
**CALL FOR PAPERS**
**SPECIAL SESSION ON**

# AI-Driven Intelligent Diagnostics and Prognostics for Sustainable Industrial Systems

**for ICCAD 2026**
**July 7-9, 2026, Lisbon, Portugal**

**Session Co-Chairs:**
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***Session description:***

This special session addresses the challenge of developing advanced artificial intelligence methods to improve the monitoring, diagnostics, and prognostics of industrial systems in a context where sustainability, energy efficiency, and environmental impact are becoming critical priorities. It addresses the challenges of processing large-scale heterogeneous data, dealing with noisy or incomplete measurements, modelling complex degradation mechanisms, and enabling reliable decision-making for maintenance and resource optimization, while also considering the environmental footprint of AI models themselves, such as computational energy consumption, carbon impact of large-scale training, and the need for greener, more resource-efficient algorithms.

The goal is to bring together researchers and practitioners working on innovative AI-driven solutions for fault detection, anomaly identification, health estimation, and remaining useful life prediction, with an emphasis on sustainable industrial operations. The objective is to highlight recent methodological advances, practical applications, and emerging trends that contribute to reducing energy consumption, minimizing downtime, extending asset lifetime, and supporting eco-efficient maintenance strategies. Ultimately, the session aims to foster interdisciplinary exchanges, promote best practices, and catalyse collaborations between academia and industry around intelligent diagnostics and prognostics for sustainable systems.

***The topics of interest include, but are not limited to:***

- Machine Learning and Deep Learning for intelligent diagnostics and prognostics
- Fault detection, anomaly detection, and health indicator construction

- Sustainable, energy-efficient, and eco-responsible maintenance strategies
- Green AI and resource-efficient model design (low-carbon ML, edge AI, lightweight models)
- Robust signal processing and noise reduction for condition monitoring
- Explainable, trustworthy, and safe AI for industrial systems
- Multi-modal data fusion (vibration, thermal, acoustic, images, operational data)
- Case studies and industrial applications in smart factories, transportation, and energy infrastructures

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- **SUBMISSION**
- Papers must be submitted electronically for peer review by**: January 31, 2026**
- https://www.iccad-conf.com/submission/
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- All papers must be written in English and should describe original work. The length of the paper is limited to a maximum of 6 pages (in the standard IEEE conference double column format).