

## **RESEARCH ACTIVITIES**

The Department of Electronics and Communication Engineering (ECE) stands as a beacon of innovation and interdisciplinary research. One of its standout features is the commitment to breaking down traditional boundaries, engaging in research that spans a multitude of cutting-edge topics. At the heart of these groundbreaking efforts are the UG, PG and PhD students. They form the backbone of the department's research activities, infusing fresh perspectives and energy into every project.

The ECE department boasts a faculty of exceptional versatility, with expertise extending across diverse fields. This diversity enables them to explore and excel in a wide array of research domains. Notably, their contributions extend beyond academia, as strong collaborations with industry leaders and prestigious institutions are a hallmark of the department's research endeavours. These collaborations not only enrich the research environment but also facilitate the practical application of research outcomes, driving real-world solutions.

In terms of research output, the ECE department has achieved remarkable milestones. With nearly 300 papers and 34 book chapters published in globally recognized journals indexed in Scopus and SCI, it demonstrates a commitment to advancing theoretical knowledge. Furthermore, the faculty's innovation extends to the patent landscape, with 50 patents published and 13 granted. These patents underscore the department's dedication to transforming research findings into tangible innovations with real-world impact. In essence, ECE department stands as a dynamic hub of interdisciplinary research, fostering a culture of collaboration and academic excellence that transcends the boundaries of traditional academia, ultimately contributing to advancements in both theory and practical applications.

## Research Supervisors

Sl.no	Supervisor Name	Designation	Area of interest
1	Dr Phani Kumar P	Professor & Head	Wireless Communications
2	Dr Vani R	Professor	Image Processing
3	Dr P Thirumurugan	Professor	Wireless communication and Networks
4	Dr R Arthi	Associate Professor	Wireless Sensor Networks, Medical Imaging
5	Dr Roopa M	Associate Professor	Mobile AdHoc Networks
6	Dr Christeena Joseph	Associate Professor	Wireless Adhoc Networks and Security
7	Dr Thaiyalnayaki K	Associate Professor	Multidimensional Image processing
8	Dr Lathamam R	Associate Professor	Wireless Sensor Networks
9	Dr Vidhya Lakshmi M	Assistant Professor	Artificial Intelligence, Computer Vision, Internet of things
10	Dr. Ramya G	Assistant Professor	Power Electronics and Drives
11	Dr Megala V	Assistant Professor	Artificial intelligence, IoT, VLSI Design, Nanotechnology applications
12	Dr Mohan Babu A	Assistant Professor	VLSI and Nanoelectronics
13	Dr Shunmugathammal M	Assistant Professor	VLSI Physical Design
14	Dr Manoj Kumar D	Assistant Professor	VLSI- Cryptography
15	Dr. Durga Devi K	Assistant Professor	Image processing , Deep learning , Internet of Things
16	Dr. S. Nagarajan	Assistant Professor	VLSI and Nanoelectronics

**Ph.D Awarded:**

Name of Faculty	Thesis Title	Name of Supervisor & Affiliation	Year of Award of Degree
Dr Phani Kumar P	Classification & Identification of Audible Voice Data of Indian Languages	Dr K Sri Rama Krishna, ANITS	2017
Dr Vani R	Optimization of Hybrid Block Matching Motion Estimation Algorithms For Advanced Video Coding Standard	Dr. Sangeetha, Professor, BIHER, Chennai	2016
Dr R Arthi	Localization of sensor nodes using Learning movement model in Wireless sensor networks	Dr.K.Murugan,Professor, CEG, Anna University, Chennai	2014
Dr Roopa M	A Novel Hybrid Intrusion Detection and Prevention System For Military Mobile Adhoc Networks	Dr.Selvakumar Raja, Principal, Kaketiya Institute of Science and Technology	2018
Dr Christeena Joseph	Cluster Head-Based Intrusion Detection System for Black Hole Attacks in Wireless Ad Hoc Networks using Fuzzy Logic	Dr. P.C.Kishoreraja, Professor, School of Information Technology, Vellore Institute of Technology, Vellore	2018
Dr Lathamanju R	Secure Data Aggregation in Wireless Sensor Networks	Dr. P. Senthil kumar, Principal, SKR Engineering college	2018
Dr Ramani P	Non Destructive Decay Assessment of Ancient Monuments using Image Processing Techniques	Dr. V. Subbiah Bharathi, Professor, SRM Institute of Science and Technology, Ramapuram	2021
Dr Vidhya Lakshmi M	Scene text detection with High performance Computing	Dr. Sudha.S Easwari Engineering College, Ramapuram	2020
Dr Ramya G	Comprehensive Analysis of Interleaved Boost Converter with Simplified H-Bridge Multilevel Inverter based Distribution Static Synchronous Compensator System	Dr.V. Ganapathy SRM Institute of Science and Technology	2020
Dr Megala V	Corona Discharge Performance Analysis of PI/MWCNT Coated ACSR Conductor	Dr.Usha, Anna University	2019
Dr Mohan Babu A	Advanced III-V Heterostructure Quantum Well Devices with Enhancement Mode (E-	Dr. N. Mohankumar, Professor, GITAM University, Bangalore	2018

	Mode) Operation for High-Power Switching, Analog/RF Applications		
Dr Shunmugathammal M	Effective Design of VLSI Circuits using Metaheuristics	Dr.Christopher Columbus, Professor, PSN College of Engg and Technology, Tirunelveli	2020
Dr Manoj Kumar D	VLSI Implementation of High Throughput and Low Power Blowfish Crypto Algorithm	Dr. Sundararajan, Controller of Examination , Bharath University, Chennai	2019
Dr. Durga Devi K	A Novel approach for Digitization of Ancient Stone Inscription and Development of Machine Learning models for Character Recognition and Transliteration	Dr.P.Uma Maheswari, Associate Professor, CEG Campus, Anna University, Chennai	2019
Dr Judy Simon	Investigation On the Performance Of Time Division Duplex Long Term Evolution System	Dr. Prabakaran. N, KL University, Guntur, AP	2021
DrNagarajanS	Impact Of Advanced III-V Compound Semiconductor Based HEMT for High Power And RF Applications	Dr.Reeba Korah, Professor, St.Joseph's College of Engineering, Chennai	2019
Dr.R.Thangam	Digital pulse skipping modulation strategies for DC-DC converters to improve the power conversion efficiency	Dr.S.P.Joy vasantha Rani, Professor, MIT, Anna University	2020
Dr.M.Tamilselvi	Evaluation and Analysis Effectual Face Recognition Methods using Hybrid CNN Algorithms for Unconstrained Facial Images	Dr.S.Karthikeyan, Professor, Sathyabama Institute of Science and Technology	2022
Dr.K.Gopi	Non-Small Cell Lung Cancer Detection And Stage Classification Using Modified CNN	Dr.J.Selvakumar, Professor, SRM Institute of science and technology,Kattankulathur	2023
Dr. Michael Mahesh K	Hybrid Optimization based Deep learning method of Glioma Brain Tumor Detection using MRI	Dr. Arokia Renjit J, Professor & Head, Jeppiaar Engineering College, Chennai.	2021

## **International and National Patents**

1. Patent Application No. : 2021100214, IoT and Machine Learning based Building Energy Management System (iBEMS), granted on 24.3.21 by R.Arthi
2. Patent Application No. : 2021100437, Machine Learning Based Smart Water Purifier and Dispenser, granted on 31.3.21 by R.Arthi
3. Patent Application No. : 2021100300, Machine Learning-based Smart Workout System, granted on 31.3.21 by R.Arthi
4. Patent Application No. : 2021100668, E commerce sales prediction and Boosting using Machine Learning, Accepted by R. Megala
5. Patent Application No. : 202041000000, "Dynamic Policy Based Behavioural IOT Security Enforcement System Using Computer,
6. Environment", Published on 7.8.2020 by Ms. Haripriya
7. Patent Application No. : 2020101637, A Method of Designing Advertisement Boards using Conductive 3D Printable Electronic Sensors, granted on 4.8.2020 by Dr. Haripriya
8. Patent Application No. : 202041000000, Anti-lock braking systems (ABS) Modeling and System Recognition, Published on 10.7.2020 by Mr. M. Janarathanan
9. Patent Application No. : 201941014385A, Antenna Integrated with Lead as parasitic element for improving gain, Published on 16.10.2020 by V. Reji
10. Patent Application No. : 202141019005, Intelligent Reusable Mask with Integrated communication setup and Social distancing Alert, Published on 28/10/2022 by Dr.M.Vidhyalakshmi
11. Patent "An Intelligent Driver assistance system for overtaking and Blind spot Detection, published on 05-07-2021 by Dr.M.Vidhyalakshmi
12. Patent Application No. : 202141019796, A smart Chair with AI and IOT for dynamic Posture correction,filed by Dr.R.Preetha, Dr. Durga Devi, Dr.M.Vidhyalakshmi
13. Patent Application No. : 202141021999, An Intelligent Interactive Display system and method for Fitness Training, Published on 18/11/2022 by Dr.M.Vidhyalakshmi
14. Patent Application No. : 202141025435, Self Monitoring artificial intelligence system for aqua farm maintenance and animal feeding, Published on 25/06/2021 by Dr.M.Vidhyalakshmi, Dr.M.Shunmugathammal
15. Patent Application No. : AIP02/2021, E commerce sales prediction and Boosting using Machine Learning, granted on 13.4.21 by Dr.V.Megala

16. Patent Application No. : 202141035453, Reusable Low-Cost System For Measuring Ozone Layer Data, applied on 5.8.21 by R.Arthi
17. Patent Application No. : 202141041423 A, Fluorescent Chemical Sensor And Preparation Method Thereof For Detecting Cu(Ii) And Fe(Iii) Ions, published on 1.10.2021 by D.Haripriya
18. Patent Application No. : 202141039673, Self Sterilizing Grab Handle, Filled on 02 September 2021 by Dr.Roopam
19. Patent Application No. : 202141045592, Sensor based Intelligent smart watch for early detection of Heart attacks in patients suffering from cardiovascular diseases, published on 15.10.2021 by Dr. A. Mohanbabu
20. Patent Application No. : 202141028535, An Intelligent Embedded Auxiliary System For Reading, Recognizing And Navigation Assistance, published on 25-06-2021 by Dr.M.Vidhyalakshmi
21. Patent Application No. : 202141051367, A Smart System to stabilize tremor conditions with connected wearable wrist band and finger caps, published on 26-11-2021 by Dr.M.Vidhyalakshmi, Dr.D.Manojkumar, Mrs.Lalitha
22. Patent Application No. : 202141021999, An Intelligent Interactive Display system and method for Fitness Training, published on 17-05-2021 by Dr.M.Vidhyalakshmi.
23. Patent Application No. : 202141009256, Systems and Methods for Detecting Patterns with Quantum Algorithms, published on 05-03-2021 by Dr.M.Vidhyalakshmi.
24. Patent Application No. : 202141052137 A, Power Sharing and Eco-Friendly Smart Connected Vehicle System Driven By Hybrid Renewable Energy And IOT For Highways, published on 12-10-2021 by Dr. Judy Simon, Mr. N. Kapileswar, Ms. B. Padmavathi, Dr. Phani Kumar. P, Ms. Aarthi Elaveini, Ms. Reshma P Vengaloor
25. Patent Application No. :202141061531A, "Thermal imaging for snake detection - Living Things Detection Using Thermal Imaging in Agricultural Field", Published on 07/01/2022 by Mr. Mahesh Kumar N, Dr. Arthi, Mr. Vinoth Kumar G, Mr. J Janarthanan, Mr. C Aravindan, Dr. Manoj Kumar, Dr. M. Vidhya Lakshmi, Ms Srisabarimani K, Dr. G. Ramya, Mrs. T, Ramya
26. Patent Application No. :202141062067, Intelligent Emotional Quotient processing using brain signals and ZYNQ SoC by Dr.Thaiyalnayaki.K, Dr.Christeena Joseph, Dr.R.Lathamaju, Dr.Kamatchi Sundari, Dr.M.Shunmugathammal, Mrs.M.Rajesvari
27. Patent Application No. : 357829-001, Diabetics management system, granted on 3/2/2022 by Dr. Vidhyalakshmi, A.Alice linsie, G Annapoorani and Dr. A, Mohanbabu.

28. Patent Application No. :202241044319, Smart Non-Invasive Blood Glucose Monitoring Device For Diabetes Patient, Published on 8/12/2022 by Dr.Christeena Joseph, Dr.K.Thaiyalnayaki
29. Patent Application No. :202241052855, Assistive Cap for Visually Challenged People, Published on 30.9.2022 by Dr. P. Ramani and Dr.R.Vani
30. Patent Application No. :377726-001, Artificial Intelligence Horoscope Device, granted on 05/05/2023 by Dr.M.Vidhyalakshmi, Dr.R.Lathamaju, Mr.C.Aravindhan, Mr.N.Maheshkumar
31. Patent Application No. :202241022369 A, A System For Fault Detection And Predictive Maintenance Of Electric Vehicle, Published on 30.9.2022 by Dr.Roopam, Mr. Adithya.G, Mr. Adinath Jayant Shirodkar ,Mr. Nirmal Raj M.U, Mr. Ameen Ahmed MD .
32. Patent Application No. : 202241005699, Method and system for independent control of multiple devices using hand gestures in home automation, Published on 20/05/2022- by Dr. Vani R
33. Patent Application No. : 202241074372 A, Supervisory Control, Monitoring, and Data Acquisition for Remote Industry using Arduino, Published on 30/12/2022 by Dr. V. Megala
34. Patent Application No. : 202241047142, System and Design Of Wind-Induced Pressure Prediction Ontall Buildings For Smart City, Published on 26/08/2022 by Mr.M.Moovendan, Mr.K.Premkumar, Mr.J. Ajay Daniel, Ms.Supraja G and Dr.Megala
35. Patent Application No. :382438-001, ANIMAL TRACKING STRAP USING RFID AND IOT, granted on 24/5/2023 by Dr.Christeena Joseph, Dr.K.Thaiyalnayaki, Dr. R. Lathamaju, Dr.M.Shunmugathammal, Dr.K Durga Devi and Ms.V.Reji
36. Patent Application No. :202341026273, Optimal Scheduling of Electric Car Charging and Discharging at a Parking Station with a solar system, published on 05/05/2023 by Dr.M.Shunmugathammal, Dr. G. RAMYA
37. Patent Application No. :202341027315, Introduction to smart mirror using Raspberry PI 4, published on 26/05/2023 by Dr. G. RAMYA
38. Patent Application No. :375531-001, Machine Learning Based Oxygen Filter for Oxygen Tents, granted on 4/14/2023 by Dr M Vidhya Lakshmi, Dr K Durga Devi, Dr M Shunmugathammal, Dr D Manoj Kumar

39. Patent Application No. :377726-001, ARTIFICIAL INTELLIGENCE HOROSCOPE DEVICE, granted on 5/5/2023 by Dr.M.VidhyaLakshmi, Dr.R.Lathamaju, Mr.C.Aravindan, Dr.Mahesh kumar
40. Patent Application No. :202341028666, ELK stack for IoT driven smart buildings: Effective surveillance & monitoring, applied on 20.4.2023 by Mrs.Aarthi Elaveini, Mrs.B.Padmavathi, Dr.Tamilselvi, Dr.Roopa M
41. Patent Application No. : 381660-001, AI Based Wrist Band for Women Safety, granted on 11.3.2023 by Mrs.B.Padmavathi.
42. Patent Application No. :357351-001, IoT based portable hygiene monitoring system, granted on 30/3/2023 by Dr.Roopa M, Mrs. B.Padmavathi
43. Patent Application No. :202341026218 A, Autonomous Camera-Equipped Patrol Robot With Lidar For Efficient And Safe Security Monitoring, published on 26/5/2023 by Mr. J. AJAY DANIEL, Mr. M. Moovendan, Mr. K Premkumar,
44. Patent Application No. :378203-001, Advance Robotic Hand for Industrial Application, granted on 26/5/2023 by Dr. Phani Kumar Polasi and M. Aarthi Elaveini
45. Patent Application No. :202241073381, A Novel Approach To Predict The Effects Of Climate Conditions And The Prevention Of Cardiovascular Disease, published on 6/1/2023 by Dr.P.Ramani
46. Patent Application No. :387458-001, IOT ENABLED HEMOGLOBIN ANALYZER, published on 1/6/2023 by C Aravindan
47. Patent Application No. : 202341037776, IOT Based Sensory Cyber physical system for climate changing monitoring, published on 30-06-2023 by Dr.Christeena Joseph.
48. Patent Application No. : 202341032697 A, System for Ensuring the Safety of School-Age Passengers Using Esp32, published on 23/06/2023 by Mr. J. Ajay Daniel, Mr. M. Moovendan, Mr. K Premkumar.
49. Patent Application No. : IoT based Smart Farming Surveillance System using Thing Speak, published on 23/06/2023 by Dr. Thirumurugan P, Dr. Ushus. S. Kumar, Dr. Shunmugathammal. M, Dr.S.Nagarajan, Dr.G.Ramya
50. Patent Application No. 202241069922, A Scalable Infrastructure For Enhanced Crop Protection Relying On Blockchain And Deep Neural Networks, Published on 09/12/2022 by Dr Vani R



## **AICTE MODROB – Advanced Communication Lab**

Electronics and Communication Engineering department received an amount of Rs 17.41 lakhs from AICTE under the MODROB scheme for the establishment of an Advanced Communication Laboratory during the 2022-2023 academic year.