Special Issue Reprint

Advances in Machine Fault Diagnosis

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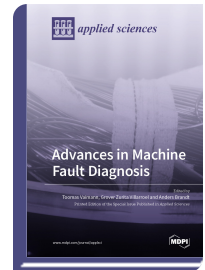Grover Zurita Villarroel
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Research on machine fault diagnosis (MFD) methods is receiving significant attention in academia and industry due to the importance of identifying underlying causes of machine faults. The overall objective of MFD methods is to develop an effective diagnosis procedure. Recent methodological advances permit compressive MFD, providing detailed information essential for the prevention of future machine failures. Some of the most promising approaches for the continuous advancement of fault detection and diagnosis technologies are: advanced digital signal processing, vibration-based condition monitoring, modal and operational mode analysis, neural network analysis, and machine learning. Artificial Intelligence (AI) has become one of the most transformative technological revolutions since, e.g., the invention of the steam or electric engines. Robustness, precision automated (online) learning, and the capacity to handle complex data are some of AI's attributes that hold significant potential for MFD. In hand with the Internet of Things (IoT) and cloud computing, the emerging AI-based diagnostic methods are proving themselves to be powerful tools for the future. The main objective of this Special Issue is to gather state-of-the-art research contributing recent advances in machine fault diagnosis and, hopefully, to outline future research directions in the field.

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