

Special Issue

Industry 4.0 and Industry 5.0: Simulators and Algorithms in Manufacturing Processes and Systems

Message from the Guest Editors

Simulators serve as powerful tools for modeling, optimizing, and testing industrial processes in a virtual environment, enabling industries to reduce risks, improve efficiency, and facilitate innovation. Meanwhile, algorithms, particularly those leveraging AI and machine learning, are essential for optimizing resource allocation, enhancing predictive maintenance, and supporting human-machine collaboration. Topics include, but are not limited to:

- Development and application of simulators for smart manufacturing systems
- Algorithms for predictive maintenance, resource optimization, and decision-making in Industry 4.0 and 5.0
- Human-centric AI algorithms in Industry 5.0
- Integration of IoT, CPS, and AI for real-time monitoring and control
- Sustainable manufacturing algorithms and energy-efficient solutions
- Case studies demonstrating the transition from Industry 4.0 to Industry 5.0
- Federated learning applications in Industry 4.0 and 5.0
- Digital twins for real-time industrial process monitoring and control;
- Robotics and human-robot collaboration algorithms in Industry 5.0;

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Deadline for manuscript submissions

30 November 2025



Processes

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