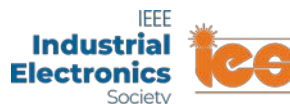




**IEEE International  
Conference on Power  
Electronics and  
Energy (ICPEE 2025)**



## Special Session 12 (SS 12)

### SS 12: Artificial Intelligence and Machine Learning Applications in Power Electronics and Smart Energy Systems

#### Organized and co-chaired by:

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#### Call for Papers

#### Technical Outline of the Session:

This special session explores the integration of Artificial Intelligence (AI) and Machine Learning (ML) techniques in power electronics and smart energy systems. It covers AI-driven control and optimization of power converters, predictive maintenance through fault detection and diagnosis, and intelligent energy management in smart grids. Emphasis is placed on AI-enabled renewable energy integration, energy storage management, and real-time implementation challenges. The session also highlights data analytics, cybersecurity, and hardware deployment of AI algorithms in power systems. Cutting-edge research, case studies, and future directions for enhancing efficiency, reliability, and sustainability in power electronics through AI/ML.

#### Topic of the Session includes, but are not limited to:

- ❖ Machine Learning-Driven Battery Health Monitoring and State-of-Charge Estimation for EVs
- ❖ AI-Powered Coordinated Control of Distributed Energy Resources and EV Charging Stations
- ❖ Intelligent Energy Management and Optimization in Smart Grids Using AI
- ❖ AI-Enabled Integration and Forecasting of Renewable Energy Sources
- ❖ Cybersecurity Strategies for AI-Driven Power Electronics in Smart Energy Networks

#### Important Dates:

**Special Session Paper Submission Due Date: 15.08.2025**

**Notification of Paper Acceptance Date: 31.08.2025**

**Camera Ready Paper Submission Due: 15.10.2025**

**Author guidelines areas per regular paper submission.**

**IEEE Template**

**Submission Portal**

<https://icpee.kiit.ac.in/special-sessions/>

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