Call for Papers

Annals of Operations Research

Special Issue: OR and analytics for digital, resilient, and sustainable manufacturing 4.0

The ***Annals of Operations Research*** seeks submissions for a special issue on "**OR and analytics for digital, resilient, and sustainable manufacturing 4.0"**

Submission deadline: December 31st, 2019

Special Issue Guest-Editors:
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This special issue is targeted towards, but not restricted to, the 9th IFAC Conference MIM 2019 which will take place on August 28-30, 2019 in Berlin. The general theme for the 9th MIM Edition is "Digital, resilient, and sustainable manufacturing 4.0". The MIM 2019 conference papers submitted to this Special Issue must make an additional contribution: they must cite the relevant conference paper and explicitly state what the additional contribution is.

Scope

Today and looking into the near future, manufacturing systems will only be as good as the digital technology behind them. At the same time, increased uncertainty, complexity, and vulnerability of global supply chains and operations have highlighted the importance of further research in resilience. Finally, the focus of companies on increased sustainability poses new challenges in designing and managing manufacturing systems in the age of Industry 4.0.

This special issue seeks new contributions from the OR community in the following areas and at the intersection of those areas: manufacturing and supply chain digitalization, resilience, and sustainability. The application areas of OR and analytics to digital, resilient, and sustainable manufacturing may contain descriptive and diagnostic analysis, predictive simulation and prescriptive optimization, real time control, and adaptive learning. Examples of OR and analytics applications include logistics and supply chain control with real-time data, inventory control and management using sensing data, dynamic resource allocation in Industry 4.0 customized assembly systems, improving forecasting models using Big Data, machine learning techniques for process control, network visibility and risk control, optimizing systems based on predictive information (e.g., predictive maintenance), combining optimization and machine learning algorithms, and supply chain risk analytics.

Success in manufacturing system design and control will become more and more dependent on analytics algorithms in combination with optimization and simulation modelling. Initially intended for process automation, business analytics techniques now disrupt markets and business models and have a significant impact on manufacturing development. Digitalization and Industry 4.0 may significantly influence the optimization techniques in the manufacturing domain as well as the performance of manufacturing systems. With the help of optimization and simulation approaches, current research generates new knowledge on manufacturing system design and control. New digital technologies create new challenges for the application of quantitative analysis techniques to manufacturing and open new ways and problem statements for these applications.

Sourcing, manufacturing, logistics, and sales data are distributed among very different systems, such as ERP, RFID, sensors, and Blockchain. Big Data Analytics integrates this data to information used by artificial intelligence algorithms in the cyber systems and managers in the physical systems. As such, a new generation of simulation and optimization models is arising and evolving into decision-support systems that combine simulation, optimization, and data analytics.

This special issue of ANOR seeks to attract high-quality, high-impact research, state-of-the-art developments building upon methods and applications of OR and analytics to digital, resilient, and sustainable manufacturing 4.0. Submitted papers have to comply with the mission of the journal. Potential topics of OR applications include but are not limited to:

- Supply chain risk analytics,
- Circular supply chain management,
- Intelligent manufacturing systems,
- Resilient supply chain design and planning,
- Logistics and supply chain control with real-time data,
- Inventory control and management using sensing data,
- Combined applications of optimization, simulation, and data analytics
- Dynamic resource allocation in Industry 4.0 customized assembly systems,
- Improving forecasting models using Big Data,
- Impact of additive manufacturing on decision-support systems,
- Machine learning techniques for process control,
- Manufacturing process visibility and risk control,
- Optimizing manufacturing systems based on predictive information,
- Sustainable manufacturing,
- Retail operations
- Engineering, project, and production management,
- Data-driven decision support systems in manufacturing real-time control,
- Dynamic approaches to scheduling.

Strong, new, and insightful conceptual and applications oriented studies that add significantly to the existing body of knowledge are particularly solicited. All papers submitted to the special issue will be peer reviewed in accordance with the standard procedures of the Annals of Operations Research (ANOR) journal.

Manuscript Preparation and Submission
Authors should submit their papers via the journal's online submission site http://www.editorial-manager.com/anor/ and should select the article type S.I.: MIM2019. Authors must follow the ANOR "Guide for Authors" at http://www.springer.com/business/operations+research/journal/10479. Submitted papers should not have been previously published or be currently under consideration for publication elsewhere.

Important Dates:
Submission start after MIM 2019; Deadline for submissions: December 31st 2019

Editors:

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