

Special Issue

Advanced Signal Processing Methods and Deep Neural Networks for Machine Fault Diagnosis

Message from the Guest Editors

Based on prior fault mechanisms, advanced signal processing are used to extract fault features from machine condition monitoring signals. Compared to this classical fault diagnosis paradigm, deep neural networks (DNN) can directly extract implicit fault features and identify the operating status of the machine. As a purely data-driven diagnostic method, DNN sometimes lack interpretability in their mechanisms and output results. Hence, researchers have used classical signal processing theories to explain the working mechanisms and output results of neural networks, developing a series of interpretable DNN. This Special Issue aims to collect theoretical and applied research for diagnosis on advanced signal processing methods, deep neural networks, and interpretability of deep neural networks based on signal processing theory. Potential research topics include, but are not limited to, the following:

- Machinery fault mechanisms;
- Advanced signal processing methods and their applications in machinery fault diagnosis;
- Fault evaluation indicators;
- DNN methods and their applications in machinery fault diagnosis;
- Interpretability of DNN based on signal processing theory.

Guest Editors

Dr. Shiqian Chen

Dr. Peng Zhou

Dr. Minghui Hu

Dr. Zhuyun Chen

Deadline for manuscript submissions

closed (31 May 2025)



Machines

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 4.7



mdpi.com/si/180794

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

[mdpi.com/journal/
machines](https://mdpi.com/journal/machines)





Machines

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 4.7



[mdpi.com/journal/
machines](https://mdpi.com/journal/machines)



About the Journal

Message from the Editor-in-Chief

Machines is an international, peer reviewed journal on machinery and engineering. It publishes research articles, reviews and communications.

Our aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. There is no restriction on the length of the papers. Full experimental and/or methodical details must be provided.

There are, in addition, unique features of this journal: Manuscripts regarding research proposals and research ideas will be particularly welcomed; Electronic files or software regarding the full details of the calculation and experimental procedure - if unable to be published in a normal way can be deposited as supplementary material.

Editor-in-Chief

Prof. Dr. Antonio J. Marques Cardoso
CISE–Electromechatronic Systems Research Centre, University of Beira Interior, Calçada Fonte do Lameiro, P-6201-001 Covilhã, Portugal

Author Benefits

High Visibility:

indexed within Scopus, SCIE (Web of Science), Inspec, and other databases.

Journal Rank:

JCR - Q2 (Engineering, Mechanical) / CiteScore - Q1 (Control and Optimization)

Rapid Publication:

manuscripts are peer-reviewed and a first decision is provided to authors approximately 17.6 days after submission; acceptance to publication is undertaken in 2.7 days (median values for papers published in this journal in the second half of 2025).