

**ECAI 2025**  
**17th Edition**  
**INTERNATIONAL CONFERENCE on Electronics, Computers and Artificial**  
**Intelligence**  
**26 June - 27 June 2025**

**Special Session on**  
**Artificial Intelligence and Embedded Systems for Next-Generation**  
**Energy Conversion**

The integration of Artificial Intelligence (AI) and Embedded Systems into energy conversion processes is transforming the way energy is managed, optimized, and utilized, particularly in the context of renewable energy technologies. These innovations enable advanced capabilities such as real-time monitoring, predictive maintenance, and dynamic optimization, driving more efficient, reliable, and sustainable energy systems.

In renewable energy applications like wind, solar, and hydrogen systems, AI-driven algorithms optimize the performance of power converters, which are vital for regulating and transforming electrical energy between various forms and ensuring seamless integration into grids or standalone systems. Embedded Systems, on the other hand, provide robust platforms for implementing advanced control strategies, enabling low-latency decision-making and enhancing the overall efficiency and reliability of energy conversion processes.

This session focuses on the latest advancements and practical applications of AI and Embedded Systems in energy conversion systems, with a particular emphasis on their role in advancing next-generation renewable energy technologies. Contributions highlighting innovative control strategies, hardware-software integration, simulation models, and experimental validations are especially welcomed.

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

- AI-driven optimization techniques for power converters
- Embedded system applications in real-time energy monitoring and management
- Advanced control strategies for renewable energy integration
- Predictive maintenance and reliability analysis of energy systems
- Novel converter designs and topologies for renewable energy applications
- Real-time decision-making using embedded AI systems
- Dynamic optimization of hybrid renewable energy systems
- Enhancing system stability and grid resilience with AI and Embedded Systems
- Co-design of hardware and software for efficient energy conversion
- Cybersecurity challenges in embedded AI-enabled energy systems

**Organizer(s):**

**Dr. Mourad Yessef**

Engineering, modelling and system Analysis Laboratory (LIMAS).  
Faculty of Sciences Dhar El Mahraz,  
Sidi Mohamed Ben Abdallah (SMBA) University, Fes, Morocco.  
E-mail : [mourad.yessef@usmba.ac.ma](mailto:mourad.yessef@usmba.ac.ma)

**Pr. Dr. Hatim Ameziane**

Electrical Engineering Department  
Science and Technology for the Engineer Laboratory (LaSTI),  
National School of Applied Sciences (ENSA), Khouribga.  
Sultan Moulay Slimane University- Morocco.  
E-mail : [h.ameziane@usms.ma](mailto:h.ameziane@usms.ma)