Special Issue

Machine Learning and Data-Driven Techniques for Complex Industrial Processes

Message from the Guest Editors

Big data and machine learning techniques are broadly redefining the state of the art in complex industrial and chemical processes. Using datasets collected from manufacturing, maintenance, operations and environments, data-driven methods make it possible to explore the functioning of complex manufacturing processes and behaviors via combining technologies. Known physical properties are widely incorporated into data-driven models for high-performance process modeling and optimization. The application of industrial big data to enhance industrial intelligence includes process modeling, production design, process control, optimization and scheduling, digital twins for smart manufacturing.

- New methodologies for data-driven modeling and machine learning techniques;
- Data-driven process modeling, monitoring, control, optimization and scheduling;
- Hybrid modeling methods based on industrial big data and process mechanisms for various processes;
- Industrially relevant applications of data-driven models;
- Example usages of digital twins in various complex industries;
- Challenges and potential research directions regarding data-driven techniques for complex industrial processes.

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