

**International Conference on  
Sustainable Energy Technologies and Computational Intelligence  
(SETCOM 2025)**

**Department of Electrical Engineering, SoET  
Pandit Deendayal Energy University (PDEU), Gandhinagar, Gujarat, India |**

**February 21 – 23, 2025**



**IEEE Gujarat  
Section**

**SETCOM 2025 Special Sessions on**

**“Sustainable Wireless Communication Networks with Energy-Aware AI/ML  
Solutions”**

Aims & Scope of the Session (100-200 words):

The session on **Sustainable Wireless Communication Networks with Energy-Aware AI/ML Solutions** aims to explore innovative approaches that leverage artificial intelligence (AI) and machine learning (ML) to enhance the energy efficiency of wireless communication networks. As the demand for high-speed connectivity grows, the focus will be on developing sustainable practices in the design and deployment of communication networks. This session seeks to provide a platform for researchers, industry experts, and practitioners to share insights on energy-aware technologies, methodologies, and applications across various wireless domains, including 5G, IoT, and beyond.

This session encompasses a wide range of topics related to sustainable wireless communication, including energy-efficient modulation and coding techniques, eco-friendly vehicular networks, sustainable IoT frameworks, and the integration of cognitive radio networks. Discussions will focus on both theoretical advancements and practical implementations that minimize energy consumption while maintaining performance and security. The session aims to foster collaborative efforts toward developing communication solutions that contribute to the transition toward greener technologies and promote sustainable development within the telecommunications sector. Participants will have the opportunity to engage in knowledge exchange and collaboration, driving the advancement of energy-aware wireless communication systems.

**Topics of interest include, but are not limited to:**

**Energy-Efficient Wireless Communications & Networks**

Focus on technologies and methodologies that reduce power consumption in wireless communications while maintaining quality and reliability.

**Sustainable Optical Communications & Networks**

Explore advancements in optical communication systems that contribute to energy savings and lower environmental impacts.

**Energy-Aware Modulation and Coding Techniques**

Discuss modulation and coding strategies designed to optimize energy use in data transmission, enhancing efficiency.

**Ad-hoc & Sensor Networks for Sustainable Solutions**

Highlight the application of ad-hoc and sensor networks in energy management and monitoring, promoting sustainability.

### **Eco-Friendly Vehicular Networks**

Investigate communication systems that facilitate energy-efficient transportation solutions, focusing on vehicle-to-vehicle and vehicle-to-infrastructure communications.

### **Energy-Efficient Internet-of-Things (IoT) Networks**

Examine IoT architectures and protocols designed to optimize energy consumption in smart devices and applications.

### **Cognitive Radio network and Cooperative Communications for Sustainable Energy**

Delve into cognitive radio technology that adaptively manage spectrum usage to minimize energy waste.

### **Energy-Conserving Device-to-Device (D2D) Communications**

Explore D2D communication methods that enable direct device interactions, reducing reliance on network infrastructure and energy usage.

### **Socially Aware Wireless Networks for Sustainability**

Discuss the integration of social data into wireless networks to enhance energy efficiency and sustainability through user-driven insights.

### **Energy-Efficient Cryptography and Network Security**

Focus on secure communication methods that are optimized for low energy consumption without compromising safety.

### **mmWave Communications for Sustainable Systems**

Investigate the role of millimetre-wave (mmWave) technology in achieving high data rates while ensuring energy efficiency.

### **Ultra wide band Communications with Energy Efficiency**

Examine the benefits of ultra wide band communication systems designed to operate with lower energy requirements.

### **Security and Privacy in Energy-Efficient Cloud, Edge, and Mobile Computing**

Explore techniques to ensure secure data handling across cloud and edge platforms, with a focus on minimizing energy use.

### **Blockchain for Sustainable Communication**

Discuss the potential of blockchain technology to enhance secure, decentralized communication solutions while improving energy efficiency.

### **Cross-Layer Designs for Energy Optimization**

Analyse approaches that integrate multiple layers of communication protocols to optimize energy usage across the network.

### **Distributed Resource Allocation for Sustainable Networks**

Examine strategies for efficient resource management that prioritize energy conservation in network operations.

### **Energy-Aware Multicarrier Communication Systems**

Focus on multicarrier techniques that minimize energy consumption while maintaining high-performance levels.

### **Underwater Communications for Renewable Energy Applications**

Explore technologies facilitating communication in underwater environments, particularly in relation to renewable energy sources.

**Special Session Organizers (names and contact emails):**

(Maximum two members)

Dr. Deepak Sahu

Assistant Professor

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**Special Session Organizers (short bios with photo):**



Deepak Sahu has received his B.E. degree in Electronics and communication Engineering from Rajiv Gandhi Technical University, Bhopal (M.P.), India, in 2012 and M. Tech. in Digital Communication from ABV-India Institute of Information Technology and Management, Gwalior, India in 2014. He has completed his PhD from PDPM- PDPM-Indian Institute of Information Technology, Design and Manufacturing Jabalpur, India in 2023. He is currently working as an Assistant Professor in the Department of Information Communication and Technology, SoT at Pandit Deendayal Energy University (PDEU), Gandhinagar, Gujarat, India. His current research includes Deep learning, Wireless communication, cognitive relay network, Energy efficiency and precoder designing.



Shikha Maurya received her B.Tech (Electronics and Communication Engineering) degree from Uttar Pradesh Technical University in 2012 and M. Tech (Digital Communication) degree from ABV-Indian Institute of Information Technology and Management, Gwalior, India in 2014. She has received Ph.D. in the Department of Electronics and Communication Engineering at the PDPM-Indian Institute of Information Technology, Design and Manufacturing Jabalpur, India in 2019. Presently, she is working as an Assistant Professor at the National Institute of Technology, Agartala, India. Her research is primarily focused on optimizing 5G/6G wireless networks through energy-efficient resource allocation with the emphasis on reducing energy consumption while simultaneously improving throughput.