Special Issue

Artificial Intelligence for Fault Detection in Manufacturing

Message from the Guest Editor

We are pleased to invite you to contribute to a Special Issue on "Artificial Intelligence for Fault Detection in Manufacturing: Addressing Data Imbalance for Reliable Quality Control", which will be published in *Mathematics*. This Special Issue focuses on the critical intersection of AI, manufacturing processes, and advanced mathematical techniques, highlighting the importance of addressing data imbalance to enhance the reliability and accuracy of quality control systems. In recent years, the application of AI in manufacturing has become essential for maintaining high standards of quality control. However, a significant challenge in this domain is the imbalance of data, where abnormal or faulty data are scarce compared to normal operational data. This imbalance can hinder the effectiveness of AI-driven fault detection systems. Therefore, this Special Issue aims to gather cutting-edge research that leverages mathematical techniques—such as statistical modeling, data augmentation, and algorithmic optimization—combined with AI to overcome these challenges and improve manufacturing processes.

Guest Editor

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Deadline for manuscript submissions

31 December 2025

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an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 4.6

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About the Journal

Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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