

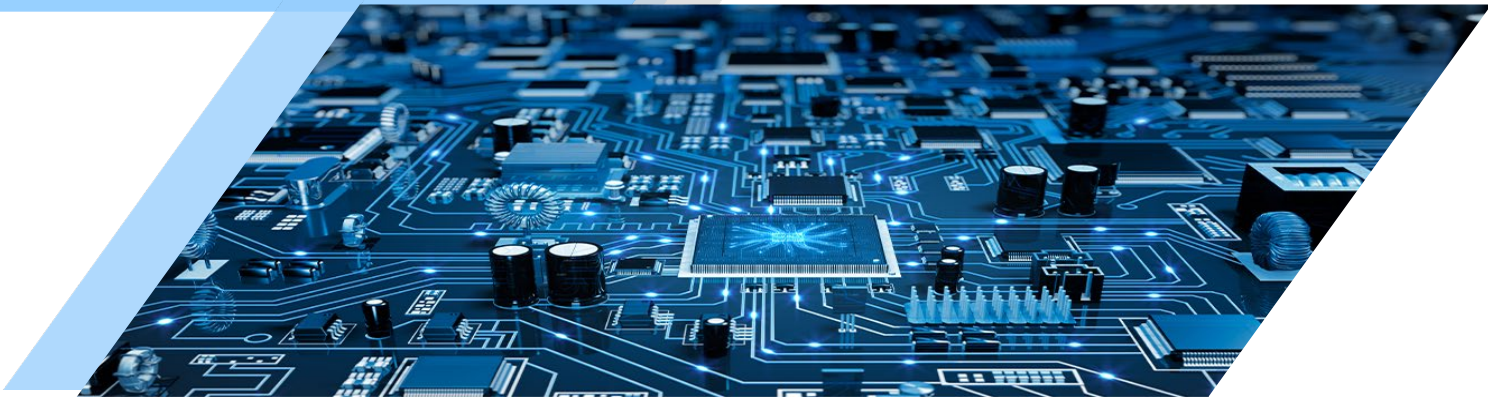
**INTERNATIONAL CONFERENCE ON  
ADVANCEMENTS IN POWER, COMMUNICATION  
AND INTELLIGENT SYSTEMS – APCI 2024**

*(Technically Co-sponsored by IEEE Kerala Section)*

**21-22 June 2024**

**Government College of Engineering, Kannur, Kerala, India**

# Conference Handbook



Email : [apci@gcek.ac.in](mailto:apci@gcek.ac.in)

URL : <https://www.gcek.ac.in/APCI2024/>



Logo  
Name

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Government College of Engineering, Kannur is one of the premier institutes among the 9 Government Engineering Colleges in Kerala and was established in 1986 and is affiliated to APJ Abdul Kalam Technological University. We offer 5 B.Tech Degree programs in Civil engineering, Mechanical engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, and Computer Science and Engineering branches. The college also offers 7 M.Tech Programs (Computer Aided Structural Engineering, Advanced Manufacturing and Mechanical Systems Design, Power Electronics and Drives, Signal Processing and Embedded Systems, Power systems, Energy engineering and Geotechnical and geoenvironmental energy) and doctoral programs. All the B Tech programs and M Tech programme in Computer Aided Structural Engineering are presently accredited by National Board of Accreditation (NBA). Institute has 103 faculty members having specialisation in various disciplines and most of them have doctoral degrees.



**Dr. Jayaprakash P.**  
Principal, GCE Kannur

International Conference on Advancements in Power, Communication and Intelligent Systems (APCI), 2024 is planned in hybrid mode from June 21-22, 2024. This conference is a step to encourage various professionals to colonise the developments in power, communication, signal processing, electronic systems, artificial intelligence, etc. The participants from academia, industry, and research organisations come closer through keynote lectures, presentation sessions, and exhibitions.

I would like to thank all authors who have submitted research papers to the International Conference on APCI-2024. I am happy to invite all leading researchers, engineers, and scientists in the domain of interest from around the world. I hope this conference will act as a platform to share the valuable experiences and innovations of the authors.

I wish all the very best for the conference, APCI 2024.

# Welcome Address

On behalf of the APCI-2024 organizing committee, we are honored and delighted to welcome you to the International Conference on Advancements in Power, Communication and Intelligent Systems (APCI-2024) will be held in hybrid mode from June 21-22, 2024, at Government College of Engineering Kannur, Kerala, India. We believe that we have chosen a venue that guarantees a successful technical conference amid the culture and scenery of Kerala.

Our technical program is rich and varied with two keynote speeches four invited talks and 94 technical paper presentations. The paper presentation is split between 5 sessions with 3 parallel oral presentations each day. We also expect to provide technical demonstrations and numerous opportunities for informal networking.

As the conference chairs of APCI 2024, we know that the success of the conference depends ultimately on the many people who have worked with us in planning and organizing both the technical program and supporting social arrangements. In particular, we thank the Organizing committee and Executive Committee for their wise advice and brilliant suggestions on organizing the technical program; the Publication and Review Committee for their thorough and timely reviewing of the papers, and our technical sponsors and cosponsors who have helped us to keep down the costs of APCI-2024 for all participants. Recognition should go to the Local Organizing Committee members who have all worked extremely hard on the details of important aspects of the conference programs and social activities.



**Dr. Umasankar S.**  
General Chair, APCI 2024



**Dr. Manoj Kumar M. V.**  
General Chair, APCI 2024

## Plenary 1: Control of Solar Photovoltaic Generation in Diverse Applications

**Abstract:** With over 300 sunny days annually, India has a vast potential for solar energy exploitation. This renewable energy source not only reduces dependence on depleting fossil fuels but also plays a crucial role in mitigating climate change by lowering greenhouse gas emissions. Solar PV energy is abundant, cost-effective, and increasingly viable with advancing technology, making it a cornerstone of sustainable development. By the end of 2023. In India, solar power capacity has surpassed 50 GW, contributing significantly to the national grid, and aiming for 500 GW by 2030 under National Solar Mission. Some of the applications of solar PV power are as follows - rooftop solar, solar, water pumping, solar cookers, marine and space applications, smart building applications, EV charging infrastructure, off-grid remote applications, telecom tower applications, military applications, and microgrid applications

Thus, the application of solar power converters across various sectors holds immense potential for India's sustainable energy future. By harnessing our abundant solar resources through the implementation of proper control of power converters, one can address energy challenges, promote economic growth, and protect our environment.

**Biography:** Professor Bhim Singh has received his B.E. (Electrical) from the University of Roorkee, India, and his M. Tech. (Power Apparatus & Systems) and Ph.D. from the Indian Institute of Technology Delhi, India. He joined the Department of Electrical Engineering, University of Roorkee as a Lecturer where he became a Reader. Later on, he joined the Department of Electrical Engineering, at IIT Delhi, India, and worked in various capacities. He is currently serving as a SERB National Science Chair and an Emeritus Professor at IIT Delhi since July 2021.

Professor Bhim Singh has guided several Ph. D, M. Tech./ME /M.S.(R) students and has 106 patents to his credits. He has more than ninety sponsored and consultancy projects. Solar photovoltaic power generation, wind energy generation, solar water pumping, renewable energy-based charging stations, microgrids, power quality, improved power quality converters, etc. are some of his research interests. He is also a recipient of various international and National Awards including the Kalpana Chawla Solar Award. He was also the General Chair, Co-chair, and Honorary chair of many IEEE international conferences.



**Dr. Bhim Singh**  
Professor, IIT Delhi

**Date:** 21<sup>st</sup> June 2024  
**Time:** 11:00 to 11:45 a.m.  
**Venue:** Hall 1 (online)

## Plenary 2: Latest technologies driving the wireless industry

**Abstract:** 5G is the fifth generation of wireless networks, offering significantly higher speeds, and lower latency. It supports enhanced mobile broadband massive machine-type communications and ultra-reliable low latency communications, enabling applications such as Real-time remote control of machinery and autonomous vehicles, High-quality video streaming and virtual/augmented reality, and IoT devices connectivity on a massive scale. As research and development in this field continue to evolve, Massive MIMO is expected to play a crucial role in shaping the future of wireless networks. Beamforming is a fundamental technology in modern wireless communication systems, offering significant improvements in signal quality, capacity, and interference management. Despite its complexity, ongoing advancements in signal processing and computational techniques continue to enhance its effectiveness and applicability across various domains. As wireless networks evolve, beamforming will remain a critical component in achieving high-performance communication systems. These are the fundamental technologies driving the 5G revolution and enhancements in Wi-Fi like Wi-Fi7. We will discuss the changes happening to antennas, the critical component of diversity in communication systems.



**Dr. Deepu V Nair**

Antenna Labs  
Cambium Networks

**Date:** 21<sup>st</sup> June 2024

**Time:** 11:50 a.m. to 12:30 p.m.

**Venue:** Hall 1

**Biography:** Dr. Deepu Nair is currently with Cambium Networks as Director, Antenna Labs, and is responsible for the design, development, and production of Antennas.

He is heading the Centre of Excellence in Antennas and is involved in the design of 5G antennas, smart antennas, sector antennas, dish antennas, ultra-compact antennas, antennas for wifi, LTE, 60 GHz, etc.

Previously, he was with Redpine Signals Inc. as Project Lead in the design of ultra-compact wifi devices and with Powerwave Technologies Inc. as Principal Engineer on the design of base station antennas.

He holds 16 granted patents in the design of ultra-compact antennas, Base Station antennas, and RFID systems. He has several publications in International journals and has co-authored a book and has been an invited speaker for various conferences.

He received his PhD in antennas from Cochin University of Science and Technology (CUSAT) and a postdoc from INP Grenoble, France. He is a senior member of IEEE.

## Plenary 3: Enhancing underwater domain awareness through IoT and information processing

**Abstract:** Underwater Domain Awareness (UDA) is the comprehensive monitoring and understanding of underwater environments to ensure safety, security, environmental sustainability, and effective exploration of underwater resources through the use of advanced technologies and data analytics.

IoT offers a transformative approach by enabling real-time monitoring through interconnected sensors and devices. Key technologies include Underwater Wireless Sensor Networks, Autonomous Underwater Vehicles, Smart Buoys, etc. Efficient data collection and transmission are crucial for IoT-enabled UDA systems. The vast datasets generated by IoT devices require sophisticated information processing and analytics, where machine learning techniques come in handy. ML algorithms detect patterns, anomalies, and trends, enabling the identification of underwater features, prediction of environmental changes, and detection of potential threats.

Modern sonars offer advanced capabilities like long-range target detection, high-resolution imaging, seabed mapping capabilities, etc. Sonar systems can be seamlessly integrated with IoT networks, allowing real-time transmission of sonar data and enabling centralized processing and analysis. The convergence of advanced sensor technologies, robust communication systems, and big data analytics provide solutions to underwater monitoring challenges.

**Biography:** She has more than 20 years of experience in the design and development of sonar systems. She has made key contributions to several complex and mission-critical underwater surveillance systems for the Indian Navy. Most notably, she was the project director of the sonar suite that is operational on INS Arihant.

She has also served as the Technology Leader for the Electronics and Embedded systems groups in NPOL. She has won several awards for her commendable technological achievements in DRDO. She is also the recipient of the National Design and Research Foundation, IEEE award for outstanding contributions to engineering design.

She is a graduate of NIT Calicut and a postgraduate from IISc Bangalore.



**Dr. Rema Devi**

Associate Director  
Naval Physical Oceanographic  
Laboratory, DRDO, Kochi

**Date:** 21<sup>st</sup> June 2024

**Time:** 01:30 p.m. to 02:15 p.m.

**Venue:** Hall 1

## Plenary 4: Exploring the impact of GenAI in transforming Engineering

**Abstract:** This talk will discuss the transformative impact of generative AI, particularly large language models (LLMs) and natural language processing (NLP), on engineering. Starting with the basic terminologies of generative AI, the session will discuss the state-of-the-art models that contributed to this transformation. We will explore how these advanced technologies revolutionize design, optimization, automation, and research by enhancing creativity, improving efficiency, and enabling intelligent decision-making. Through a series of case studies and real-world examples, we will illustrate the practical applications and benefits of AI in engineering and the challenges and ethical considerations that come with its adoption. Additionally, we will discuss prospects and the importance of interdisciplinary collaboration to fully harness the potential of AI in driving engineering innovation

**Biography:** Dr. Manu Madhavan received his B. Tech Degree in Computer Science and Engineering from Nehru College of Engineering and Research Center, Thrissur, M. Tech degree in Computer Science and Engineering (Computational Linguistics), from Govt. Engineering College, Palakkad, and Ph.D from the Department of Computer Science and Engineering from National Institute of Technology Calicut.

Dr. Manu Madhavan has worked as an Assistant Professor in the Department of Computer Science and Engineering, Sreepathy Institute of Management and Technology, Palakkad, Kerala, and Amrita Vishwa Vidyapeetham (Deemed to be University) Coimbatore, Tamil Nadu. He is currently with the Indian Institute of Information Technology, Kottayam as an Assistant Professor in the Department of Computer Science and Engineering.

His research interests include Computational Linguistics, Bioinformatics, Machine Learning, Deep Learning, Graph Neural Networks etc. He has two book chapters to his credit and authored several journal and conference papers.



**Dr. Manu Madhavan**  
Assistant Professor  
IIIT Kottayam

**Date:** 22<sup>nd</sup> June 2024

**Time:** 01:30 p.m. to 02:15 p.m.

**Venue:** Hall 1



## Keynote 1: Unravelling the intricacies of modern CPU architecture

**Abstract:** This talk will delve into the intricacies of modern core microarchitecture design with a particular focus on out-of-order (OOO) processor design. We will explore the fundamental concepts and benefits of OOO execution, which allows instructions to be processed as resources become available rather than strictly following program order. Key topics include instruction scheduling, register renaming, branch prediction, etc. We'll discuss the components that enable OOO execution, such as the reorder buffer, reservation stations, and the issue queue. Attendees will gain a comprehensive understanding of how OOO design enhances computational speed and efficiency, and its critical role in modern high-performance computing.

**Biography:** Shreeroop Ajayakumar received his B Tech degree in Electronics and Communication from the Government College of Engineering Kannur and his M.Tech. in Visual Information and Embedded Systems, from IIT Kharagpur. He worked as a Senior Lead Engineer with Snapdragon CPU Performance Team, at Qualcomm. Presently, he is working as a Staff Engineer, at Server Performance Group, AMD.



**Shreeroop Ajayakumar**

Staff Engineer,  
Server Performance Group  
AMD

**Date:** 21st June 2024

**Time:** 10:15 a.m. to 11:00 a.m.

**Venue:** Hall 3 (Online)

## Keynote 2: Advanced multilevel converters and its application in grid-connected system

**Abstract:** Multilevel converters have revolutionized the field of power electronics, especially in their application to grid-connected systems. These advanced technologies, which include Diode-Clamped, Flying Capacitor, and Cascaded H-Bridge converters, are designed to manage high power and voltage levels with remarkable efficiency. They significantly enhance power quality, reduce voltage stress on system components, and improve overall operational efficiency, making them ideal for modern electrical grids. Multilevel converters play a crucial role in integrating renewable energy sources, such as solar and wind power, into the grid, thereby supporting the transition to more sustainable energy systems. Additionally, they contribute to grid stability and reliability by effectively managing power quality. Despite the challenges in implementing these converters, such as the complexity of control strategies and the need for robust design, their benefits are undeniable. Multilevel converters are indispensable in advancing the efficiency and reliability of power systems, ultimately facilitating the integration of renewable energy on a large scale.

**Biography:** Nirmal Mukundan C. M. received the B. Tech. degree in electrical and electronics engineering from the Government Engineering College, Idukki, Mahatma Gandhi University in 2013, and the M. Tech. degree in power electronics and drives from the Government College of Engineering, Kannur, Kannur University, India, in 2016, and the Ph.D. degree from Government College of Engineering Kannur, APJ Abdul Kalam Technological University in 2021. After completing his Ph.D. degree, he joined as a Postdoctoral Fellow with Khalifa University, Abu Dhabi, UAE. Currently, he is working at the Renewable Energy Lab, at Prince Sultan University, Riyadh, Saudi Arabia.

His research interests include power quality, power electronics, renewable energy, power systems, electric vehicles, multilevel inverters, and smart grids.



**Dr. Nirmal Mukundan C. M.**

Renewable Energy Lab  
Prince Sultan University  
Riyadh, Saudi Arabia.

**Date:** 22<sup>nd</sup> June 2024

**Time:** 10:15 a.m. to 11:00 a.m.

**Venue:** Hall 1

# Schedule at a Glance

## Day 1: 21<sup>st</sup> June 2024

08:30 a.m. to 10:00 a.m.	Session 1 (Online)
10:00 a.m. to 10:45 a.m.	Inauguration Venue: Hall 1
10:45 a.m. to 11:00 a.m.	Tea
11:00 a.m. to 11:45 a.m.	<b>Plenary 1: Control of Solar Photovoltaic Generation in Diverse Applications</b> Prof. Bhim Singh, Professor, IIT Delhi (online)
11:50 a.m. to 12:30 pm	<b>Plenary 2: Latest technologies driving the wireless industry</b> Dr. Deepu V Nair, Antenna Labs, Cambium Networks Venue: Hall 1
12:30 p.m. to 01:15 p.m.	Lunch
01:30 p.m. to 02:15 p.m.	<b>Plenary 3: Enhancing underwater domain awareness through IoT and information processing</b> Dr. Remadevi, Associate Director, Naval Physical Oceanography Laboratory, DRDO, Kochi. Venue: Hall 1
02:30 p.m. to 04:30 p.m.	Session 2 (Offline)
02:30 p.m. to 04:30 p.m.	Tea
04:45 p.m. to 06:15 p.m.	Session 3 (Online)
06:30 p.m. to 08:00 p.m.	Gala Dinner and cultural programs

## Day 2: 22<sup>nd</sup> June 2024

08:30 a.m. to 10:00 a.m.	Session 4 (Online)
10:15 a.m. to 11:00 a.m.	<b>Keynote 1: Unravelling the intricacies of modern CPU architecture</b> Shreeroop Ajayakumar, Staff Engineer, Server Performance Group, AMD Venue: Hall 3
	<b>Keynote 2: Advanced multilevel converters and its application in grid-connected system</b> Dr. Nirmal Mukundan C. M., Renewable Energy Lab, Prince Sultan University, Riyadh, Saudi Arabia. Venue: Hall 1

# Schedule at a Glance

11:00 a.m. to 11:15 a.m.	Tea
11:15 a.m. to 12:45 p.m.	Session 5 (Offline)
12:30 p.m. to 01:30 p.m.	Lunch
01:30 p.m. to 02:15 p.m.	<b>Plenary 3: Exploring the impact of GenAI in transforming Engineering</b> Dr. Manu Madhavan, Assistant Professor, IIIT Kottayam Venue: Hall 1
02:30 p.m. to 03:00 p.m.	Valedictory function Venue: Hall 1

# Schedule at a Glance

<b>Session 1</b> <i>(Online)</i>  8:30 a.m. to 10:00 a.m. 21st June 2024	Session 1.1		Session 1.2		Session 1.3	
	T1	59	T5	116	T8	87
		62		237		90
		68		554		95
		393		558		154
585		587		158		
<b>Session 2</b> <i>(Offline)</i>  2:30 p.m. to 4:30 p.m. 21st June 2024	Session 2.1 <i>(Hall 2)</i>		Session 2.2 <i>(Hall 1)</i>		Session 2.3 <i>(Hall 3)</i>	
	T1	114	T4	37	T8	5
		138		257		40
		225	T7	105		98
		248		282		274
		284		497		463
				526		500
				569		
<b>Session 3</b> <i>(Online)</i>  4:45 am to 6:15 p.m. 21st June 2024	Session 3.1		Session 3.2		Session 3.3	
	T2	6	T4	107	T8	84
		7		216		165
		13		245		167
		18		383		168
		21				206
214				220		

# Schedule at a Glance

		Session 4.1		Session 4.2		Session 4.3		Session 4.4	
<b>Session 4 (Online)</b> 8:30 a.m. to 10.00 a.m. 22 <sup>nd</sup> June 2024	T2	363	T7	139	T8	231	T8	548	
		447		239		252		557	
	T6	239		270		387		559	
		312		515		414		560	
		415	T5	411	448	566			
				490	568				
		Session 5.1 (Hall 2)		Session 5.2 (Hall 3)		Session 5.3 (Hall 1)		Session 5.4 (Online)	
<b>Session 5 (Offline &amp; Online)</b> 11:15 a.m. to 12:45 p.m. 22 <sup>nd</sup> June 2024	T1	602	T2	8	T5	528	T8	538	
		604		189		530		578	
		609		406				594	
		613		573	592	606			
		618		603	T6	599		616	
	T3	86	605			620			
							T9	501	
T1: Power and Renewable Energy Systems T2: Electric Drives and Power Converters T3: Sensors, Instrumentation and Automation Systems T4: VLSI T5: Embedded Systems and IoT T6: Signal Processing T7: Communication Systems T8: Artificial Intelligence and Machine Learning T9: Cloud Computing									

## Session 1.1 - Online

8:30 a.m. to 10:00 a.m., 21<sup>st</sup> June 2024

Chairs - Dr. Shelas Sathyan (NIT Tiruchirapalli), Dr. Shahin M. (GCE Kannur)

Track	Paper Id	Title	Authors
T1	59	High Gain Multiport Boost Converter for Hybrid Renewable Energy Systems	Saritha Paramel (APJ Abdul Kalam Technological University)*
	62	Design and Performance Validation of 3MW PV Grid connected Plant at VIT Chennai	Sidharth Mishra*, Gnana Swathika O. V. (VIT Chennai); (VIT Chennai); Tarun Padhi, Jitendra Tripathi (Solar Operation and Maintenance Sterling & Wilson)
	68	P&O MPPT-based Wind Power Generation Scheme for Telecom Tower Power Supply	Gopinath A. *, Sankar Natarajan, Srimaheswaran V., M. M. Rajan Singaravel (NIT Puducherry)
	393	PV Array Reconfiguration Using Futoshiki Puzzle to Extract Maximum Power Under Partial Shading Condition	Sakthisudhursun B. *, Thagul C. P., Rahul Kanna S., Sanjay Kumar M. (Mepco Schlenk Engineering College)
	585	Performance Evaluation of Reconfiguration Techniques Used to Reduce Partial Shading Losses	Nisha G. Poothullil *; Abdul Saleem (GEC Thrissur)

## Session 1.2 - Online

8:30 a.m. to 10:00 a.m., 21<sup>st</sup> June 2024

Chairs - Dr. A. R. Jayan (GEC Thrissur), Dr. Baburaj M. (GEC Kozhikode)

Track	Paper Id	Title	Authors
T5	116	Review on a smart solar-powered greenhouse system using IoT sensors for automated internal climate control and crop monitoring.	M. Jayakumar (Amrita Vishwa Vidyapeetham, Coimbatore)*
	237	IoT Based Air Quality Monitoring System for Apartment Building Performance Analysis of Low power long range protocol LoRaWAN for embedded applications.	Rohan Karthikeya Chekuri (Amrita Vishwa Vidyapeetham); Lekshmi R. R. (Amrita School of Engineering)*
	554	Performance Analysis of Low power long range protocol LoRaWAN for embedded applications.	Saritha E. *; Sajesh Kumar Ulayil (GCE Kannur)
	558	Comparative Analysis of Stand-alone and Hybrid Multi-UAV Network Architectures for Disaster Response Missions.	Indu Chandran (BITS Pilani-K.K.Birla Goa campus)*
	587	IOT Based Food and Grain Condition Traceability and Controlling System in Warehouses.	Sabarinathan R. Rangarajan *; Parameswaran B.; Pavithra D.; Saravanan M. A.; Shahid Afridi A. (SRM Valliammai Engineering College)

## Session 1.3 - Online

8:30 a.m. to 10:00 a.m., 21<sup>st</sup> June 2024

Chairs - Dr. Ajeesh Ramanujan (CET), Dr. Rafeeqe P. C. (GCE Kannur)

Track	Paper Id	Title	Authors
T8	87	Analysing the Performance of Dense Net in the context of Tuberculosis Disease	Geetamma Tummalapalli*; Babji Prasad Chapa; Jami Kousik (GMR Institute of Technology)
	90	AI-assisted Silhouettes Generation from Sparse mmWave Sampling	Fred Mohamadi (TIALINX, INC.)*
	95	Multi Disease Detection and Diagnosis Through Ensemble Learning	Athira K. P.*; Maya Mohan (NSS College of Engineering Palakkad)
	154	Quantitative Analysis and Optimization of Sensor Deployment for Enhanced Activity Recognition in Smart Home Environments: A Multidimensional Approach to Data-Driven Intelligence and Efficiency in Universal Computing Spaces	Khalid Aziz; Sakshi Dua; Dr. Prabal Gupta* (Lovely Professional University)
	158	Advancements in the Efficacy of Flan-T5 for Abstractive Text Summarization: A Multi-Dataset Evaluation Using ROUGE and BERTScore	Abdulrahman M. Zeyad (REVA University)*

## Session 2.1 – Hall 2

2:30 p.m. to 4:30 p.m., 21<sup>st</sup> June 2024

Chairs - Dr. Umashankar S. (Prince Sultan University), Dr. Anilkumar T. T. (GCE Kannur)

Track	Paper Id	Title	Authors
T1	114	DAB based advanced EV Charging System for V2G Mode Operation	Devika Harikumar*; Narendramudra N. G. (College of Engineering Trivandrum)
	138	Design and Simulation of 100MW Floating Solar PV System: A Idukki Reservoir Case Study	Akshay S.*; Suresh Kumar E (College of Engineering Trivandrum)
	225	Fault Analysis in Three Phase Long Transmission Lines using Wavelet Transform	Sudipta Chatterjee*; Nasirul Haque (NIT Calicut)
	248	Analysis and Prediction of the Events Occurring in the Scaled Down Model of IEEE 5 Bus System using Machine Learning Algorithms	Balamurugan S. (Amrita School of Engineering)*; Deepu Jose (Amrita Vishwavidyapeedhom)
	284	Evaluating Reliability: A Comparative Analysis of Two High Gain DC to DC Converters in Solar Photovoltaic Applications	Stalin D. M.*; Dr.Vinod B. R. (College of Engineering Trivandrum)



## Session 2.2 – Hall 1

2:30 p.m. to 4:30 p.m., 21<sup>st</sup> June 2024

Chair - Dr. Rohith K. Raj (GEC Wayand), Dr.Sajith K.. (GCE Kannur)

Track	Paper Id	Title	Authors
T4	37	Floating-point CORDIC Coprocessor with Dynamic Iterations	Padmakumar Kumarapillai (Vikram Sarabhai Space Centre)*; Lalu V.; Shiny G. (College of Engineering Trivandrum)
	257	A Hardware Efficient Implementation of Sub-Block Interleaver for Polar Codes in 5G NR	Lakshmi J. L.*; Jayakumari J. (Mar Baselios College of Engineering and Technology)
T7	105	Improving User Satisfaction for Next Generation CRN using Utility Proportional Fairness based Resource Allocation Approach	Alin Mariam Solomon*; Jayakumari J. (Mar Baselios College of Engineering and Technology)
	282	An Improved Antenna for Wireless Implantable Medical Devices (WIMD) that supporting Retinal Prosthesis	Anto Davy Palathingal (College of Engineering Trivandrum)*
	497	A Coplanar Wave Guide Fed Triangular Shaped Implantable Antenna for Industrial Scientific Medical Radio Applications	Athulya Gopinath*; Sajith K. (GCE Kannur)
	526	Design of Co-Planar Waveguide Fed Split Ring Resonator Loaded Diamond Shaped Antenna for Industrial Scientific Medical Radio Communication	Aswani* (GEC Wayanad); Sajith K. (GCE Kannur)

## Session 2.3 – Hall 3

2:30 p.m. to 4:30 p.m., 21<sup>st</sup> June 2024

Chair - Dr. Amit Praseed (NIT Calicut), Dr. Bindu P. V. (GCE Kannur)

Track	Paper Id	Title	Authors
T8	5	Enhancing Anomaly Detection in Sensor Time Series Data using Machine Learning Model Optimization	Balu R (VSSC)*; Pradeep R (CET)
	40	Handling Missing Data in Graph Networks with Adaptive Graph Convolutional Network	Adarsh S (VSSC, ISRO)*; Joseph Zacharias (CET)
	98	A Review of Attention Based Model for Sentimental Analysis using NLP	Dhanya P.*; Dr. Arun Cyril Jose (IIIT Kottayam)

	<b>274</b>	IMU data based HAR using Hybrid model of CNN & Stacked LSTM	Adarsh Dubey*; Joseph Zacharias (College of Engineering Trivandrum)
	<b>463</b>	Using the DenseNet121model to classify hand gestures, with the intention of aiding individuals with disabilities	Basel Ali Dabwan (DR.BAMU)*
	<b>500</b>	Smart Healthcare Systems: A Survey of IoT and AI Technologies for Heart Disease Prediction	VISHNU K.*; Thomas Sebastian; Binu P. K. (Amrita Vishwa Vidyapeetham)
	<b>569</b>	Remote Sensing Image Captioning using CNN and LSTM	Vaishnavi T. V.* (GCE Kannur )

### Session 3.1 – Online

5:45 p.m. to 06:15 a.m., 21<sup>st</sup> June 2024

Chairs - Dr. Rijil Ramchand (NIT Calicut), Dr. Anjali Anand K. (GCE Kannur)

Track	Paper Id	Title	Authors
T2	<b>6</b>	Level Shifted PODPWM Technique for Quadra Boost Nine Level Inverter	Geno Peter (University of Technology Sarawak); Vijayakumar Arun (Mohanbabu University)*; Albert Alexander S. (VIT ); Samat Iderus (Univeristy of Technology Sarawak)
	<b>7</b>	9-Level Switched Capacitor Inverter With Level Shifted PWM Technique	Geno Peter (University of Technology Sarawak); Vijayakumar Arun (Mohanbabu University)*; ALBERT ALEXANDER S. (VIT ); Samat Iderus (University of Technology Sarawak)
	<b>13</b>	Level Shifted PWM Technique for Minimum Component Switched Capacitor Inverter	Albert Alexander S. (VIT )*; Vijayakumar Arun (Mohanbabu University); Geno Peter (University of Technology Sarawak); J. Jasmine; K. Ezhil Vignesh; B. Athish (Stella Mary's College of Engineering)
	<b>18</b>	Advancing Power Conversion: A Comprehensive Survey on Reduced Multilevel Inverters, Switching Techniques, And Controllers	Shaik Shakeera (VFSTR)*
	<b>21</b>	Modeling and Control of Sepic Converters in Hybrid Microgrid Application Using Exact Lineraization Technique	Brindha R. (KIT)*
	<b>214</b>	Design and Analysis of Different Rotor Structures In-Wheel Brushless DC Motor Performance for Electric Vehicle Applications	DEEPAK M. (KIT-Kalaignarkarunandihi Institute of Technology)*

### Session 3.2 - Online

5:45 p.m. to 06:15 a.m., 21<sup>st</sup> June 2024

**Chairs - Dr.Suresh Babu, (MVJ College of Engineering, Bangalore),  
Dr. Pramod P. (LBS College of Engineering)**

Track	Paper Id	Title	Authors
T4	107	Design of Low Power and High Speed 1-bit Full Adder for DSP Applications	Shaik Mohisena Tabassum*; Madala Venkata Kavya Sri; Bhanu Navya Sri Dasari; Shaik Muskaan; Satyajeet Sahoo; Aswini Kumar Samantaray (Vignan Foundation for Science, Technology and Research )
	216	Compressor based Approximate Multipliers for Neural Network Accelerators	Chintagunta Munikantha (Vemu Institute of Technology)*; Kota Venkata Ramanaiah (YSR Engineering College)
	245	Analyzing Measured and De-Embedded S-Parameters of a Hybrid Network Unit for RF Characteristics of AlGaN HEMTs	Anbuselvan N. (Saveetha School of Engineering, SIMATS)*; Anandan P. (Saveetha School of Engineering)
	383	Investigating FPGA Optimization Methods for the Performance Evaluation of SKINNY Cipher	Laseena C. A. (GCE Kannur)*

**Session 3.3 - Online**

5:45 p.m. to 06:15 a.m., 21<sup>st</sup> June 2024

**Chairs - Dr. Manu Madhavan (IIIT Kottayam), Dr. Ajish Kumar K. S. (GCE Kannur)**

Track	Paper Id	Title	Authors
T8	84	Cognitive Detection of Anomalies in Autonomous In-Vehicle Network Communication	Shyamala Devi M.*; Jeeva R.; Jagadheeswaran R.; Hemand Kumar V.; Erwin Nicholas M.; Keerthi Vasam P. (Panimalar Engineering College, Chenna)
	165	Relu Activated Attention UNet Encipher Decipher Framework based Species Classification of Butterfly	Akhil P. C. (GEC Thrissur)*
	167	Automated People Counting System	Reny Sam (Periyar University)*
	168	Performance Analysis of Fitness Function in Genetic Algorithm for Fetal Brain MRI Classification	Afraim Maruboina; Sukith Sai Chittibomma* (Velagapudi Ramakrishna Siddhartha Engineering College)
	206	Facial Recognition System for Law Enforcement: An Integrated Approach Using HAAR Cascade Classifier and LBPH Algorithm	Jansi R.*; Pavikars M. M. (SRM Institute of Science and Technology)
	220	Yoga Pose Classification Using CNN with PReLU Activation	Suzen Malik Firasta; Yash Srivastava; Vidya Rao* (Manipal Institute of Technology)

**Session 4.1 - Online**

8:30 a.m. to 10:00 a.m., 22<sup>nd</sup> June 2024

Chairs - Dr. Nirmal Mukundan C. M. (Prince Sultan University),  
Dr. Baburaj P (GCE Kannur)

Track	Paper Id	Title	Authors
T2	363	Speed Control of Three-Phase Induction Motor Using ANFIS and Flower Pollination Algorithm Optimized PI Controller	Aayushi Singh*; Aayushi Aryam; Aditya Mohan (Delhi Technological University)
	447	Design of Electric Vehicle Regenerative Braking System	Abhijit Prabhakar Gulhane*; Swapnil Khubalkar; Suraj S. Dudhe (G H Rasoni College of Engineering Nagpur)
T6	263	Real-Time Population Tracking Personal Information Log with Image Processing: Haar Cascade LBPH Approach	Binish M. C. (Model Engineering College)*; Hana V. K.; Fadhiya N. Z.; Anupama P. T.; Erin Edward George (KMEA Engineering College)
	312	Lightweight Stereo Image Super-Resolution Using Parallax Attention	Smriti Govind*; Pradeep R. (CET)
	415	A Review of Vehicular Adhoc Network Routing and Congestion Control	Sridevi H.*; Kaveri Kori (Sharnbasva University)

## Session 4.2- - Online

8:30 a.m. to 10:00 a.m., 22<sup>nd</sup> June 2024

Chairs - Dr. Pradeep R. (CET), Dr. V. Vinod Kumar (GCE Kannur)

Track	Paper Id	Title	Authors
T7	139	EmoSpeak: An Emotionally Intelligent TTS System for Visually Impaired	Shamal D. Dhekale*; Yugchhaya Galphat; Bhagyashree S. Vaswani; Chandni J. Gangwani (Vivekanand Education Society's Institute of Technology )
	239	A rescue aid for hazardous situations	A. Anilet Bala*; Pallapothu Uttez; Jheyvanth M.; Konda Harsha Reddy; Shibi Peter (SRMIST)
	270	Optimizing Communication in High-Speed Train Environments over 5G Signals through MIMO Base Station Positioning	Bablu Kumar Singh (Adani University); Sathvik Bhat; Narendra Khatri (Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal)*
	515	Performance Analysis of Textile Substrates adopted in Wearable Antennas: A Review	Manikandan Manoharan (SSM Institute of Engineering and Technology)*; Femina V. (PSNA College of Engineering and Technology); Vetrimanikumar J. (SSM Institute of Engineering and Technology); Vijayakumar S. D.; Karthi V.; Kumar V. (Builders Engineering College)
T5	411	Automatic Rotary Assembly Line Speed Controller and Fault Detection System using Machine Learning Algorithm	Abhishek Arun Madankar (YCCE)*

## Session 4.3 - Online

8:30 a.m. to 10:00 a.m., 22<sup>nd</sup> June 2024

Chairs - Dr. Manu Madhavan (IIT Kottayam), Dr. Ajish Kumar K S (GCE Kannur)

Track	Paper Id	Title	Authors
T8	231	Optimized Machine Learning Model for Disease Prediction and Treatment Recommendation Through Gait Analysis	Velusamy A.*; Akilandeswari Jeyapal (Sona College of Technology); Nareshkumar P. (Knowledge Institute of Technology); Banumathy D.; Maheskumar V.; Thiyagarajan P. (Paavai Engineering College)
	252	Empowered Brain tumor detection using Deep Learning Methodology	Surya U.*; Dhivya K. (IFET College of Engineering )
	387	Deep Learning Approaches for Waste Classification	Jubaira Mammoo (KMEA ENGINEERING COLLEGE)*
	414	Lattice thermal conductivity of material and its correlation with Debye temperature using regression models	Sayantan Dandapat*; Nepal Sahu; Dr. Azad Chandrashekhar; Uday Kumar (NIT Jamshedpur)
	448	Suggestion Mining for Mobile APP Quality Improvement	Makarand L Mali (R C Patel Institute of Technology)*
	490	Real-World Evaluation: Hybrid Recommender System and User Engagement	Aditya K Gupta (U Digital Content Pvt. Ltd.)*

## Session 4.4 - Online

8:30 a.m. to 10:00 a.m., 22<sup>nd</sup> June 2024

Chairs - Dr. Ajeesh Ramanujan (CET), Dr. Nidheesh N., (GCE Kannur)

Track	Paper Id	Title	Authors
T8	548	Exploring the Efficacy of Federated-Continual Learning Nodes with Attention-Based Classifier for Robust Web Phishing Detection: An Empirical Investigation	Jesher Joshua M.*; Adhithya R.; SreeDananjay Sudhakaran; Revathi M. (Vellore Institute of Technology, Chennai)
	557	A Bird Eye View on Next Generation Smart Farming Based on IOT with Machine Learning Approach – A Review	Amit Gahlot*; Manisha Agarwal (Banasthali Vidyapith University, Rajasthan)
	559	Deep - Transfer Learning for Multi-Crop Leaf Disease prediction using ResNet and ConvNet	M. Dhilsath Fathima*; Akash Gupta; Kartik Jain (SRM Institute of Science and Technology)
	560	AIR QUALITY PREDICTION USING DEEP LEARNING MODELS	M. Dhilsath Fathima*; Sashank Donavalli; Harshitha Kambham, (SRM Institute of Science and Technology)
	566	Improved Pulse Coupled Neural Network based on Maximize SNR for Vessel Extraction	Yogendra Narayan (Chandigarh University Mohali); Dr. Davinder Paul Singh (Pandit Deen Dayal Energy University)*

568	Detection of Diabetic Retinopathy (DR) Severity from Fundus Photographs using Conv-ViT	Usha Rani Seshasayee*; Dheeraj Chintamreddy (Vellore Institute of Technology)
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<b>Session 5.1 – Hall 2</b> <b>11:45 a.m. to 1:00 p.m., 22<sup>nd</sup> June 2024</b> <b>Chairs - Dr. Kalpana R. (NIT Surathkal), Dr. Jayaprakash P (GCE Kannur)</b>			
Track	Paper Id	Title	Authors
T1	602	Enhancing Electric Vehicle Charger Efficiency Through Improved PQ-Based Zeta-Luo Converter.	Vineeth V. Nair*; Pradip C. (NSS College of Engineering Palakkad)
	604	Coordinated Control of PSS and SSSC using Ant Colony Optimization	Sreelakshmi Satheesan*; Anilkumar T. T. (GCE Kannur)
	609	Hybrid Compensation Strategy using DSTATCOM and FCTCR for Enhanced Power Quality in AC Grid	Anupriya K.*; Sooraj Suresh Kumar; Manoj Kumar M V; Jayaprakash P (GCE Kannur); Dr. Nirmal Mukundan C. M.; Umashankar Subramaniam; Dhafar Almakhles (Prince Sultan University)
	613	Bidirectional Charging System for Electric Vehicle With Improved Power Quality	Muhammed Shameem M.*; Favaz Kaniyath; Ashnil T. K.; Alen Godson M D; Akhil Chacko; Sooraj Suresh Kumar; Jayaprakash P (GCE Kannur)
	618	PV Fed Offboard Ebike Battery Charger Using LLC Resonant Converter	Prakrithy Mohan M. S.*; Malavika Unnikrishnan; Lakshmi Priya; Anjali Anand K. (GCE Kannur)
T3	86	Intelligent Rush Hour Management in Metro Station	Anandu V. P.*; Vinatha U. (National Institute of Technology Karnataka); Bharath Y. K.; Neethu V. S. (Malnad College of Engineering)

<b>Session 5.2 – Hall 3</b> <b>11:45 a.m. to 1:00 p.m., 22<sup>nd</sup> June 2024</b> <b>Chairs - Dr. Rajesh M. (GEC Wayanad), Dr. Sreekumar C. (GCE Kannur)</b>			
Track	Paper Id	Title	Authors
T2	8	Adaptive Common-Mode Voltage Reduction Technique for Three Level NPC Inverters	Geno Geo David*; Dr. Vinod B. R. (College of Engineering Trivandrum)
	189	Hysteresis Current Control Technique for Dual Output PFC Enabled Converters having the Unified Magnetics Stage	Srinivas N R (GE Healthcare)*
	406	Analysis of modified Buck-Boost Converter in Battery charging system by using solar energy	Krishnaveni Subramani (SSN College of Engineering)*

	<b>573</b>	Interleaved Boost PFC with Half Bridge LLC Resonant Converter based EV Battery Charger	Jeevanand P.*; Akhil Chacko (Government College of Engineering Kannur); Rajesh M (GEC Wayanad)
	<b>603</b>	SOC Estimation Using Extended Kalman Filter in Electric Vehicle Batteries	Srihari S.*; Vasanthi V. (NSS College of Engineering Palakkad)
	<b>605</b>	Fault Detection in NPC Multilevel Inverter Using Artificial Neural Network	Induja J.*; Saju N. (NSS College of Engineering Palakkad)

### Session 5.3 – Hall 1

11:45 a.m. to 1:00 p.m., 22<sup>nd</sup> June 2024

Chairs - Dr. Bindima T. (GEC Kozhikode), Dr. Jesy P. (GEC Kozhikode)

Track	Paper Id	Title	Authors
T5	<b>528</b>	Experimental Validation of Mathematical Modeling of MoX Sensors	Shamila C. P. (GCE Kannur)*
	<b>530</b>	Smart Farming: Integrating Soil Monitoring and Weather Analysis for Precision Agriculture	Athulya Mol P. (GCE Kannur)*
T6	<b>592</b>	A Comparative Analysis of Medical Image Fusion Techniques: A Variety of Approaches	Sanila P.*; Sreejith S. (GCE Kannur); Safeer K. P. (Defence Research and Development Organization (DRDO), Bangalore)
	<b>599</b>	ECG Denoising: Evaluating the Effectiveness of Different Algorithms	Sneha S Nair*; Nishil Kumar P. P. (GCE Kannur); Safeer K. P. (Defence Research and Development Organization)

### Session 5.4 - Online

11:45 a.m. to 1:00 p.m., 22<sup>nd</sup> June 2024

Chair - Dr. Deepthi K. (Central University Kerala, Kasaragod)  
Dr. Rafeeqe P. C. (GCE Kannur)

Track	Paper Id	Title	Authors
T8	<b>538</b>	BAT-CNN: BirdNet Assisted Training for CNN	Salini S (College Of Engineering Thiruvananthapuram)*; Suresh K (Govt Engineering College Idukki)
	<b>578</b>	GAN-based Image Inpainting Techniques: A Survey	Aishwarya Mohod*; Piyosh P (College of Engineering Trivandrum)
	<b>594</b>	Analysis of Customer Churn for Telecom Company with SMOTE-ENN and Hyperparameter Tuning Randomized-SearchCV Technique in Advanced Machine Learning Technology	Tonmoy Day Sarkar*; Md. Sayeem Rahman; Karthikeyan S (Jain (Deemed-To-Be University))

# Technical Sessions

	<b>616</b>	Implementation of silicon wafer defect classification web application using deep learning	Akshaya Bura*; B. K. Chaitanya (Chaitanya Bharathi Institute of Technology)
	<b>606</b>	Artificial Neural Network Based Fault Identification and Monitoring for Brushless Direct Current Motors	Preethi P. Nair*; Smitha B. (NSS College of Engineering, Palakkad)
	<b>620</b>	Enhancing Fetal Health Monitoring through TPOT and Optuna in Machine Learning-Driven Prenatal Care	Akilandeswari A. Prasad (Saveetha)*
<b>T9</b>	<b>501</b>	Optimizing Cloud Computing Energy Efficiency with a Grasshopper-Inspired Technique for Virtual Machine Migration	Jaspreet Singh (Chandigarh University, Mohali)*



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