# Special Issue

# Reliability Analysis and Fault Diagnosis of Safety-Critical Systems Using Data-Driven Approaches

## Message from the Guest Editors

Safety-critical systems are vital parts in several industries such as aerospace, maritime, energy, and oil and gas. Their failures can cause immoderate consequences in terms of environmental damage, financial loss, and loss of life. Accordingly, reliability analysis, risk analysis, fault diagnosis, and maintenance optimization are essential to assure safe and reliable operations. However, the complex and dynamic nature of safety-critical systems hinders the former analyses. Data-driven approaches can assist by analyzing system-generated data, possibly leading to the creation of new knowledge. This, in turn, greatly improves precision regarding fault diagnosis and reliability behavior of a system, leading to better failure prevention. The present Special Issue will welcome innovative theoretical and practical contributions related to the development, application, and test of data-driven approaches for reliability analysis and fault diagnosis of safety-critical systems. Methodologies and frameworks accounting for the typical gap between theory and industrial applications are particularly welcome.

## Guest Editors

Dr. Leonardo Leoni

Prof. Dr. Mario Tucci

Dr. Filippo De Carlo

## Deadline for manuscript submissions

31 August 2025

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*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

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