khan Lateef Mohammed Khan Sahab, Honourable Chairman, SUES, Inaugurating "MJCET Techno Showcase" An ADSOPHOS 2019 student project expo on 12th February at MJCET Ghulam Ahmed Hall

VISION

To be a part of universal human quest for development and progress by contributing high caliber, ethical and socially responsible engineers who meet the global challenge of building modern society in harmony with nature.

MISSION

1. To attain excellence in imparting technical education from the undergraduate through doctoral levels by adopting coherent and judiciously coordinated curricular and co-curricular programs .

2. To foster partnership with industry and Governmental agencies through collaborative research and consultancy.

3. To nurture and strengthen auxiliary soft skills for overall development and improved employability in a multi cultural work space .

4. To develop scientific temper and spirit of enquiry in order to harness the innovative talents

5. To develop constructive attitude in the students towards the task of nation building and empower them to become future leaders .

6. To nourish the entrepreneurial instincts of the students and hone their business acumen.

7. To involve the student and faculty in solving local community problems through economical and sustainable solutions.

Research and Development Projects

**Students of First year engineering presenting
a laser printed image of Albert Einstien to Janab Zafar Javeed, Hon. Secretary, SUES**

For any education, and technical education in particular, the basic model of a 'teaching – only' institution is inadequate to ensure quality education. In all disciplines of technical education, knowledge is dynamic with new technologies being introduced very frequently. In this scenario, it is not possible for the teachers to deliver good quality instructions without being tuned to the current developments in the subjects, for which they must constantly update their knowledge. MJCET recognized the importance of R & D in the vertical growth of the institution and established the R & D cell to focus on the scientific and industrial research in the various disciplines of Engineering. The MJCET R & D

Cell is a nominated committee consisting of professors from various programs of Engineering and Basic Sciences

In order to promote research culture among the faculty and students, an annual fund of Twelve Lakhs is earmarked for providing seed funding of innovative ideas of students and faculty. The main aim of these projects is to provide necessary financial support so that the projects can become products. The outcome is assessed in the form of Intellectual property created and research papers published based on the work done. These innovative ideas are the main attraction in the engineering projects exhibition.

ANTHRO2.0 – A semi Humanoid Robot

The advancement of technology and sophistication in field of automation and Robotics has revolutionized every field of life. Anthro 2.0 is a semi-humanoid robot with its upper body shape built to resemble that of human body. In this project the focus is on developing Face Recognition feature and Speech Recognition abilities in the robot. A raspberry Pi based single board computer is used to cater to both face and speech recognition. This robot can be utilized in applications such as greeting guests, working like a chat bot performing face recognition giving a personalized experience while acting as a security & surveillance robot. The image recognition part is built around Raspberry Pi Hardware with Python Programming. The upper torso and hands were completely 3D printed in the college using the 3D printer designed by the students in the previous year project. The movement is controlled by 18 high torque servo motors which are controlled by using an Arduino Mega controller. The movement is controlled using PS2 and the image and speech recognition is controlled using Bluetooth technology. Such a mobile robot with further improvements can be used for defensive applications, diffusing bombs, during nuclear and chemical warfare and as a rescue-bot during fires and natural disasters.

Humanoid Phase - 2 Robot

The development of bipedal humanoid robots began more than thirty years ago. A stable walking motion in a humanoid robot requires effective gait balancing and robust posture correction algorithms. Despite the several research efforts, it is still an extremely challenging task to develop and implement intelligent motion algorithms to control a bipedal humanoid robot, particularly with regards to adaptability, robustness and stability of the robot. This project is implemented using 10 servo motors and it gives fifteen degrees of freedom. An R botix kit was used to implement the design algorithm.

Automated Navigation System with Indoor Assistance for The Blind.

The problem of navigation for visually challenged individuals is of great concern. In an attempt to aid visually challenged people for Navigation, this project provides an automated navigation system with obstacle detector along with voice assistance to guide a blind individual to navigate the college Campus.

The system enables the blind people to move with the same ease, and confidence as sighted people. Since the system is linked with computer vision with colours module, it provides the direction information by detecting colours. It can also avoid obstacles using an ultrasonic sensor.

The next generation ARM Band

The next Generation ARM Band is a smart band containing three-dimensional motion sensor and vibration motors. The smart wristband can be synchronized with a Bluetooth wireless smartphone or PC, to guide for a healthy living lifestyle. The existing models all work in the presence of network but this system works offline as well it has offline GPS tracking system which makes it unique from the existing system This band will help lost people to communicate with dear ones (offline), It is designed with waterproof technology and also ha fitness mapping features.

TREBAX Chess Board

TREBAX Chess Board is Chess game i.e. predominantly a board game that requires strategy and keen decisions. This project builts a smart chess board, which takes the benefits of digitized chess and brings it to life on an actual physical board. Automated and magnetic movement of chess pieces are designed such that they don't collide with each other. Taking People off the screen back to the traditional world with the ability to learn and play chess.

CO$_2$ LASER ENGRAVER

Laser Engraver is a specialized machine that is used in engraving work and it reduces the time taken for engraving complicated designs. It uses motor automated drives which runs on computer aided commands using G-Codes & M-Codes and are used to guide the engraving process. A CO2 based Laser is used which works on materials like wood, plastics, aluminium, steel, etc. without any human intervention. The Machine can be operated by a s single person who can generate a design and pass the command to the drivers through a computer.

FLEXIBLE MANUFACTURING SYSTEM

The advent of Industry 4.0 has enabled rapid protopying and manufacturing using Automation and robotics. The concepts of Artificial intelligence, IOT, Machine Learning is being integrated with PLC SCADA which is used for controlling and monitoring the systems with logical programming. The objectives of the project are to develop FMS using the most appropriate technique, To understand logic control and associated technologies and use various type of sensors and actuators in PLC implementation and explain the role of automation in manufacturing.

HEXAPOD (Six legged walking robot)

Hydroponics is a method of growing plants in water based nutrient rich solution. Hydroponics does not use soil, instead the root system is supported using an inert medium such as perlite, rockwool, clay pellets coco moss, or vermiculite. The basic premise behind hydroponics is to allow the plants roots to come in direct contact with the nutrient solution.

WANDERWAY-SEGWAY

Sensor technology is used to maintain the concentration and PH level of the nutrient water. Temperature and light are also electronically controlled and the plants can be grown without use of sunlight.

Segway is an electronic scooter of future technology. It moves ahead by sensing the tilt angles of the person riding it. It senses the tilt using an accelerometer and keeps the vehicle stable using a gyroscope.

The Wanderway - Segway uses the gyroscope sensor, accelerometer along with an Arduino board and required mechanical and electrical hardwares.

It uses an Oblu IMU sensor and analog switches, which makes the balancing easier while taking a turn. It has an optimum speed of 6 to 8 kmph. It can be used in malls, parks, hospitals, airports and for short transport applications.

# PROJECTS DISPLAYED BY CSE DEPARTMENT

AUTOMATED PLANT WATERING SYSTEM

Plant watering is a critical and labour intensive work in agricultural domain. This project aims to decrease the burden of watering the plants on the User by automating this process. In system is based on a Node mcu microcontroller, which acts as a controller between different sensors soil moisture sensor and temperature sensor and monitors them. If the value goes below the threshold limit the Node mcu automatically switches on the motor and water the plants sufficiently.

SONIC VISION

Sonic vision helps blind people navigate easily by detecting the nearby Obstacles using the help of ultrasonic waves and notify them with buzzer sound. By wearing this device, they can avoid obstacles and navigate freely without any worries. The aim of the device is to develop a cheap and more efficient way to help visually impaired human beings walk the streets with comfort and confidence. The device can be worn as a band or like a piece of cloth over an arm and it will start functioning automatically. Our basic aim is to help the visually impaired not feel left out in a world where being a challenged person is considered as weak.
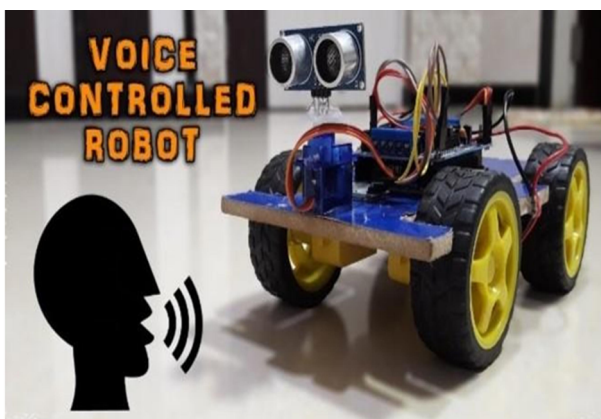
VOICE CONTROLLED BOT

In this project, **we control the movements of the vehicle using voice commands from the user.** It is made to help handicapped people to travel on their own by giving voice commands. The voice commands will be issued at the Android Application on the user's phone that is connected to the robot using a Bluetooth Module. The goal of Voice Controlled Bot is to listen and act on the commands received from the user.

SMART KEY

This project is specially designed for a situation where the key of vehicle is lost and the vehicle has to be started. There is no alternate but to find a key maker. The smart key project comes handy in this case. This application allows you to connect your phone to your bike and unlock it. An arduino based hardware is used. An android app where the users were authenticated using the firebase cloud.

SMART TAP

Water is an indispensable resource and we ought to save it as much as possible. People continue to be ignorant towards the cause of saving water; they leave the taps open for long idle periods. This project "Automatic Water Dispenser using Arduino", consists of an ultrasonic sensor (solenoid valve) that begins to dispense water as soon as it senses an object such as a glass or a hand, and continues to do so as long as the object is in the sensor's proximity; as soon as the object is withdrawn, water flow stops, preventing the need to explicitly close the tap thereby saving water.

VOICE FOR THE VOICELESS

Deaf and Dumb people rely on sign language interpreters for communications. A real time Sign Language Recognition system is designed and implemented using Machine Learning to recognize gestures from the sign Language by hand gesture recognition system for text generation which finally converts to voice. The signs are captured by using web cam and the extracted features are compared by using pattern-matching algorithm. In order to calculate the sign recognition, the gestures are compared with testing database and Machine learning models. Finally, recognized gesture is converted into text and voice.

PROJECTS DISPLAYED BY IT DEPARTMENT

Computer Control Using Hand Gesture

Hand Gesture Control System uses Human Machine Interface. Instead of using a keyboard, mouse or joystick, this system uses our hand gestures to control certain functions of a computer like play/pause a video, move left/right in a photo slide show, scroll up/down in a web page and many more. This project has implemented a simple Arduino based hand gesture control where you can control few functions of your web browser like switching between tabs, scrolling up and down in web pages, shift between tasks (applications), play or pause a video and increase or decrease the volume with the help of hand gestures.

IOT Based Home Automation

The smart home project is an application of IOT. There are situations where you want to control home appliances when away from home, like switching geyser, AC or any other electronic device. These tasks must be done irrespective of where we are. This project can be used to control home appliances using Wi-Fi and Web based devices such as mobile, laptop, etc without installing any additional software. This system not only controls the electrical appliances, but it also gives current status of home appliance on mobile phone.

Stick with a Mind

'Stick with a Mind' provides a wider access and greater assistance to blind people to navigate with the help of ultrasonic sensor. This facilitates the user to communicate by just a click of a button. In case a blind person goes unconscious or slips into a medical emergency which renders him/her and others helpless, conventionally there was no solution to attend to as there was lack of information related to the person and his/her medical history. The present proposal tries to provide a solution by using a QR Code which when scanned can provide all information needed to assist the person medically and otherwise.

Moving Arduino Bot

Moving Arduino is a life size implementation of bb8 character. This bot is designed to move around without using wheels. It has proper structure of ball that propels forward, backward and left or right using a mobile application. The original BB8 design which was used form the movie, used a hamster wheel design. Basically, there's a two wheeled robot rolling around inside a sphere. The head stays upright due to the presence of magnets.

Smart health care system

Smart Health Care System provides an IoT-ready solution for the patients. It allows to register patient's vital information and monitor their medicine intake. It provides mechanism to trigger an alarm to guardian and nurse in situation where patient forgets to take the dose. System also includes detection of the forgery of medicines. It orders the medicines automatically when medicines are about to complete and provides the description of medicines when medicine name is given as input to the system.

PROJECTS DISPLAYED BY ECE DEPARTMENT

SERVING BOT

The serving BOT is a manually operated BOT which moves according to the commands given by customer. The project aims to provide a reliable solution for increasing the efficiency of serving process. The idea behind this project is to help the society with Technology that will provide assistance to human beings in job which are repetitive and can be performed by a BOT.

AQUA 2.0

AQUA2 is part of the aqua project which explores the science and technologies for interpretation of underwater video footage, the identification of underwater features, human-robot interaction, the modeling of 3D scenes using vision and acoustics, vehicle control, position estimation and mechanical design. AQUA2 is lightweight and portable. It can be easily deployed from two standard sized shipping containers that can be transported by commercial aircraft carriers as luggage. The vehicle requires no external support vessel for either deployment or operation.

ARM ASSISTANT BOT

The project aims in designing a robot that can be operated using a mobile phone. The main purpose of this project is to develop a remote user interface, to control a robot via wireless technology. Here, the robot is controlled using mobile phone's Bluetooth technology. A robotic arm with four degree of freedom consisting of a grasping mechanism is implemented.

HYDROPONICS

Hydroponics is a method of growing plants in water based nutrient rich solution. Hydroponics does not use soil, instead the root system is supported using an inert medium such as perlite, rockwool, clay pellets coco moss, or vermiculite. The basic premise behind hydroponics is to allow the plants roots to come in direct contact with the nutrient solution. Sensor technology is used to maintain the concentration and PH level of the nutrient water. Temperature and light are also electronically controlled and the plants can be grown without use of sunlight.

THE MAZE RUNNER

The maze runner is an intelligent autonomous maze solving robot which drives over the black lines of the maze from the entrance to the goal, solving the most complex paths to discover a shortest route. The main aim of this project is to make an Arduino based efficient robot which can be used in various intelligent fields such as Automated transportation, rescue operations, medical attention, military search etc.

ROBO CLEANER

Robocleaner is a smartphone controlled robot that cleans your house's floor! The rotating mops on the front of the robot can do the job perfectly. There's also a water pump and water reservoir which can be switched on when required to throw water on the floor and make the mops moist for a proper clean.

REAL- TIME VISION BOT

A RT VISION BOT is an intelligent bot that able of detecting a person's face, recognizes it, displays the person's face and then opens or unlocks the door. A pycam is used to detect the face which is attached to the raspberry pi. If a person whose face is not saved in the system looks at the camera, the module does not recognize the face and hence does not open the door.

METALLICA - THE MINE DETECTOR

Working of this Arduino Metal Detector is bit tricky. Here we provide the block wave or pulse, generated by Arduino, to the LR high pass filter. Due to this, short spikes will be generated by the coil in every transition. The pulse length of the generated spikes is proportional to the inductance the coil. So with the help of these Spike pulses we can measure the inductance of Coil. But here it is difficult to measure inductance precisely with that spikes because that spikes are of very short duration and that is very difficult to be measured by Arduino.


SMART SUITCASE

The main Idea of the Smart Luggage System IoT Project is to develop a luggage that could be user-friendly. The project is more of a luggage less of a robot. Bags have always been an integral part of travel life whether it may be a travel bag or a plastic bag or even leather bag every bag has its own importance and carries different functions and utility. Thinking of a luggage which conveys its weight, tracks which follows the user or manually, by the touch of the present technology to the old baggage it may bring out its true potential.

IOT based projects

A special interest group in the area of Internet of things has been established in the ECE Department and the following IoT based projects were displayed:

SMART WASTE MANAGEMENT, Smart Traffic Signal, Smart Photo Booth, Smart Lighting.
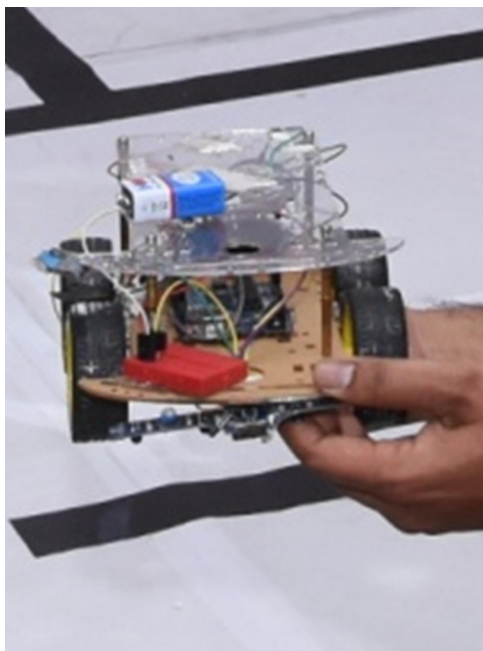
PROJECTS DISPLAYED BY
MECHANICAL ENGINEERING DEPARTMENT

SMART PARKING SYSTEM

Smart Parking uses sensing devices such as cameras, vehicle counting equipment, sensors installed in pavements, etc. to determine occupancy of the parking lot. The system increases the availability of parking with the use of sensors. It prevents the drivers from spending too much time searching for a parking space. **Smart Parking makes use of sensor technology**, variable road message signs, flexible payment systems and smart navigation mobile map applications to direct the drivers and make them aware of parking options in an urban.

AGROBOT

A single solution to implement precision agriculture is the development of a single gantry robot that can perform several precision agriculture related operations. The main objective of this system is to implement soil monitoring and precision irrigation on each crop, perform de-weeding and cultivate the field using accurate robotic crop planning.


CARBON FIBER RIM

Reducing the weight of a vehicle can substantially improve its acceleration and general performance abilities. Decreasing the weight of the wheel itself is a straightforward approach to reducing the overall weight. In this project, Light weight and stiff wheel is developed using composite materials such as carbon fiber reinforced plastics alternative to conventional metals due to their high stiffness to weight ratios. Manufacturing is done using carbon fiber composite and epoxy by adopting optimum ply orientations.

3D MAPPING BOT (3D Scanner)

Map building is a fundamental task in many robotics applications. The 3D map is created using the 3D data from an RGB-D camera mounted on the robot and simultaneously transmitted to a remote server, and then rendered to the VR device. On the other hand, the intentions of the user are inferred using the motion of the head movement based on hidden Markov models (HMMs), and then interpreted into commands to control the robot.

3D PRINTER with dual extrusion
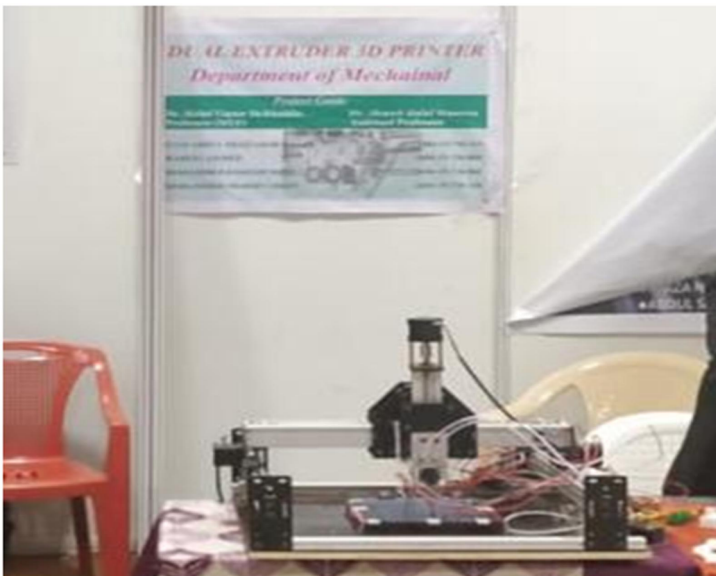
3D printer is a form of Additive Manufacturing Technology where a three dimensional object is created by laying down successive layers of material from bottom to top. These layers are fused together to form a 3D part. The project uses Fused Deposition Modeling Technology where plastic filaments are extruded through two different heads to form dual color components. It can make physical models of objects either designed with a CAD program or scanned with a 3D scanner.

MIRRORLESS CAR

The project replaces the stock outside rear view mirrors with a camera system and 3.2" monitor. This reduces the driver fatigue during night time by reducing the glare from high beams of other vehicles on the road. This improves the rear visibility and gives a larger 120 degrees field of view compared to stock rear view mirrors. An unobstructed view is provided to the driver as the cameras are fixed outside the vehicle. The mirrors are placed within the field of view of the drive, hence the driver does not have to move his/her eyes of the road.

EVENTS CONDUCTED BY ENGLISH DEPARTMENT

For the **ADSOPHOS 2019** the Orators' club, organized three events and decorated the hallway with the theme .

"JOURNEY OF AN ORATOR".

Below are the stages which were depicted in the hallway wherein the journey of an individual from being an introvert to an extrovert is depicted.

1. **Rumination** A person who is completely unaware of himself and is unknown to this competitive world. Pressurized with burden of the curriculum and society.

2. **Progression** Here the person learns the ability of skills like speaking, writing, listening and pronunciation .The range of vocabulary and fluency of English. He develops optimism, the self-care, bibliophile, innermost self (personality).

3. **Coordination** This stage depicts the opportunities provided by the Orators' Club to enhance knowledge and skills that will assist them in personal development and to promote better relationships between all people through the frame work of friendship, service and workplace. It also encourages the participants to join apps creating awareness regarding oratory skills.

4. **Contribution** A model world map showing the participation in MUN by the MJCET students.

5. **Rhetorician** In the last stage the participant develops confidence, the ability to deliver well-drafted speech ad oratory skills. To display the theme railway tracks and milestones were used.

Automated Navigation System with Indoor Assistance for The Blind.

Event 2 - Clueless- The objective of this language game was to enhance the vocabulary of the participants; promote teamwork .It had three rounds :

Round 1: Hint me up and

Round-2-"Whisper **Challenge**".

Round 3 - **Bird Box -** This game had the use of Pictionary.

3. **Wolf of Orators' Street** It is an event that helps students to enhance their vocabulary with Orators' club "In-house Auction". Participating pairs compete with each other in this auction of the English Lexicon game to build a strong vocabulary for day- to- day use.

It was an event that helps students to enhance their vocabulary with Orators' club "In-house Auction". Participating pairs compete with each other in this auction of the English Lexicon game to build a strong vocabulary for day- to- day use.

CHEMISTRY DEPARTMENT

Bioplastic are biodegradable materials that come from renewable source and can be used to reduce usage of plastic. In the demonstration a bioplastic container was prepared using very easily available renewable material like starch, oils, straw etc.

Automation of Biodiesel Pilot Plant Using Continuous Flow Process

"**Biodiesel Extraction – Phase 5 - Automation of Biodiesel Pilot Plant Using Continuous Flow Process**":

In this Phase 5 (Current Phase), we designed and fabricated pilot plant for biodiesel production using continuous flow process using Controllers and with newly identified catalyst. Our intention is to automate it to decrease the manual labor for production and make the process easier and simpler and to increase the productivity of process. We also attempt to substitute the material of reactor which is glass to make the setup more reliable.This R & D sanctioned project has been approved for patent filing and submitted the invention disclosure form on 15th July, 2019 so as to initiate the patent filing work.

Also MJCET Institute Innovation Cell has selected the project for Ideation Contest 2019, which was going to be held on 2nd August 2019 at Hyderabad Central University.

BIOBASED PLASTICS AND CONDUCTIVITY POLYMERS AS ENGINEERING MATERIALS

Synthesis OF POLYLACTIC ACID (PLA) from lactic acid obtained from renewable resources like starch, corn, sugarcane, Environmentally Friendly process.

PLA is biodegradable, compostable, recyclable plastic. PLA fibers , composites , conductivity polymers can be prepared with vast applications in making films , bottles , packaging , in 3D printers , Bio compatible medical devices etc. .

QUIZOPHOS

On the occasion of ADSOPHOS-2019, Department of Mathematics organized QUIZOPHOS-2019. It tested the analytical and reasoning ability of the students. A quiz is a game which can also be called a mind sport wherein the students in teams attempt to answer questions posed to them correctly, in order to win a prize.

The event significantly matches Course outcome and Programme Outcome of the college.

Since the ability to expand one's mind and strife for lifelong learning is critical to personal and professional success. And this context communication in every form plays a crucial role. For this event we are giving cash prizes.

PROJECTS DISPLAYED BY PHYSICS DEPARTMENT

UV Method for Nano Glass Making

Nanoparticles are particles between 1 and 100 nanometres (nm) in size with a surrounding interfacial layer. The interfacial layer is an integral part of nanoscale matter, fundamentally affecting all of its properties. The interfacial layer typically consists of ions, inorganic and organic molecules. Nanoparticles are of great scientific interest as they are, in effect, a bridge between bulk materials and atomic or molecular structures.

A bulk material should have constant physical properties regardless of its size, but at the nano-scale, size-dependent properties are often observed. Thus, the properties of materials change as their size approaches the nanoscale and as the percentage of the surface in relation to the percentage of the volume of a material becomes significant.

PROJECTS DISPLAYED BY ELECTRICAL ENGINEERING DEPARTMENT

POLLUTION MONITORING QUADCOPTER

Assessment of air quality has been traditionally conducted by ground based monitoring, and more recently by manned aircrafts. Unmanned Aerial Vehicles (UAVs) i.e. quad copter equipped with different sensors is being introduced for air quality monitoring, as they can offer new approaches and research opportunities in air pollution and emission monitoring, as well as for studying atmospheric trends, such as climate change, while ensuring urban and industrial air safety. The aim of this project is to

S
compile information on the air quality by the use of a quadcopters and assess their benefits and range of applications. A quadcopter based on brushless DC motors(BLDC) has been designed to carry the payload of a pollution sensor so as to provide dynamic data and can be used to better understand the pollution pattern. A quadcopter is so chosen because it is fairly simple to operate by minimal training.

HEXACOPTER DRONE FOR INDUSTRIAL PURPOSES

A drone used to deice the turbine blades and clean solar panels. It's a hexacopter heavy lifting industrial drone used to spray and clean solar panels by leveraging the fusion of vision and sensors. The hexacopter has six motors and can carry a payload of spraying material and brushes to clean the windows of high rise buildings.

SOLAR BASED BIOMETRIC VOTING MACHINE [EVM]:

The project aims at developing and advanced Electronic Voting Machine (EVM) which helps in free and fair way of conducting elections. This EVM is solar powered and a biometric system is essentially used for authentication of the voter.

SOLAR TREE:

This project implements the concept of having solar panel embedded on the leaf like structures and all the leafs welded to a central pole giving the perception of solar tree. The cells are connected in series and parallel to generate reasonable voltage and current from the solar tree.

STANDALONE SOLAR SYSTEM FOR RESIDENTIALS IN RURAL AREAS

In this project, Solar power is used for electrifying remote rural areas without a central power grid supply. Also, the similar apparatus can be installed in urban areas. This apparatus also helps in interfacing the solar energy with the grid supply to bypass surplus output to the grid. In conditions where peak loads occur very often, the loads can be distributed among both grid supply and solar supply to maintain balanced loads.

STEM BLUE BOT:

This robot is two wheel drive voice controlled system based on Arduino and Bluetooth module. It was developed keeping in mind the three wheel vehicles and their safety.

It is simple system programmed to make the road experience very safe as it is observed that maximum number of road accidents have been reported in the two wheeler segment.

MODELS DISPLAYED BY CIVIL ENGINEERING DEPARTMENT

KALESHWARAM PROJECT

The Kaleshwaram Lift Irrigation Project (KLIP) is a multi-purpose irrigation project on the Godavari River in Kaleshwaram, Bhoopalpally, Telangana, India. It is world's largest multi-stage lift irrigation project. The project starts at the confluence point of the Pranahita River and the Godavari River at Kaleshwaram. Pranahita River is in itself a confluence of various smaller tributaries including the Wardha, Painganga, and Wainganga Rivers. It is estimated that the Pranahita River has an annual average flow of 280 TMC.It remains untapped as its course is principally through the dense forests and other ecologicallysensitive zones, such as wild life sanctuaries. Topographical similitude of Kaleshwaram Project is made to create awareness amongst budding engineers, the necessity and relevance of this gigantic multi-stage lift irrigation project.

EARTHQUAKE RESISTANT BUILDINGS

In this project, several fluid viscous dampers are used in Earth quake resistant buildings. Viscous dampers are Hydraulic that dissipate kinetic energy of seismic events cushion the impact between structures. They are versatile and can be designed to allow free movement as well as controlled damping of a structure to protect from wind load, thermal motion or seismic events. These can be used in buildings to resist the seismic load as they act as shock absorbers and prevent the damage caused by natural calamities and aid in saving lives during natural crisis. Miniature viscous dampers are used in this replica and the progression is put in plain words practically.

SMART CITY

A SMART CITY is an urban area that uses different types of Internet of things (IoT) sensors to collect data and then use this data to manage assets and resources efficiently. This includes data collected from citizens, devices, and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, water supply networks, solid waste management, crime detection, information Systems, schools, libraries, hospitals and other community services. Though ideal is miniscule, the different segments of SMART CITY has been demonstrated.

SEWAGE WATER TREATMENT PLANT

Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial waste water. Physical, chemical and biological processes are used to remove contaminants and produce treated waste water that is safe enough for release into the environment.

An honest attempt is made to explain the different processes involved in the sewage treatment and the different pertinent stages with a miniature model.

HYDROPOWER DAM

Hydro electric power is the most reliable and most cost effective renewable energy source.   Among all the renewable energies, hydropower occupies first place in the world and it will keep this place for many years to come. Amongst the renewable energy sources, small hydro is one of the most attractive renewable energy technology.   Small hydropower system uses the energy in flowing water to produce electricity.

Although there are several ways to harness the energy from moving water, runoff of the river systems, which do not require large storage reservoirs, are often used for micro hydro and sometimes for small scale hydro projects.Candid effort is made to enlighten young brains towards the necessity and importance of micro hydropower and its appurtenances.

MULTIPURPOSE BUILDING

Multipurpose building is designed for providing all the necessary advantages and luxury to a middle class family, it provides various facilities without occupying much space and is very suitable in metropolitan city. Humble exertion in making this model is to facilitate the large section of middle class community their dream of multipurpose building and luxury using the cost effective techniques.

TELANGANA MODEL

Telangana became the 29th state of India on June 2, 2014. It was previously a part of Andhra Pradesh. The state of Telangana is surrounded in its north-western and northern directions by Maharashtra. Karnataka encircles the region towards the west and Chhattisgarh lies to its north-eastern direction. To the east of Telangana is Odisha. In all, the region covers an area spanning 112,077 square kilometres. The most important rivers of this province are Musi, Krishna, Manjira and Godavari. The population of Telangana stands at 35,193,978. The number of male and female population is 1, 77,04,078 and 2,46, 48,731 respectively. The state has a total area of 1,33,103 kilometre squares and the density of population is 307 per square kilometre. An artificial clay model depicting the topographic features and demographic data has been made available in order to comprehend the newly formed state of Telangana

SEWAGE WATER TREATMENT PLANT

Mechanically stabilized earth (MSE) is a structural system used throughout our infrastructure for earth retention and load support. MSE systems are utilized to meet a variety of infrastructure needs, including highway retaining walls, bridge abutments, ramps, and overpasses as well as structures for railroads, mass transit, airports, and commercial and industrial facilities. Though a prototype the mechanically stabilized earth as a system used is laboratory tested for its strength parameters and significance & application of MSE is elucidated.

AMAZING ROAD TECHNOLOGY

Roads and highways are important components of infrastructure for any nation. They help in transportation of men and material across the length and breadth as and when required. In this model specially prepared speed breaker has been planted on highways in such a way that it generates power when vehicles pass over it which can be utilized for operating traffic signals.

XIAN SMOG TOWER

The tower has already brought a noticeable improvement in air quality across an area of 10 square kilometres, according to a report in the South China Morning Post Lead researcher Cao Junji says the tower is capable of producing more than 10 million cubic metres of clean air per day, adding that on severely polluted days smog is reduced to "moderate levels". Facsimile of Xian Smog tower and its operating functionalities have been explained succinct .

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MJCET MEDIA COVERAGE

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