Special Issue

AI-Enhanced Industrial Sensors: From Adaptive Detection to Smart Manufacturing

Message from the Guest Editor

With the rapid advancement of artificial intelligence (AI), industries are moving beyond adaptive detection into the era of smart manufacturing. Meanwhile, sensors play a pivotal role in this transition—as the primary data acquisition gateway, they capture real-time, high-precision data from production lines, equipment, and environments—including temperature, pressure, vibration, imagery, and sound. Without reliable sensing data, AI algorithms lack the foundation for accurate predictions or decisions.

Topics of interest include the following:

- AI-enhanced defect detection and anomaly prediction;
- Real-time sensor data fusion for adaptive process control;
- Self-calibrating and energy-autonomous sensor systems;
- Human–machine collaboration through intelligent sensing.

This Special Issue investigates how AI advances from intelligent detection to integrated smart manufacturing, emphasizing its impact on industrial efficiency, quality, and flexibility. It also underscores the critical synergy between AI and sensor technologies in driving innovation for the future of industry.

Guest Editor

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Deadline for manuscript submissions

25 April 2026

Sensors

an Open Access Journal by MDPI

Impact Factor 3.5
CiteScore 8.2
Indexed in PubMed

mdpi.com/si/250469

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Message from the Editor-in-Chief

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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