

Special Issue

Intelligent Fault Diagnosis and Predictive Maintenance for Machinery: Advanced Signal Processing and AI-Driven Approaches

Message from the Guest Editors

Alongside the increasing dissemination of Industry 4.0 and intelligent manufacturing, the health management of machinery and equipment is undergoing a paradigm shift from "sensing" to "cognition", and from "diagnosis" to "prediction." Traditional maintenance methods based on rules and fixed thresholds are no longer sufficient to cope with the challenges of complex operating conditions, new failure modes, and massive amounts of multi-source data. Cutting-edge technologies such as artificial intelligence, digital twins, and edge computing provide the core impetus for building a new generation of intelligent operation and maintenance systems that are self-sensing, self-decision-making, and self-evolving. This Special Issue aims to gather the latest breakthrough research from scholars worldwide in the field of intelligent fault diagnosis and predictive maintenance, focusing on algorithmic innovation, cross-domain integration, and engineering implementation, promoting the development of this field towards higher precision, stronger generalization, and greater interpretability, and providing a solid technological foundation for industrial intelligence.

Guest Editors

Dr. Chaoyong Ma

Dr. Kun Zhang

Dr. Yanping Zhu

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
signals@mdpi.com

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About the Journal

Message from the Editor-in-Chief

Our primary goal is to encourage scientists and engineers to publish their theoretical results and developed methods in as much detail as possible. There is no limit to the maximum length of papers. Whenever possible, authors are encouraged to provide relevant data and developed code so that the results can be reproduced. Our goal is to provide a platform for scientists and engineers to share new approaches to signal processing in various application domains.

Editor-in-Chief

Prof. Dr. Santiago Marco

1. Department of Electronics and Biomedical Engineering, University of Barcelona, Martí I Franqués 1, 08028 Barcelona, Spain
2. Signal and Information Processing in Sensor Systems, Institute for Bioengineering of Catalonia, The Barcelona Institute of Science and Technology, Baldiri Rexac 10-12, 08028 Barcelona, Spain

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