Special Issue

Digital Twin-Enabled Deep Learning for Machinery Health Monitoring

Message from the Guest Editors

Digital twin technology, which creates high-fidelity virtual replicas of physical assets, is transforming numerous industries by enabling real-time monitoring, diagnostics, and optimization. When coupled with deep learning, a subset of artificial intelligence adept at handling large datasets and uncovering intricate patterns, digital twins can significantly enhance machinery health monitoring. This integration allows for more accurate fault detection, predictive maintenance, and overall system reliability, ultimately reducing downtime and maintenance costs. This Special Issue will present the latest research findings, technological advancements, and practical applications related to integrating digital twins with deep learning for machinery health monitoring. This Special Issue encourages submissions that cover, among others, the following topics:

- Advancements in digital twin for machine fault diagnosis;
- Integration of digital twins and deep learning algorithms for health monitoring;
- Advanced sensing and monitoring techniques under variable working conditions;
- Transfer-learning-based mechanical fault diagnosis and prognosis.

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Sensors is a leading journal devoted to fast publication of the latest achievements of technological developments and scientific research in the huge area of physical, chemical and biochemical sensors, including remote sensing and sensor networks. Both experimental and theoretical papers are published, including all aspects of sensor design, technology, proof of concept and application. Sensors organizes Special Issues devoted to specific sensing areas and applications each year.

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