14th ICCMA 2026

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SPECIAL SESSION 1

Bari, Italy

November 3-5, 2026

The 14th International Conference on Control, Mechatronics and Automation

- ***Predictive Maintenance in Mechatronic Systems: Data-Driven Diagnostics, Condition Monitoring, and Industrial Applications***

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Abstract

Modern industrial environments increasingly rely on predictive maintenance (PdM) to maximize operational availability, minimize unscheduled downtime, and optimize lifecycle management of complex mechatronic assets. By synthesizing advancements in Internet of Things (IoT) infrastructure, edge computing, artificial intelligence, and physical signal processing, PdM transforms traditional reactive and time-based strategies into dynamic, condition-based operational frameworks. This special track focuses on state-of-the-art methodologies and emerging industrial applications across the entire PdM pipeline, from high-fidelity sensor data acquisition and feature extraction (e.g., vibration analysis, thermal profiling, acoustic emissions) to real-time fault detection, isolation, and Remaining Useful Life (RUL) estimation.

This session invites original contributions spanning theoretical foundations, algorithm design, and practical engineering implementations in intelligent condition monitoring and predictive maintenance. We particularly welcome work on unsupervised anomaly detection methods capable of identifying unmodeled degradation and incipient faults in real time, under the non-stationary conditions typical of industrial operation. By bringing together perspectives from control theory, data science, and mechatronic design, the session aims to advance scalable, robust maintenance strategies for next-generation automated systems.

Committee

Conference Chairs

Maria Pia Fanti, Polytechnic University of Bari, Italy
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Qiang Li, Shenzhen Technology University, China
Zhiqiang Ma, Northwestern Polytechnical University, China

Important Dates

Submission Deadline	Notification Deadline	Registration Deadline	Listener Registration
August 25, 2026	September 15, 2026	September 25, 2026	October 25, 2026

TOPICS

*Unsupervised ML algorithms for anomaly behavior analysis under non-stationary operating conditions
*Deep learning and physics-informed models for fault prognosis.
*Edge-AI architectures for real-time monitoring.
*Embedded-AI applications for predictive maintenance.
*Industrial IoT integration.
*Anomaly detection under non-stationary operating conditions.
*Quantitative ROI frameworks for large-scale industrial deployment.
*Physics-Informed Neural Networks (PINNs) and hybrid physical-data modeling.
*Remaining Useful Life (RUL) estimation and health degradation prognostics.

Submission Method

1.Online submission link: https://easychair.org/conferences/?conf=iccma2026
2.Email: *iccma@chairmen.org*
Submission Type: Abstract submission for presentation only without publication;
Full paper submission for both presentation and publication.
Paper Length: The minimum page limit for full paper is full 4 pages including all figures, tables, and references. When it exceeds 6 pages, each additional page (from Page 7) will be chargeable.

History

ICCMA2013|Sydney, Australia on December 6-7, 2013
ICCMA2014|Dubai, UAE on , December 8-10, 2014
ICCMA2015|Barcelona, Spain on December 21-22, 2015
ICCMA2016|Barcelona, Spain on December 7-11, 2016
ICCMA2017|Edmonton, Canada on October 11-13, 2017
ICCMA2018|Tokyo, Japan on October 12-14, 2018
ICCMA2019|Tu Delft, Netherlands on November 6-8, 2019
ICCMA2020|Moscow, Russia on November 6-8, 2020
ICCMA2021|Luxembourg on November 11-14, 2021
ICCMA2022|Luxembourg on November 9-12, 2022
ICCMA 2023|Norway on November 1-3, 2023
ICCMA 2024|London on November 11-13, 2024
ICCMA 2025|Paris on November 24-26, 2025

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