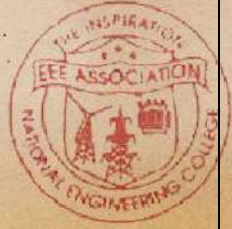




NATIONAL ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)
K.R.NAGAR, KOVILPATTI-628503.



EEE NEWSLETTER

FEBRUARY 2020

Volume 7 Issue 5

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

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STAFF ACTIVITIES**COURSE ATTENDED**

S.No.	Name of the Staff	Events/Guest Lecture	Topic/Event	Date	College/Industry
1.	Mr.B.Venkatasamy, Ms.K.Gowthami, Mr.F.Antony Jeffry vaz, AP/EEE	QIP-AICTE	IoT enabled Analog Systems Design	13 th – 17 th January 2020	Indian Institute of Science, Bengaluru
2.	Mr.M.Sivapalanirajan, AP/EEE	Industry Know How		20 th – 24 th January 2020	Greenstar Fertilizers Limited, Spic Nagar, Tuticorin – 5

EXPERT LECTURE

- ✓ **Dr. N.B.Prakash**, Associate Professor /EEE has delivered the expert lecture in a Workshop on **“Introduction to Deep Learning”**, organized by Department of CSE, GVN Arts and Science, Kovilpatti on January 8, 2020.

STAFF PUBLICATIONS**PUBLICATIONS – INTERNATIONAL JOURNAL****SCI – WITH IMPACT FACTOR**

- ✓ **R. Muniraj, M. Willjuice Iruthayarajan, R. Arun, T.Sivakumar**, “Parameter Optimization of Multi Objective Robust Proportional Integral Derivative Controller with Filter using Multi Objective Evolutionary Algorithms”, **Revue Roumaine des Sciences Techniques**, Vol. 64, 3, pp. 259–265, 2019 – **Impact Factor: 0.763**

SCOPUS INDEXED JOURNAL

- ✓ M. Leela Nivashini, K. Madhumitha, S. Sindhu, **Dr.R.V.Maheswari**, “Design of High Voltage Transformer using Finite Element Method”, **International Journal of Scientific & Technology Research** - Accepted for Publication.

- ✓ G.Arun, R.Arunkumar, K.Krishnakumar, P.Muthupattan, **Dr.G.Kannayeram, Mr.K.Karthik Kumar**, "Design and Development of a phase shifted Full bridge converter for EV battery charging", *International Journal of Innovative Technology and Exploring Engineering*, - Accepted for Publication.
- ✓ R.K. Gobiga, S. Kowsalya, L. Malini, J. Sheeba, **K. Karthik Kumar**, "High Efficient A-Source DC-DC Boost Converter for Battery Charging Application", *International Journal of Scientific & Technology Research* - Accepted for Publication.
- ✓ K.S.Lincy, **S.Senthil kumar**, Optimization For The Properties Of Various Ester oil With Antioxidants And Nano Powders for Power Transformer, *International Journal of Recent Technology and Engineering* - Accepted for Publication.
- ✓ P.Pio, S.Vigneshwaran, J.Vincent Denis, C.Vignesh, **S.Senthil kumar**, Optimization of the properties of mineral oil blended with Natural Ester oil using Desirability based Methodology, *International Journal of Scientific & Technology Research* - Accepted for Publication.
- ✓ S.Amarnath, R.Muralitharan, M.Vijay Sanmugam, R.Robinson, **Dr.M.P.E.Rajamani**, "Biometric Authentic based Management for Vehicle sharing system", *International Journal of Scientific & Technology Research* - Accepted for Publication.
- ✓ M.Vavuniya, R.Santhiya, A.M.Kirthika, T.Salomiya Paulin, **M. Sivapalanirajan**, "Trajectory Tracking of Wheeled Mobile Robot: Model-Based Test and Validation using QBOT", *International Journal of Scientific & Technology Research*- Accepted for Publication.
- ✓ M.Pandaravel Kannan, R. Pitchai Kumar Arun, P. Pon selva Kumar, R. Vasanthan, **N. Sankar** Travel Card for State Transport Corporation using RFID, *International Journal of Scientific & Technology Research* - Accepted for Publication.
- ✓ S. Arockia Ranjith Kumar, R. Glarwin, M. Gowthamaraj, M. K. Vijayanainar, **G. Shunmugalakshmi**, IOT Based Automatic College Gong, *International Journal of Scientific & Technology Research* - Accepted for Publication.
- ✓ S.Madhupriya, **R.V.Maheswari, B.Vigneshwaran** "Measurement and Denoising of Partial Discharge Signal in High Voltage Cables using Wavelet Transform", *International Journal of Engineering and Advanced Technology*, Vol. 9, Iss. 2, December, 2019

- ✓ C. Subalakshmi, **M. Bakrutheen, Dr. M. Willjuice Iruthayarajan**, “Influence of Aging Derivatives in Natural Ester Oil”, *International Journal of Innovative Technology and Exploring Engineering* - Accepted for Publication.
- ✓ M. Kalyanasundari, **M. Ravindran, R. V. Maheswari, B. Vigneshwaran**, “Development of Partial Discharge Signal in Ester Oil Impregnated Paper”, *International Journal of Innovative Technology and Exploring Engineering* - Accepted for Publication.
- ✓ M.Peratchiammal, **N.B.Prakash, B.Vigneshwaran**, “Pollution Severity Diagnose on Solid Insulators using the Partial Discharge and Flashover Characteristics”, *International Journal of Innovative Technology and Exploring Engineering* - Accepted for Publication.
- ✓ K.Shunmuga Sundaram, R.Siva Sornaram, A.G.Naveen Kumar, M.Ranjith King Jimson, **B.Venkatasamy**, “Smart Vehicle Monitoring System using OpenCV”, *International Journal of Scientific & Technology Research* - Accepted for Publication.

BOOK PUBLICATION:

- ✓ T. Mariprasath, V. Kirubakaran, **M. Ravindaran**, “Modern Trends in Renewable Energy Technology”, Cambridge Scholar Publishing, 2020

R & D ACTIVITIES

Dr.S. Sankara Kumar, AP(SG)/EEE was completed his **Doctorate** in “*Harmonic Elimination In Multilevel Inverters Using Evolutionary Computation Techniques*”, on 24.01.2020 under the supervision of **Dr.M.Willjuice Iruthayarajan, Professor and Head/EEE.**

DEPARTMENT ACTIVITIES

INDUSTRY - INSTITUTION INTERACTION



MEMORANDUM OF UNDERSTANDING



Signed a Memorandum of Understanding (MoU) with **M/S Akil Electronics Systems Pvt Ltd, Gujarat** for 3 years periods.



MEMORANDUM OF UNDERSTANDING



Signed a Memorandum of Understanding (MoU) with **M/S MAS Solar Systems Pvt Ltd, Coimbatore** for 3 years periods.

BENEFITS OF MoU:

- UG and PG Students, who are interested in the field of High voltage testing techniques, Partial discharge analysis, Solar PV modules and Solar power plant will be selected by interview, for the Internship programme every year.
- These selected students will be deputed to Akil Electronics Systems/MAS Solar Systems during summer vacation for two weeks.
- Students will be allotted Internal Guide(s) to monitor the progress of the projects.
- Faculty members of the EEE Dept. will be deputed to Akil Electronics Systems/ MAS Solar Systems every year for knowledge updation during summer vacation for a maximum period of two weeks.

MINI PROJECT FORUM

Session 1 [29.06.2019]

MINI PROJECT Forum is functioning in EEE department for motivating students to do mini projects from III semester onwards. In this connection, a hands on session was conducted on the topic of **“Hands on training on PCB designing and implementation”** by Mr.B.Venkatasamy, AP/EEE and Mr.F.Antony Jeffrey Vaz, AP/EEE at Microprocessor and Microcontroller Lab of EEE Department on **29.06.2019**. Around **56 students** of second year EEE was participated in the hands-on session.



The Session is started with the fundamentals and basic circuits in electronics which is useful for doing projects and about the selection of a project. Then the preparation of Printed Circuit Board (PCB) for some simple circuits such as power supply unit, IR based switch, mini inverter has been discussed. For each batch of students, a simple project circuit has been given and they have completed the PCB of their circuits in the afternoon session. The Students are encouraged to do such type of mini projects continually by the support of this forum

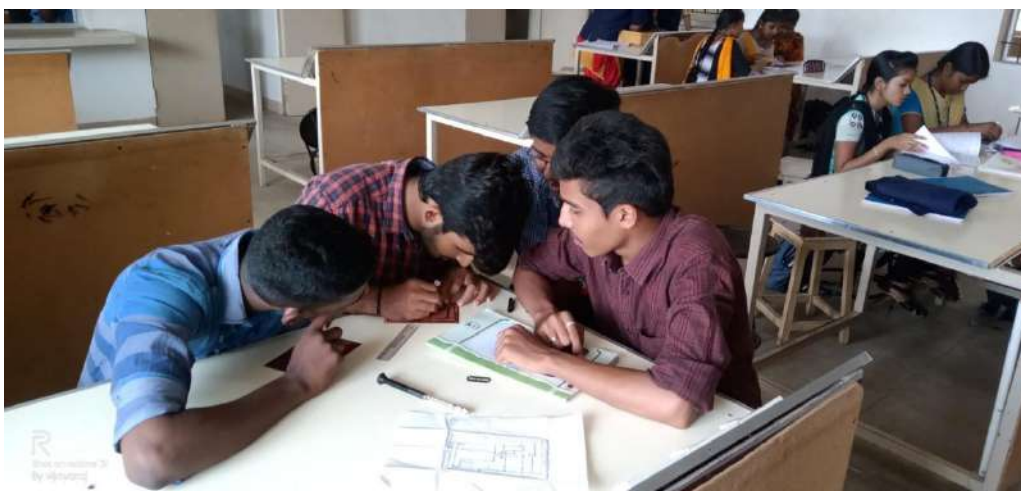
Session 2 [06.07.2019]

The **37 students** actively participated in hands on training on ‘making of simple mini projects’ conducted by the Mini Project Forum on **06.07.2019** at Microprocessor and Microcontroller Lab. The Students were trained on soldering practice and they soldered their own printed circuit boards and completed their circuit in morning session. Then in afternoon session, they finished PCB boards with wiring and rectified the faults and issues in the circuit boards and all the students experienced a hands-on training on error finding

and rectification. The session was guided by Mr.B.Venkatasamy, AP/EEE and Mr.F.Antony Jeffery Vaz AP/EEE.



The students used to do mini projects during working Saturdays in the Microprocessor and Microcontroller lab of our department. A Simple Application Oriented projects has been assigned to the students those who are attended in the introduction sessions. The students completed the projects like automatic street light control, Mini inverter, Water level controller; IR based remote controlled electrical apparatus etc. on **03.08.2019, 17.08.2019 and 31.08.2019**. The students are motivated to do more innovative projects with their ideas. The session was guided by Mr.B.Venkatasamy, AP/EEE, and Mr. F.Antony Jeffery Vaz AP/EEE.



EEE ASSOCIATION ACTIVITIES

INTRODUCTION TO MATLAB

A technical session on the “**Introduction to MATLAB**” was conducted by **Mr. K. Karthik Kumar, AP/EEE** on **31.08.2019** at old Computer Centre.

The session first began with an introduction about the course and guided the students to implement the course content in MATLAB Simulink Package.

The following topics were discussed using PPT and asked students to complete it in MATLAB software,

- ✓ Basic Arithmetic and logical Programming
- ✓ Plots using commands
- ✓ MATLAB file creation
- ✓ Workspace monitoring and etc.

The session was conducted for second-year students (2018-batch). The session was started by 10.30AM and completed by 12.30 PM. Totally 23 students were participated and got knowledge about MATLAB commands and its purpose.

MATLAB ONRAMP

A technical session on the “**MATLAB Onramp Course**” was conducted by **Mr. K. Karthik Kumar, AP/EEE** on **07.12.2019** at old Computer Centre.

The session first began with an introduction about the course and guided the students to login the Online MATLAB Onramp Course.

The following topics were orally discussed and asked students to complete it online,

- ✓ Course Overview, Commands
- ✓ MATLAB desktop and Editor
- ✓ Vectors, Arrays, Functions
- ✓ Plotting data, Programming and etc.

The session was conducted for second-year students (2018-batch). The session was started by 10.30 AM and completed by 4.30 PM. Totally 21 students were participated and got knowledge about MATLAB coding and graph plotting skills. Among 21 students, 12 students got the MATLAB Onramp course completion certificate.

PLACEMENT DETAILS

On behalf of the Chairman, Managing Director, Director, Principal, Head of the Department and staff members, we heartily congratulates the final year students who got placed in the Campus drive in our campus during the academic year 2019-2020



ARUN GOMATHI.R



SHANMUGAVEL.S.J



SIVA SORNARAM.R



GANESH PRABU.R



PANDARAVEL
KANNAN.M



KAUSHIK.S



MURALITHARAN.R



KALYANKUMAR.J



ABDUL RAHIM.P



MANIKUMAR.S



SALOMIYA PAULIN.T



POORNA PUSHKALA.A



LEELA NIVASHINI.M

DATA PATTERNS



ARUN GOMATHI.R



SHANMUGAVEL.S.J



VIJAY SANMUGAM.M



MALINI.L



SANGEETHA SHORUBHA.R



MURALITHARAN.R



KALYAN KUMAR. J



ABINAYA.P



GOWTHAMA RAJ.M

CHAIN•SYS



MEENAKSHI.S



AJMAL AHAMED.S

Cognizant



CHERMA JEYA.K



GOBIGA.R.K



SUBASH.K



AJMAL AHAMED.S





MAFIN RIJOE.M



ARUN.G



AROCKIA RANJITH
KUMAR.S



SIVA SANKAR.P

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KIRTHIKA.A.M

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Auto Component
Limited**



SOLAIPRAKASH.R





NAVEEN KUMAR.A.G



VARATHARAJAN.M



HEMALAXMI.P

SHREE ABIRAMI ENGINEERING WORKS

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ARUMUGARAJ.S



ARUN.G



KARTHICK.S



VINCENT DENIS.J



LOGESWARABALAN.K



MAFIN RIJOE.M



MANIBHARATHI.G



MOHAMED RIYAZ.S



MYTHILE.A



VIGNESHWARI.P



SRI ALAMELU MANGAI.N



KOWSALYA.S



UTTHAND RAJAN.J



SUBBIAH KUMAR.K



SIVA SANKAR.P



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AJAY KARTHICK.J



MOHAMED KHASIF.S.M.H

STUDENTS EXPERIENCE IN INTERVIEW

- **Mr. R. Arun Gomathi,**

Trainee, Data Patterns India Limited, Chennai

- **Mr. K. Subash,**

Trainee, CTS, Chennai

Placed Experience:

Students should have fundamental knowledge on circuit theory, EDC, LIC, DLC, power electronics, mainly MPMC. For me they concentrated on

- Power supply circuit design,
- Circuit debugging,
- Some recent technologies
- MOSFET
- Transistor bias configuration
- PN junction, Zener, Schottky, Tunnel diodes V-I characteristics and their usage.

Intern Experience: Team – Boards (Hardware), Role – Graduate engineer trainee.

Get to know about the basic design procedures, test procedures, analysis and constraints for designing a board.

First level of Selection process

Involved Quans, Verbal, Logical Reasoning and Programming test

Time plays a major role in this process, since you have to solve 14 Quantitative aptitude in 13 minutes; 15 Verbal in 14 minutes; 12 logical reasoning in 13 minutes and 7 programming Questions 3 debugging and 4 logical programming Questions in 20 minutes Except Programming you cannot Skip between the Questions. You have to attend all the questions. (These experiences are based on this year's online test this may be subjected to change over year). The entire question was Quite easy. You need have regular practice to solve it quickly.

TECHNICAL INTERVIEW

For me there were less programming based questions but most of the questions from our discipline and mainly an elaborate self introduction were demanded at least for 4 minutes. Only English acts as the medium of communication. Give an elaborate explanation for every answer. For me it took around 20 min for this round

HR ROUND

In this round your willingness for the company will be tested and mostly question will be about nightshifts working willingness in north India Most probably say a good big YES to all such related question It just took place for 10-15 min

- *Mr. L. SivaBalaji,*

Trainee, VVDN, Chennai

- *Ms. A.M. Kirithika,*

Trainee, Infosys, Chennai

Round 1: Technical Written Test

- ***Question Pattern***

Aptitude (15 quantitative, 5 logical reasoning), Embedded system, microprocessor and controller, C programming, Electronics and Quality Analysis test.

- We have to perform well in any two areas.

Round 2: Technical round-1

- According to the performance on the written test, technical rounds will be conducted.
- I had faced most of the question based on basic practical implementation skills on electronics and some for technical written test.
- I gone to general HR round after this first round.

Round 3: Technical round-2

- If the first round is not about electronics, then the second round will be the electronics.

Round 4: General HR

- Initially, they asked me to introduce myself and they interact about my family details.
- Here they tested personality whether the person is stable and confident or not.
- Then they asked me whether I had any questions or not. I had asked some questions about the company and interacted well.

Round 1:

The first round is online test. It has 65 question which has 3 sections as logical, quantative aptitude and logical. The logical section has 15 questions and the time limit is 35 minutes. The questions are from seating arrangement, blood relation, syllogism. The second section is quantative aptitude it has 10 questions and the time limit is 25 minutes. The questions are from time and work, percentage, speed time and distance, data interpretation, coding decoding. The third section is verbal. This section has 40 questions and the time limit is 35 minutes. The questions are from reading comprehension, sentence correction, sentence completion, para jumbles, and verbal analogy.

Round 2:

The second round is face to face. This round has questions from final year project, some basic questions on oops concept, some hypothetical questions and about family background.

PLACEMENT ACTIVITIES

The technical training program on python programming language was conducted from 9th to 14th December 2019 for about 6 days for our college pre-final year students. The following are the schedule and activities of the training program which makes us benefitted.

DAY 1:

Introduction to Python:

The following are the topics handled during the session

1. Brief introduction of python language, the purpose of learning it,
2. The data types used and handling
3. The modes of running the program,
4. Standard input-output functions, conventional functions.

All the session topics handled has given a clear idea about the importance of learning the python language.

DAY 2:

Operators and Control flow statements:

The purpose of operators and its types and control flow statements were discussed in the session. The conditional statements like 'If' statement and looping statements like 'for' and 'while' statements were explained in the class. The programs regarding the Conditional and looping statements were made executed by everyone and was made to evaluate the error in the program.

DAY 3:

Functions:

Functions and the importance of using it in a program, categories of functions were discussed and the sample programs on the functions were executed in the class. Additionally, lambda functions and Recursive functions were also discussed.

DAY 4:**Collection data types:**

The brief introduction on Collection data types like List, Tuple, Set, Dictionary were given in this session. The list data type was explained well and the programs regarding the list were executed in the session.

DAY 5:**Tuples, Sets and Dictionaries:**

The membership operators and identity operators in list were explained briefly. The students were well understood about the Tuples, sets and the way to initialize it. The dictionary types of collection data types were also well taught and the sample programs on all the collection data types were executed and learned.

DAY 6:**Files:**

The purpose of files and the modes of opening, performing manipulations and closing it were discussed. Additionally, Comma Separated files were also discussed and the program related to files was executed.

YOGA SESSION:

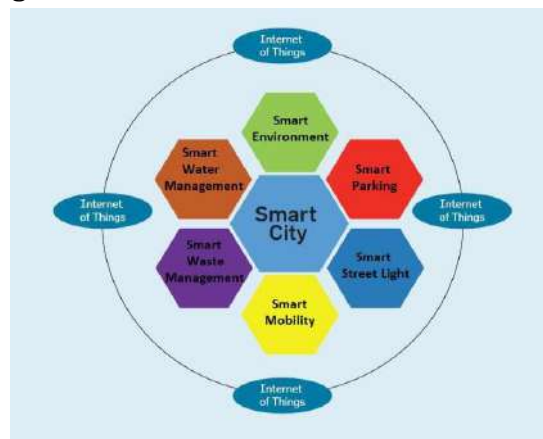
The yoga session was conducted by every day morning session from 6am to 7am since 10.12.2019. The students were practiced with many asana which provides a physical fitness and mentally strong human being. The activities in the session gave us strength and promote mind relaxation throughout the day.

TECHNICAL ARTICLE – EXPERT MEMBER

LORA BASED SMART CITY APPLICATIONS

Mr. K. Moorthi
Director-Business Development
Enthu Technology Solutions India Pvt Ltd
Coimbatore-641004

Enthu Technology Solutions India Pvt. Ltd., developed LoRa based Smart City applications with following use cases

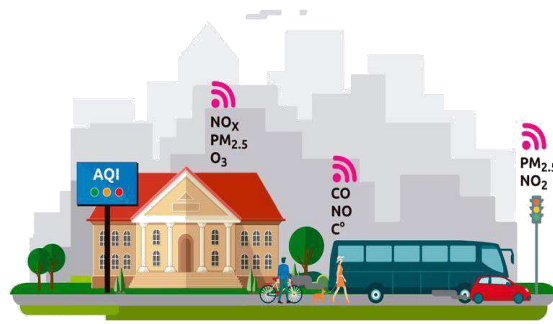


- ✓ LoRa Environmental Monitoring System
- ✓ LoRa Multilevel Parking System
- ✓ LoRa Street Light Management System
- ✓ LoRa Water Management System
- ✓ LoRa Smart Waste Management System
- ✓ LoRa Smart Mobility

LORA ENVIRONMENTAL MONITORING SYSTEM

In Cities, the major and foremost import thing is Environment and Pollution Monitoring. Since this affects the entire health of people from infant to senior citizens. This LoRa based Environment and Pollution Monitoring solution provides complete solution to measure the following features of environment, this helps to improve environment by taking necessary actions.

- ✓ Temperature
- ✓ Humidity
- ✓ Air quality



WORKING

- ✓ Battery enabled LoRa based environmental sensor nodes can be installed around the city. This sensor node sends the periodic data to LoRa WAN gateway.
- ✓ This LoRa WAN Gateway collects the information from all the nodes around its coverage and provides the same to end application server.
- ✓ This application provides information about air quality level around the city to pollution monitoring Board through "Smart Environmental application"
- ✓ Based on this information the pollution monitoring board will take necessary steps to reduce the pollution around the city.

BENEFITS

- ✓ Pollution can be monitored and controlled more preciously and also immediately
- ✓ Reduced Man power and Maintenance cost
- ✓ More Life time with Battery operated device with replaceable battery.

LORA MULTILEVEL PARKING SYSTEM

In Cities, another most facing problem is Traffic. The 30% of traffic is due to parking of vehicles in road side due to lack of resource to find proper parking space. Also this traffic congestion occurs due to drivers in search proper space for parking. This LoRa based parking solution provides user to identify the free parking slot in advance. This helps to reduce the last minute parking inconveniences.



WORKING

- ✓ Battery enabled LoRa Based Parking Sensors are installed at Parking Slots. These sensors determine whether parking slot is empty or not and sends the information to the LoRa WAN gateway.
- ✓ This LoRa WAN Gateway collects the information from all the nodes around its coverage and provides the same to end application server. This Mobile/Web application provides information to driver about parking slots availability through "Smart Parking application"
- ✓ This makes the driver to identify the parking slot easily to park their vehicle.

BENEFITS

- ✓ Easy Parking Slot identification reduces the traffic of city
- ✓ More Life time with Battery operated device with replaceable battery
- ✓ Very low Maintenance cost

LORA STREET LIGHT MANAGEMENT SYSTEM

As we are seeing in most of the places the street lights are glowing even in day time unknowingly. LoRa based Smart Street light system is suitable for Municipalities, Apartments, Residential colonies and Villas. This LoRa Street Light controller helps to remotely control all the street light wirelessly throughout the city from a single place. Also this makes alert if we forgot to turn off the lights or even it turns-off automatically based on our predefined settings. This will reduce the manpower and save the electricity.



WORKING

- ✓ User can send the ON/OFF Command from the Application page to End device through LoRaWAN Gateway.
- ✓ LoRaWAN Gateway collects the information from application and sends to end device. This makes the street light ON/OFF device.
- ✓ Also Electricity Board can able to monitor the status of street light.

BENEFITS

- ✓ Easy Control and Monitoring of Street Light
- ✓ Saves Energy

LORA WATER MANAGEMENT SYSTEM

LoRa based Smart Water Management system is suitable for Municipalities, Apartments, Residential colonies and Villas. This can be very useful to provide exact billing as per their usage rather than common sharing of bills for water usage. Also this reduces the man power by reducing manual operations like taking reading from individual house, entry of reading in computer to generate billing.

**WORKING**

- ✓ Battery enabled Water Meter can able to store the data temporarily and send the accumulated data to LoRaWAN Gateway for every sampling duration.
- ✓ LoRaWAN Gateway collects the information from the water meter and sends to end application.
- ✓ This application provides information about every house water usage and bill respectively based on their usage automatically.

BENEFITS

- ✓ Reduce unnecessary usage of water and saves water.
- ✓ User can pay only for their usage.
- ✓ Reduced Man power and Maintenance cost.

- ✓ More Life time with Battery operated device with replaceable battery.

LORA SMART WASTE MANAGEMENT

- ✓ LoRa based Smart Water Management system is suitable for Municipalities, Apartments, Residential colonies and Villas. This enables the monitoring of bin to clean before it going to fill completely. This makes more hygiene and healthy environment.

WORKING

- ✓ Smart Bin will send the wastage occupancy level to LoRaWAN Gateway.
- ✓ LoRaWAN Gateway will send the concern value to end application server.
- ✓ End application server will do analytics and send alert to concern person for cleaning the bin either before it going to fill completely or based on last cleaning date and time whichever is earlier.

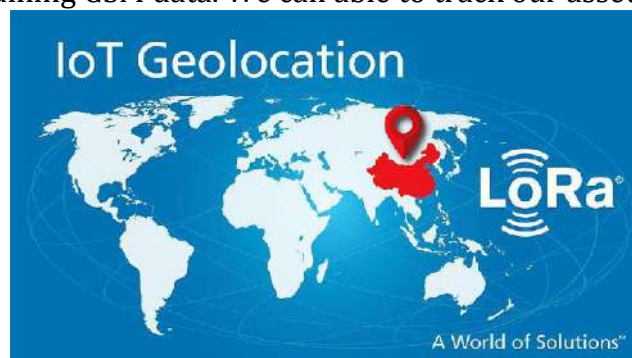


BENEFITS

- ✓ Makes clean and hygiene environment
- ✓ Easy to maintain

LORA SMART MOBILITY

LoRa GPS enabled vehicle can be easily tracked around the city or within the boundary. This is very low cost and low power solution on which reduces monthly investment on maintaining GSM data. We can able to track our assets very easily with these devices.



WORKING

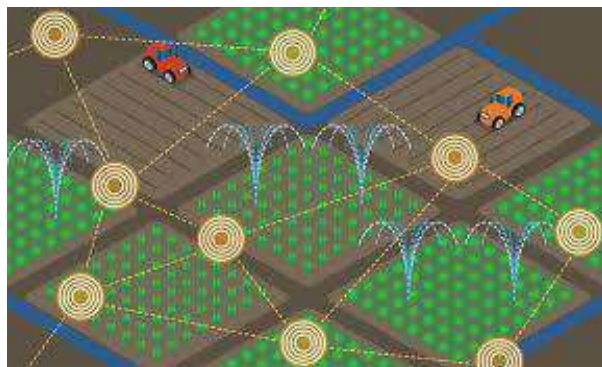
- ✓ Battery enabled LoRa GPS device will send Geo Location to end application server through LoRaWAN Gateway.
- ✓ Also it sends the accelerometer data to identify the device mobility status.

BENEFITS

- ✓ Low cost solution for GPS Tracking
- ✓ Rechargeable battery for easy maintenance

LORA BASED PRECISION AGRICULTURE**SOIL IRRIGATION MONITORING**

Agriculture is the backbone of India. In some way watering of plants will affect the yield. We need to water the plant with less stress so that it yields more. This LoRa based Soil Irrigation Monitoring solution in precision agriculture gives complete automation of watering plants based on the stress value of particular breed. Also this reduces most of the man power.

**WORKING**

- ✓ LoRa End Node is attached with soil moisture sensor to sense the moisture of particular land. Based on this moisture level we will open/close the valve for watering plat. Also it is attached with Flow meter to measure the flow of water.
- ✓ All these data can be sent to end application server through LoRaWAN Gateway.
- ✓ Application server will do analytics and turns ON/OFF the Solenoid valve.

BENEFITS

- ✓ Increased Yield
- ✓ Reduced Water usage
- ✓ Reduced Labour
- ✓ Reduced Fertilizer

TECHNICAL ARTICLE – STAFF MEMBERS

SOLAR ENERGY TECHNOLOGIES

Mrs. N. Avudaiammal

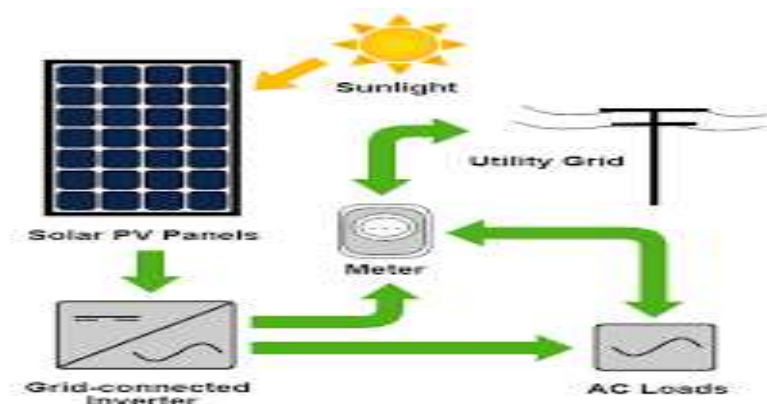
Assistant Professor

Department of Electrical and Electronics Engineering

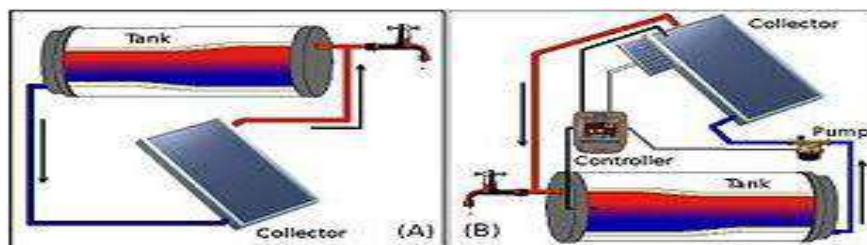
Solar energy is the energy that is produced by the sun in the form of heat and light. It is one of the most renewable and readily available sources of energy on planet Earth. The fact that it is available in plenty and free and does not belong to anybody makes it one of the most important of the non-conventional sources of energy. Mainly, solar energy can be used to convert it into heat energy or it can be converted into electricity.

There are three primary technologies by which solar energy is commonly harnessed:

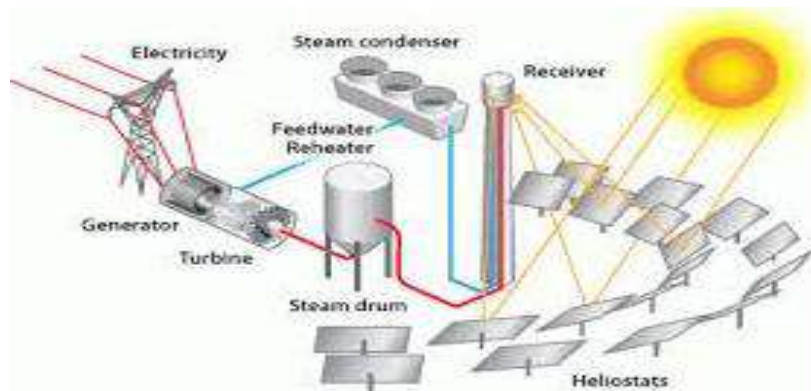
1. Photovoltaic (PV): – These solar technologies directly produce electricity which can be used, stored, or converted for long-distance transmission.



2. Solar Heating & Cooling (SHC): – These technologies generate thermal (heat) energy for water & pool heating and space heating. Some people are surprised to learn that SHC technology can also be used for cooling.



3. Concentrating Solar Power (CSP): – These systems concentrate sunlight to generate thermal energy, which is in turn used to generate electricity.



Solar panel:

Solar panels absorb the sunlight as a source of energy to generate electricity or heat. The basis of producing solar panels revolves around the use of silicon cells. In order for solar panels to become more efficient, researchers across the world have been trying to develop new technologies to make solar panels more effective at turning sunlight into energy.

Solar cell:

Solar cell is a semiconductor device made from silicon—a cousin of the solid-state diode. The solar panels are made from a number of solar cells wired together to create the desired output voltage and current. Those cells are surrounded by a protective package and topped with a glass window.

Some Latest Inventions are here,

1. Artificial Leaf Solar Cell – captures CO₂ and Sunlight, produces Fuel:

Researchers at the University of Illinois at Chicago have engineered a potentially game-changing solar cell that cheaply and efficiently converts atmospheric carbon dioxide directly into usable hydrocarbon fuel, using only sunlight for energy. Unlike conventional solar cells, which convert sunlight into electricity that must be stored in heavy batteries, the new device essentially does the work of plants, converting atmospheric carbon dioxide into fuel, solving two crucial problems at once. A solar farm of such “artificial leaves” could remove significant amounts of carbon from the atmosphere and produce energy-dense fuel efficiently.

2. Transparent Solar Cells that could power Mobile phones and Skyscrapers:

A Silicon Valley startup named “Ubiquitous Energy” has succeeded in creating such transparent solar cells. Organic chemistry is the secret to creating such material. Manufacturing cost of organic solar is less comparing to the conventional silicon solar panels. Ubiquitous Energy has redesigned the solar cell to selectively transmit light visible to the human eye while absorbing only the ultraviolet and infrared light and converting it into electricity. In future they can have this Invisible Solar Cells to Power the Skyscrapers. Clear view Power Technology of the Ubiquitous energy is a transparent solar cell that can coat any surface, including displays and windows, to harvest ambient light and generate electricity.

3. Flexible Parylene-based Solar cells as light as a soap bubble:

Parylene is a commercially available plastic coating used widely to protect implanted biomedical devices and printed circuit boards from environmental damage. The entire process takes place in a vacuum chamber at room temperature and without the use of any solvents, unlike conventional solar-cell manufacturing, which requires high temperatures and harsh chemicals. In this case, both the substrate and the solar cell are “grown” using established vapor deposition techniques.

4. New Tandem Solar Cell is at the Forefront of Solar Innovation:

Inseparable high-efficiency and high-cost linkage through an innovative multi-junction solar cell that leverages a unique “step-cell” design approach and low cost silicon. The new step-cell combines two different layers of sunlight-absorbing material to harvest a broader range of the sun’s energy while using a novel, low-cost manufacturing process.

5. Transparent, flexible solar cells using Graphene:

A new flexible, transparent solar cell developed at MIT. The device combines low-cost organic materials with electrodes of graphene, a flexible, transparent material made from inexpensive and abundant carbon sources. This advance in solar technology was enabled by a novel method of depositing a one-atom-thick layer of graphene onto the solar cell — without damaging nearby sensitive organic materials. The ability to use graphene instead is making possible truly flexible, low-cost, transparent solar cells that can turn virtually any surface into a source of electric power.

6. Wearable Solar Cell you can put in the Wash:

Ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films. It can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed. The work, published in Nature Energy, could open the way to wearable solar cells, which will provide power to devices such as health monitors incorporated into clothing.

TECHNICAL ARTICLE – STUDENTS

ENERGY KITE

- *Ms. S.T. Bala Akalya, Pre final year EEE*

In this Airborne technology the whole design of a traditional wind turbine is replaced by Energy Kite which traces the path of tip of a turbine eliminating 90% of weight.

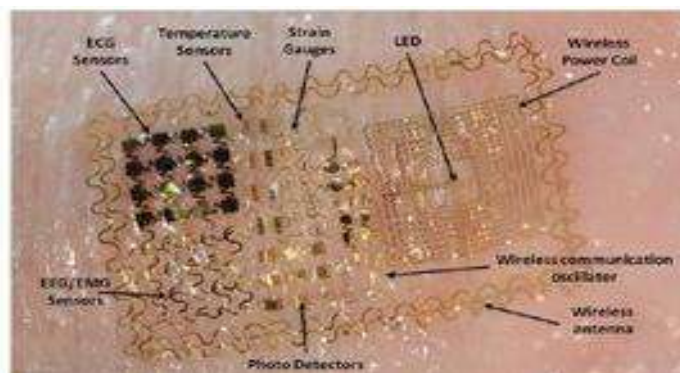


The Kites are installed with turbines or DC motors on the board that generates energy by taking advantage of the circular trajectory. When a Kite is flying at a great velocity in cross wind direction, the tension in the lines increases significantly. So Kite is tethered to ground station by a strong carbon fiber. The power generated by energy Kite on board while in its circular trajectory is transmitted to ground at the same time via a high voltage wire inserted inside tethering material to ground station. Theoretically, a modern wing with a lift of coefficient of lift 0.03 and a wind velocity of $VW=13$ m/s would lead to a power output of 217 KW per square meter of area (Diehl 2013). The main force that the Kite has to withstand is the drag force. As the tether distance increases the drag force on the Kite increases too. As the drag force increases, power generation rate also increases whereas if this exceeds a limit may lead to minor instability of the system.

FLEXIBLE ELECTRONIC SKIN

- *Ms. K. Adchaya, Pre final year EEE*

Artificial skin can be used as skin replacement for people who have suffered skin trauma, such as severe burns or skin diseases, or robotic applications. Artificial skin (E-Skin) to build a skin work similar to that of the human skin and also it is embedded with several sensations or the sense of touch acting on the skin.



Bio stamp use high-performance silicon can stretch up to 200 per cent and can monitor temperature, hydration and strain, among other medical statistics. Large-area ultrasonic sensor arrays that could keep both robots and humans out of trouble. An ultrasonic skin covering an entire robot body could work as a 360-degree proximity sensor, measuring the distance between the robot and external obstacles.

This could prevent the robot from crashing into walls or allow it to handle our soft, fragile human bodies with more care. For humans, it could provide prosthetics or garments that are hyperaware of their surroundings. This technology could make smarter artificial skin similar to human skin, that it provides greater sensitivity and resolution. The system is based on piezoelectricity, a phenomenon that occurs when materials such as zinc oxide are pressed. Changes in the electrical polarization of the mass can be captured and translated into electrical signals thereby creating an artificial

STUDENT ACHIEVEMENTS

CAMPUS AMBASSADOR

E-cell, IIT Bombay



M. Kirthik Roson of Second year EEE was selected as the ***CAMPUS AMBASSADOR of Entrepreneurship Cell IIT Bombay*** and started his work by joining with S.Giftson of III year ECE from July 2019 in promoting Entrepreneurship in our College Campus. They formed a student community and conducted many events under the guidance of Entrepreneurship Cell IIT Bombay and the support of Entrepreneurship Development cell of our college. They had participated in the organized by the Entrepreneurship cell of IIT Bombay with a team of 6 members. This team is qualified for the final round and going to attend the finals representing our college which will be held at IIT Bombay on February 1 & 2 2020. He is also shortlisted in the top 25 Campus Ambassadors of Entrepreneurship cell IIT Bombay.

STUDENTS INTERNSHIP

S.No	Name	Year	Internship / Inplant	Company Name	Duration
1	K.Shunmuga Sundaram	IV	Inplant Training	Mohan Power Infrastructure Pvt Ltd., Tirunelveli	09.12.2019 to 20.12.2019
2	R.Solai Prakash	IV	Inplant Training	Mohan Power Infrastructure Pvt Ltd., Tirunelveli	09.12.2019 to 20.12.2019
3	G.Naveen Kumar	IV	Inplant Training	Mohan Power Infrastructure Pvt Ltd., Tirunelveli	09.12.2019 to 20.12.2019
4	Vijayanainar.M.K	IV	Inplant Training	Mohan Power Infrastructure Pvt Ltd., Tirunelveli	09.12.2019 to 20.12.2019
5	G.Gailainathan	IV	Inplant Training	Tuticorin Thermal Power Station, Tuticorin	09.12.2019 to 13.12.2019
6	S.Dhanush	IV	Inplant Training	Tuticorin Thermal Power Station, Tuticorin	09.12.2019 to 13.12.2019
7	R.Abilash Pandian	IV	Internship Training	Siemens Gamesa Renewable Power Private Limited, chennai	15.12.2019 to 04.01.2020
8	M.Kaliraj	IV	Inplant Training	Tamilnadu Generation and Distribution Corporation Ltd., Kovilpatti	25.11.2019 to 29.11.2019
9	J.Kalyan Kumar	IV	Inplant Training	Kudankulam Nuclear Power project, kudankulam	26.11.2019 to 24.12.2019
10	C.Suresh	IV	Inplant Training	Kudankulam Nuclear Power project, kudankulam	26.11.2019 to 24.12.2019
11	S.Kaushik	IV	Inplant Training	Kudankulam Nuclear Power project, kudankulam	26.11.2019 to 24.12.2019
12	A.Mythile	IV	Inplant Training	Rajalakshmi Spinners Pvt ltd., Virudhunagar	13.1.2020 to 18.01.2020
13	A.Mythile	IV	Inplant Training	Rail net software solutions, Madurai	27.12.2019 to 03.01.2020

14	M.Vavuniya	IV	Inplant Training	Valuthur Gas Turbine Power station, Ramanathapuram	26.11.2019 to 30.11.2019
15	A.M.Kirthika	IV	Inplant Training	Valuthur Gas Turbine Power station, Ramanathapuram	26.11.2019 to 30.11.2019
16	V.Thiyagesh	IV	Internship Training	Associated Transformers Pvt Lt., Dindigul	02.12.2019 to 15.12.2019
17	D.Kannikumar	IV	Internship Training	Associated Transformers Pvt Lt., Dindigul	02.12.2019 to 15.12.2019
18	K.Krishnakumar	IV	Internship Training	Associated Transformers Pvt Lt., Dindigul	02.12.2019 to 15.12.2019
19	G.Manibharathi	IV	Internship Training	Associated Transformers Pvt Lt., Dindigul	02.12.2019 to 15.12.2019
20	P.Muthupattan	IV	Internship Training	Associated Transformers Pvt Lt., Dindigul	02.12.2019 to 15.12.2019
21	R.Sathya	IV	Internship Training	Kondaas Automation Pvt Ltd., Coimbatore	09.12.2019 to 28.12.2019
22	R.Aswin Kumar	IV	Internship Training	Kondaas Automation Pvt Ltd., Coimbatore	09.12.2019 to 28.12.2019
23	R.Ganesh Prabhu	IV	Internship Training	Kondaas Automation Pvt Ltd., Coimbatore	09.12.2019 to 28.12.2019
24	U.K.Bala Kannan	IV	Internship Training	Kondaas Automation Pvt Ltd., Coimbatore	09.12.2019 to 28.12.2019
25	B.Karuppasamy	IV	Internship Training	Kondaas Automation Pvt Ltd., Coimbatore	09.12.2019 to 28.12.2019
26	T.Ajith Kumar	IV	Internship Training	Kondaas Automation Pvt Ltd., Coimbatore	09.12.2019 to 28.12.2019
27	K.Cherma Jeya	IV	Inplant Training	Suzlon Global Services Ltd., Tirunelveli	17.12.2019 to 24.12.2019
28	V.Iswarya	IV	Inplant Training	Suzlon Global Services Ltd., Tirunelveli	17.12.2019 to 24.12.2019
29	K.Madhumitha	IV	Internship	JRK Consulting Services Pvt Ltd.,	23.12.2019 to

			Training	Chennai	03.01.2020
30	K.Madhumitha	IV	Inplant Training	Suzlon Global Services Ltd., Tirunelveli	17.12.2019 to 24.12.2019
31	S.Sindhu	IV	Inplant Training	Suzlon Global Services Ltd., Tirunelveli	17.12.2019 to 24.12.2019
32	S.Sindhu	IV	Internship Training	JRK Consulting Services Pvt Ltd., Chennai	23.12.2019 to 03.01.2020
33	P.Abdul Rahim	IV	Internship Training	JRK Consulting Services Pvt Ltd., Chennai	23.12.2019 to 03.01.2020
34	A.Poorna Puskala	IV	Internship Training	JRK Consulting Services Pvt Ltd., Chennai	23.12.2019 to 03.01.2020
35	G.Siva Balaji	IV	Internship Training	Ventura Sharp Industries, Coimbatore	03.12.2019 to 31.12.2019
36	R.Glarwin	IV	Internship Training	Tamilnadu Generation and Distribution Corporation Ltd., Melapalayam	09.12.2019 to 10.01.2020
37	M.Mariselvam	IV	Internship Training	Tamilnadu Generation and Distribution Corporation Ltd., Melapalayam	09.12.2019 to 10.01.2020
38	M.Ranjith King jimson	IV	Internship Training	Amnet Systems Pvt Ltd., Chennai	10.12.2019 to 10.01.2020
39	J.Steffi Cranaff	III	Inplant Training	Tamilnadu Generation and Distribution Corporation Ltd., Palayamkottai	26.11.2019 to 30.11.2019
40	H.Selvadevi	III	Inplant Training	Tamilnadu Generation and Distribution Corporation Ltd., Palayamkottai	26.11.2019 to 30.11.2019
41	M.Thirumalai Kumarasamy	III	Inplant Training	Tamilndau Transmission Corporation, Ayiudi	26.11.2019 tp 30.11.2019
42	B.Janani	III	Inplant Training	Tamilnadu Generation and Distribution Corporation Ltd., Palayamkottai	26.11.2019 to 30.11.2019

43	J.Gomathi Prabhaa	III	Inplant Training	Tamilnadu Generation and Distribution Corporation Ltd., Kovilpatti	25.11.2019 to 29.11.2019
44	V.Gowsalya	III	Inplant Training	Tamilnadu Generation and Distribution Corporation Ltd., Kovilpatti	25.11.2019 to 29.11.2019
45	M.K.Vijayanainar	IV	Inplant Training	Valuthur Gas Turbine Power station, Ramanathapuram	27.01.2020 to 31.01.2020
46	A.G.Naveen Kumar	IV	Inplant Training	Valuthur Gas Turbine Power station, Ramanathapuram	27.01.2020 to 31.01.2020
47	V.Iswarya	IV	Inplant Training	All India Radio, Tirunelveli	20.01.2020 to 24.01.2020
48	C.Cladwin Annan	IV	Inplant Training	DMF PUMPPS, Coimbatore	02.12.2019 to 02.01.2020
49	Mohamed Riyaz	IV	Inplant Training	Yukon International Technical Services, Dubai	25.12.2019 to 20.01.2020
50	Mohamed Riyaz	IV	Inplant Training	DMF PUMPPS, Coimbatore	02.12.2019 to 23.12.2019
51	M.Venkatesh	IV	Inplant Training	Anu Industries, Coimbatore	26.11.2019 to 26.12.2019
52	A.Meenakshi	IV	Inplant Training	Rajalakshmi Spinners Pvt Ltd., Virudhunagar	13.01.2020 to 18.01.2020
53	T.Jeyaraman	III	Inplant Training	TANGEDCO, Kovilpatti	25.11.2019 to 29.11.2019

STUDENTS ACTIVITIES

S.No	Dept/Club	Name of the Students	Event	Date	Organiser of the Event
1	Fine arts Club	C.R.Sridhar	Republic Day	21.01.2020	National Engineering College ,Kovilpatti
2		S.Prince Joshwa	Republic Day	23.02.2020	National Engineering College ,Kovilpatti
3	Entrepreneurship Development Cell	M. Krithik Roson	E-Summit-2020	29.01.2020-05.02.2020	National Engineering College ,Kovilpatti
4	NCC	A. Gomathi Arasu	Polio Drop Campaign	19.01.2020-21.01.2020	Medical Officer,Govt.Primary Health Center
		P.Balu			
		A.Mohamed Raziek			
		M.Menaka			
		T.Angelin Anu Abraham			
		S.Kadalarasan			
		M.Pethuraj			
		Y.Jenifa Mabel			
5	YRC	A.Sathish	Blood Donation Camp	09.01.2020	National Engineering College ,Kovilpatti
		S.Lakshmanan			
		M.Mustaq Ahamed			
		A.Godwin Akhil			
		P.Prakash			
		S.Ganesh Moorthi			
		Y.Anastarik			
		K.V.Kasimanikalidas			
		M.S.J.Kural			

		Amuthan			
		S.Bala Guru			
		M.Rajagopalasamy			
		D.Vairamuthu			
		M.Sakthivel			
		S.Kasthuri			
		S.Sujith			
		A.Akash			
		I.Abishek			
		M.Harishankar			
		A.G.Balanigesh			
		T.Vignesh Kumar			
6	NEWGEN IEDC	M.Krithik Roson	Seminar	08.01.2020	National Engineering College ,Kovilpatti
		A.Gomathi Arasu			
		M.S.J.Kural Amuthan			
		A.Selva Kumar			
7	EEE	S.Sujith	Workshop	25.01.2020 -26.01.2020	NIT Trichy
		R.Azhaguraj			
		R.Rajesh			
		S.Vishwanathan			
		A.Godwin Ahil			
8	EEE	M.Mahalakshmi	Workshop	04.01.2020	MIT ,Chennai
		N.Diana Hyden			
		G.Muthu Janani			
		G.Vigneshwari			

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