DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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Quarterly

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Department of Electronics and Communication Engineering

Student's Article

INTERNET OF THINGS

D. MANOJ, II Year ECE

The Internet of Things (IoT) deals with communication between sensors, electronic devices, cloud services, etc. through the internet. It has various applications in agriculture, energy, industrial sectors, and homes in the form of smart farming, smart grids, automation in production, smart homes, etc. There are various protocols used in the IoT for communication between various sensors and electronic components. Message Queueing Telemetry Transport (MQTT) and Hyper Text Transfer Protocol (HTTP) are two important protocols used in the Internet of Things. In the HTTP protocol, communication happens between client and server through a request and response cycle. The client sends a request to the server, and the server sends a response to the client through a socket. MQTT communication happens through the publish and subscribe commands. The server acts as a broker for publishing and subscribing requests from the client. MQTT is faster than the HTTP protocol. Both the protocols can be implemented in real-time as small projects using an ESP8266 controller. The ESP8266 controller includes a Wi-Fi module for communicating with the cloud. The controller also has GPIO pins (General Purpose Input Output) pins for interfacing with various sensors. Using this, various sensors can be programmed to send data to the cloud and control actuators by receiving commands through the cloud. For HTTP, a local area network access point can be created, and the IP address of the ESP8266 can be used to access a webpage that provides a UI to control the actuators or visualize data from the sensors. The HTTP protocol has a limited operating range. MQTT protocol utilizes Wi-Fi routers or mobile data cards as sources of internet connectivity to communicate with the cloud. Since cloud services are used, they can be accessed globally from anywhere. Using this controller, small IoT applications can be built, such as automatic plant watering, smart energy management, smart home automation, automated machinery, etc.

COVID RELIEF USING AUTOMATION

COVID-19 has been a serious pandemic prevailing in the world for the past 3 years. Due to COVID-19, all activities were stopped, such as education, commerce, the functioning of various industrial sectors, etc. Among these was the closure of schools and colleges, which had a negative impact on student education. The project proposed will make a safer environment by avoiding contact between things. Contact with other things is the major reason for the spread of COVID-19. In schools and colleges, students and faculty spend most of their time in classrooms. Hence, this work aims to automate all the things accessed inside a classroom to avoid contact with the objects. Without the use of switches, a web page or app is developed to control the electrical equipment's. The doors and the windows in the classroom are made to open and close automatically. A hand sanitizer dispenses the liquid automatically when needed. This classroom automation setup avoids the contact of frequently used objects by students and teachers in colleges and schools. The cloud stores the state of the devices. In addition to healthcare, power utilization can also be optimized to save energy.

Workshops/FDPs/Conferences

Ms. C Gomatheeswari Preethika, Assistant Professor in a Five Days "Industry Conclave on Recent Trends on Antennas and Microwave Engineering" from 30th October to 3rd November in association with IEEE Delhi Section Antenna & Propagation Society Chapter-Jaipur, IEEE Rajasthan Subsection, IETE Rajasthan Centre and Govt. Women Engineering College Ajmer, E-Cell MUJ and Electronic Society MUJ.

Dr.S.Sutha, Assistant Professor, Participated in online FDP on "MEMS Based Sensors and Actuators for Biomedical Applications" organized by Koneru Lakshmaiah Education Foundation from 2/11/2020 to 7/11/2020.

Ms.T.J.Jeyaprabha, Ms R. Kousalya, Ms.B.Sarala, Ms.S.Radhika, Mrs.S.M.Mehzabeen, attended AICTE Training and Learning (ATAL) Academy Online FDP on "Cyber security" organized by SVCE from 30/11/2020 to 4/12/2020.

Ms.M.Vidya, Assistant Professor Attended AICTE Training And Learning (ATAL) Academy Online FDP on Machine Learning organized by RMK college of Engineering and Technology 7/12/2020 to 11/12/2020.

Dr.N.Kumaratharan, Professor participated in ATAL Academy online FDP on Cyber Security at Sri Venkateswara College of Engineering, Sriperumbudur, 30th Nov. 2020 to 4th Dec. 2020 and AICTE sponsored STTP on Research and Development in Wireless communication Application using NetSim and MATLAB, online mode at Pondicherry Engineering College, Pondicherry 23rd-28th Nov. 2020.

Ms.K S Subhashini, Assistant Professor attended AICTE Training and Learning (ATAL) Academy Online FDP on "Artificial Intelligence" organized by Coimbatore Institute of Technology from 5/10/2020 to 9/10/2020.

Ms.S Radhika, Assistant Professor, attended AICTE Training and Learning (ATAL) Academy Online FDP on "Artificial Intelligence" organized by Sri Sairam Engineering College from 07/12/2020 to 11/12/2020.

Ms.S.M.Mehzabeen, Assistant Professor participated in a FDP on "End-to-End Processes in Data Analytic" organized by SSN College of Engineering from 2/11/2020 to 6/11/2020

Mr.P.Arul, Assistant Professor participated Six days Short Term Training Programme on "Recent Advancements of Computational Electromagnetics in Modern Microwave Antennas" organized by SVCE from 23/11/2020 to 28/11/2020.

Ms. C Gomatheeswari Preethika, Assistant Professor attended Six days Short Term Training Programme on AICTE sponsored online STTP on mmWave Antenna Design and Testing for Biomedical Applications organized b RIT from 07/12/2020 to 12/12/2020.

Mr. N. Sathish, Assistant Professor attended AICTE Training and Learning(ATAL) FDP on "Wearable Devices" organized by NIT, Jamshedpur from 14/12/2020 to 18/12/2020 and 2/11/2020 and participated in AICTE Sponsored online STTP on "Zero-Shot Learning by convex combination of semantic Embeddings" organized by Sri Krishna College of Engineering and Technology from 2/11/2020 to 15/11/2020.

Dr.P.Ashok, Assistant Professor attended AICTE Training and Learning (ATAL) FDP on "Advanced Optical Access Networks and its Role in Smart Cities" organized by Indian Institute of Information Technology from 23/11/2020 to 27/11/2020 and attended AICTE Training And Learning (ATAL) Academy Online FDP on Wearable Devices organized by Thapar Institute of Engineering and Technology from 16/11/2020 to 20/11/2020.

Dr.R.Gayathri, Associate Professor, attended a AICTE sponsored STTP in Implementation of Medical Image Processing using Advanced Green Computing Technology from 14/12/2020 to 19/12/2020 at Saveetha Engineering college.

Ms.L.Anju, Assistant Professor attended AICTE sponsored STTP on "Research aspects on Deep Learning in Image and Video Processing-I" organized by Velammal Institute of Technology from 14/12/2020 to 19/12/2020.

Kaaviya Baskaran, Baskaran P, Rajaram V and N. Kumaratharan presented paper titled IoT based COVID Preventive System for Work Environment in Fourth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud), organized by SCAD Institute of Technology ISBN: 978-1-7281-5463-3 held on 7th to 9th October 2020.

The following papers were presented in **Smart Materials & Emerging Technologies for Industry 4.0 (SMETI 2020)** organized by Sri Venkateswara College of Engineering on 16ᵗʰ and 17ᵗʰ October 2020.

Mr.M.Athappan, Dr.K.R.Santha presented paper titled High Speed and Low Power Carry Select using Optimized Carry Select Unit.

Mr V.Rajaram, Mr S.R. Balasubramanian Dr N.Kumaratharan Smart Home Integrated System.

B.Sarala, Dr.G.A.Sathish Kumar presented paper titled Design of an area efficient and low power Composite S-box using Reversible logic cryptographic design.

Mr.S.P.Sivagnana Subramanian, Dr.S.Ganesh Vaidyanathan presented paper titled Real time embedded traffic sign recognition system-A survey.

Mr.M.Babu, Dr.G.A.Sathish Kumar presented paper titled PIPELINED SMS4 CIPHER DESIGN FOR FAST ENCRYPTION USING TWISTED BDD S-BOX ARCHITECTURE

Ms.Jency Rubia, Dr.G.A.Sathish Kumar presented paper titled Design and Analysis of Digital FIR Filter Using RLNS Fixed-Width Multiplier.

Ms.Kiruthika Devi, Dr.G.A.Sathish Kumar presented paper titled Disease Detection and Crop Monitoring using Image Processing Technique

Ms.R.Kousalya, Dr.G.A.Sathish Kumar presented paper titled A Review on SP based Light-Weight Cryptographic algorithms.

Ms.S.M.Mehzabeen Dr.R.Gayathri presented paper titled Flood Inundation Mapping Extent using Satellite Images -A review.

Ms.M.Vidya, Dr.S.Ganesh Vaidyanathan presented paper titled Speech Recognition Techniques: A survey.

Ms.S.Kalyani, Dr.S.Ganesh Vaidyanathan presented paper titled A Literature Survey on various Handwritten Character Recognition Techniques.

Ms.K.S.Subhashini, Dr.S.Ganesh Vaidyanathan presented paper titled A Survey on Deep Learning Algorithms for Human Activity Recognition.

Ms.D.Menaka, Dr.S.Ganesh Vaidyanathan presented paper titled A Survey on Automated Analysis of Multispectral Human Chromosome Images .

Ms.Sherin Shibi, Dr.R.Gayathri presented paper titled Analysis of Super pixel Segmentation Techniques in Hyperspectral Imagery.

Ms.Babitha Lincy, Dr.R.Gayathri presented paper titled A High-Performance Handwritten Character Recognition System Using Alex-Net Based On CNN for Tamil Language.

Ms.Akila and G Dr.R.Gayathri presented paper titled Scene Classification of Remotely sensed imagery using CNN.

Ms.M.Kavitha, Dr.R.Gayathri presented paper titled Hyperspectral Image Classification with SVM and Edge-Preserving Smoothing Technique Filter.

Ms.T.J.Jeyaprabha, Dr.G.Sumathi presented paper titled Design of Secure Banking System. Springbok Technologies hosted the event "Campus 2 Corporate VLSI Webinars" for a period of one month starting from 15th September 2020 to 15th October 2020. 10 students and 5 faculty members of ECE department participated all the sessions actively. The webinar series comprising around 10 lectures on current technologies in VLSI started on 15th September on occasion of Engineers Day and ended on 15th October, this event was an initiative of Mr. HariHaran S,Alumni 1991 batch passed out of ECE department and Ms. Madhu Munjuluri.

Mr.P.Muthukumaran, Assistant Professor attended a Webinar on Block chain technology and its applications organized by Annapooma Engineering College on 9/7/2020.

Students' Achievement

Ms.J.P.J.FIONA of III year ECE, received second Prize in 2 days National Level Technical Event (TECHNORUSH-Techpirates) on 10/10/2020 organized by ECE Association.

Mr.M.Piyush of final year ECE presented paper titled Can Natural Language Processing with Machine Learning and RNN Assist in Classification of Records in Healthcare and therefore Save Business time and Cost by Integrating it with Robotic Process Automation in INTERNATIONAL CONFERENCE FOR AI, ROBOTICS AND AUTOMATION 2020 (ICARA 2020) on 14/10/2020 to 18/10/2020.

Patent filed

Dr P Ashok, Assistant Professor, filed a patent on Real Time Monitoring and Tracking of Motor Vehicles using IOT Patent Appln.no. 202011050686A dated 21/11/2020 and published on 4/12/2020, The Patent Office Journal No. 49/2020 Dated 04/12/2020.

Faculty Publications

Ms.S.Chitra, Dr N.Kumaratharan Professor, Mr.S.Ramesh published paper titled A novel subspace method for precise CFO estimation in multiuser environment in International journal of Communication Systems, Published early view during October 2020.

Mr.Prabakaran K, Mr. Suresh G, Dr.Kumaratharan N Professor and Mr. Senthil Kumar N.C published paper titled A comprehensive study on optimal energy efficient routing protocols for life time conservation of wireless sensor networks in International journal of Psychosocial Rehabilitation, vol. 24, no. 8, pp. 10550-10561 October 2020.

Ms.Babitha lincy, Dr.R.Gayathri, Associate Professor published paper titled Optimally Configured Convolutional Neural Network for Tamil Handwritten Character Recognition by improved Lion Optimization Model in Multimedia tools and applications, with ISSN 1380-7501 October 2020.

Ms.Buvaneswari.P.R., Dr.R.Gayathri, Associate Professor published paper titled Deep Learning-Based Segmentation in Classification of Alzheimer's Disease in Arab J Sci Eng (2021) October 2020.

Ms.Sherin Shibi, Dr.R.Gayathri, Associate Professor published paper titled Target Object Detection using Chicken Social-Based Deep Belief Network with Hyperspectral Imagery in IET Image processing (England)., Volume 14, Issue 15, 15 December 2020, p. 3781 – 3790, DOI: 10.1049/iet-ipr.2020.0344 , Print ISSN 1751-9659, Online ISSN 1751-96.

P.Ashok, M. Ganesh Madhan, P.Deepika, C.Rimmya, S.Piramasubramanian published paper titled An Efficient Chaotic Optical signal generation scheme using Gain Lever Effect in bi-section laser diodes in Optics Communications, Elsevier Publishing, Vol. 475, Article No. 126202, pp. 1-10. [ISSN-0030-4018] in November 2020.

K.Murali Krishna, M.Ganesh Madhan, P.Ashok published paper titled "Simulation studies on Polarization modulated Vertical cavity surface emitting laser for combined fiber and free space optical links" Optik - International Journal for Light and Electron Optics, Elsevier Publishing, Vol. 219, Article No. 165018, pp. 1-10. [ISSN-0030-4026] October 2020.

Ms.T.J.Jeyaprabha, Dr.G.Sumathi, A.Abijith, K.Guruprasanth, Chiranjeevraja Thillaiganesh "Studies on the Implementation of Remote Patient Monitoring Using Wireless Pulse Oximeter" in

Recent Developments in Engineering Research Vol. 7, Chapter 2, Print ISBN: 978-93-90431-11-3, eBook ISBN: 978-93-90431-19-9, DOI: 10.9734/bpi/rder/v7 October 2020.

Sutha Senthil, Dhineshbabu Nattanmai Raman, Arunmetha Sundaramoorthy published paper titled "Study of the magnetic properties of Mn-doped iron titanate nanoparticles fabricated using natural mineral in Micro & Nano Letters", https://doi.org/10.1049/mna2.12039 in October 2020.

Mr Suresh K and Dr. Kumaratharan N published paper titled "Performance Modelling of Service function Chaining in Distributed Controllers Secure Black SDN with NFV Architecture in Solid State Technology", Vol. 63, Issue 5, pp. 7558-7567, December 2020.
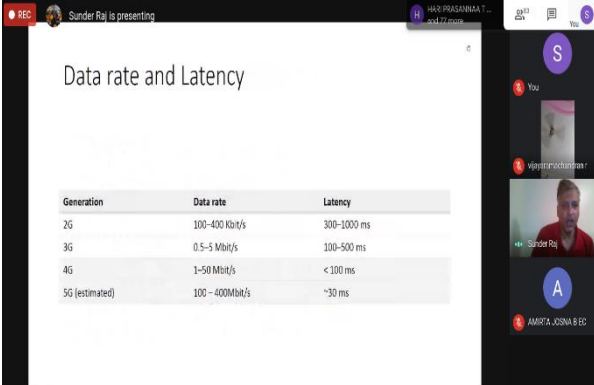
Expert Lectures

Mr.Gokul Santhanam, Senior Vice President, Mphasis, Alumni delivered webinar on Job before graduation on 24/10/2020.

Ms.Preethi Narayanan, Entrepreneur, POSH (Alumni-2014 batch) delivered webinar on delivered webinar on Business Insider on 21/11/2020.

Mr. Venkat Chakravarthi, Alumni (2011 batch) delivered webinar on Latest Trends in Industry 4.0 on 04/09/2020.

Mr.Sunder Palaniraj, Director IC Design, MEMS Sensors Business Group, Sensor Systems Design Company, Chennai delivered webinar on 5G and its History on 20/09/2020.
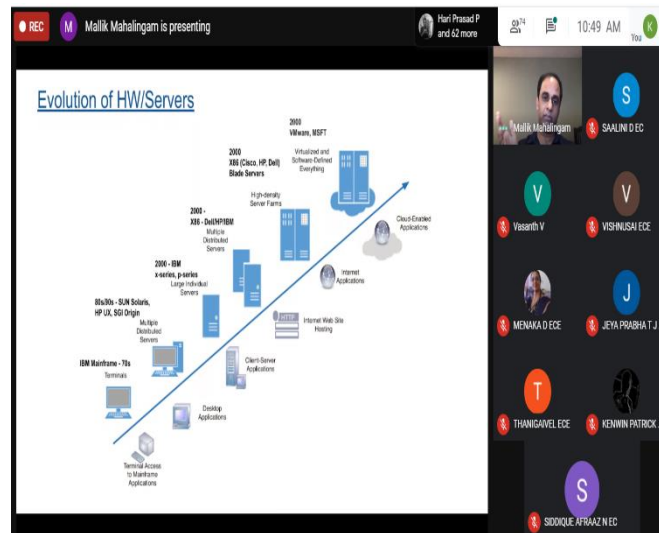

Dr.S.Krithiga, AP, ECE, SRMIST, Kattankulathur delivered webinar on delivered webinar on A perspective on 5G communications on 12/11/2020

Mr.Mallik Mahalingam, Vice President and Fellow at Intuit, California, delivered webinar on Evolution of Computing and Skill Set for the Future on 16/10/2020.

Mr.Nitesh Verma, Project Scientist I, National Institute of Ocean Technology delivered webinar on Applications of Artificial Intelligence in Ocean Exploration on 21/12/2020.

Dr.D.Vijendra Babu, Vice Principal and Professor, Aarupadai Veedu Institute of Technology, Vinayaka Mission Research Foundation, delivered webinar on Wearable Technology in Healthcare on 30/12/2020.

Mr.M.Vigneshwaran, Soft Skill Trainer and e-Learning Developer, Chennai, delivered webinar on Professional resume Writing on 17/10/2020.
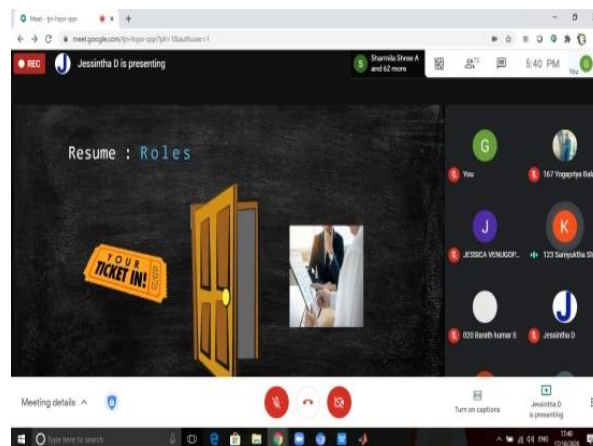
Events Organized:

The foundation day of IETE was organized by IETE Chennai Centre. The event was hosted by IETE student forum of Sri Venkateswara College of Engineering. An expert talk on "Emerging Technologies for effective management during the pandemic" was delivered by **Mr.Shubham Saraff**, AI Startup founder on 02/11/2020.

Dr.P.Jothilakshmi, Professor and **Ms.K.Srividhya**, **Mr .S.Senthil Rajan**, **Ms.B.Hemalatha**, **Mr.P.Muthukumaran**, **Ms.C.Gomatheeswari Preethika, Mr.N.Sathish**, Assistant Professors organized AICTE Sponsored Online Short Term Training Program on RECENT ADVANCEMENTS OF COMPUTATIONAL ELECTROMAGNETICS IN MODERN MICROWAVE ANTENNAS in III phases(6 days in each Phase). The I phase was organized from 24th August 2020 to 29th August 2020 followed by Phase II from 12th October 2020 to 17th October 2020. The Phase III was from 23th November 2020 to 28th November 2020.
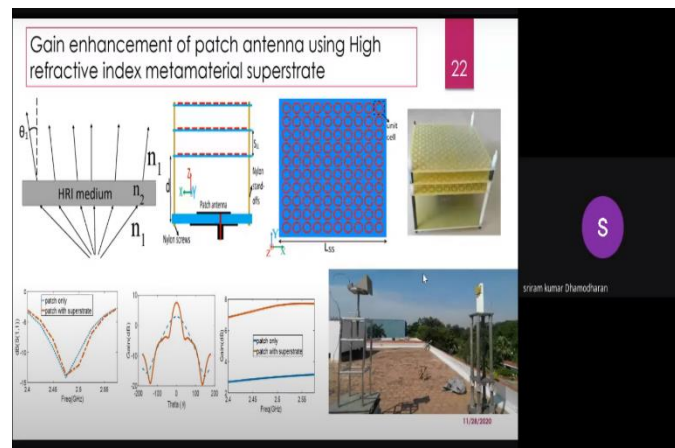
Dr.S.Muthukumar Professor & Head, **Dr.R.Gayathri** Associate Professor, **Mr.S.P.Sivagnana Subramanian, Ms.Rajeswari, Ms.S.M.Mehzabeen, Ms.A.Bharathipriya** Assistant Professors, organized Five days Hands on International Short Term Training Program on Deep learning applications on 19/10/2020 to 23/10/2020.

Ms.D.Menaka, Ms.K.Srividhya, Ms.S.Kalyani, Ms.L.Anju, Mr.M.K.Varadarajan Assistant Professors, organized a value added course on VD 18702-Signal processing using simulation tool in three phases. The durations are from 14/09/2020 to 18/09/2020,5/10/2020 to 10/10/2020 and from 30/11/2020 to 4/12/2020.

The SVCE-ISF in association with IETE Chennai Centre ISF of Jeppiaar Institute of Technology, Veltech Multitech Engineering College, SRM Easwari Engineering College, Panimalar Institute of Technology, SRM Institute of Science and Technology organized Ease The Error 1.0 was 24 Hour national level hack-a-thon on October 10 2020.

The Institution of Electronics and Telecommunication Engineers student forum with the support of Data Science Centre of Excellence, Department of Information Technology held an inaugural function for their collaboration club "The Forum of Data Science Engineering (FODSE)" on 06/12/2020. The chief guest **Mr.B.SivaSubramanian**, Business Intelligence Analyst, TEDx Speaker delivered a talk on Big Trends in Big Data Analytics.

Ms K.Srividhya, Assistant Professor organized Short Term Training Program on "Virtual Labs" for from 2/11/2020 to 6/11/2020.

Expert Lectures delivered

Mr M.Athappan, Assistant Professor, ECE delivered a Lecture on "Design Validation (Double Diamond approach) organised by IIC-SVCE in association with Department of Electronics and Communication Engineering on 28/12/2020 at SVCE.

Dr.P.Jothilakshmi, Professor:

- Delivered a session on the topic, "On-body Conformal Antennas for Biomedical Applications at mm wave frequencies", in the AICTE sponsored STTP at RIT , Chennai on 17/12/2020.

- Delivered a session on the topic, "Antenna Fundamentals and Design Challenges", in the AICTE Sponsored STTP on Recent Advancements of Computational Electromagnetics in Modern Microwave Antennas on 24/11/2020 at SVCE.

- Delivered a session on the topic, "Design Challenges and Applications of Special Antennas", in the AICTE Sponsored STTP on Recent Advancements of Computational Electromagnetics in Modern Microwave Antennas on 17/10/2020 at SVCE.

Ms.K.Srividhya Assistant Professor, delivered a session on the topic, MATLAB based Wireless Communication in the value added course on VD 18702-Signal processing using simulation tool on 08/10/2020 at SVCE.

Ms.R.Kousalya, Assistant Professor and B.Sarala, Assistant Professor ,ECE delivered a session on the topic, "Introduction to MATLAB for Signal Processing" in the value added course on   VD18702-Signal processing using simulation tool on 6/10/2020 at SVCE.

Ms.K.S.Subhashini, Assistant Professor delivered a session on the topic, "Introduction to MATLAB for Signal Processing" in the value added course on VD18702-Signal processing using simulation tool on 12/10/2020 at SVCE.