

Special Issue Proposal

Title: Big data analytics and machine intelligence for management decision-making in complex systems

Description:

With the rapid development of society and technology, today's production, logistics, transportation and other systems are becoming more and more large-scale and complex. Under this circumstance, how to reasonably design and effectively organize the structure and resources of these complex systems has become the most cutting-edge academic highland in the field of management and decision-making. For example, the design and maintenance of high-end equipment, the machines scheduling in manufacturing industry, the vehicles allocation in urban traffic networks, and the operation planning in automated container terminal are all management decision-making problems of complex systems. However, such problems show the characteristics of high-dimensional coupling, nonlinearity and strong dynamics, which pose severe challenges to traditional operations research and even some advance data-driven technologies. Big data analytics and machine intelligence brings dawn to solve these problems and challenges, by taking advantage of massive data brought by advanced sensors, internet of things and cloud computing technologies, as well as cutting-edge theories and methods such as machine learning, swarm intelligence, cognitive science and complex network.

This special session aims to disseminate the latest research advances and important industrial applications of big data analytics and machine intelligence for management decision-making in complex systems. Topics that may be addressed in the contributions of this special session include, but are not limited to:

- Advanced and future perspectives of big data analytics and machine intelligence for complex systems
- Advanced theories for modeling, analysis and management decision-making in complex systems
- Advanced methodologies about machine learning, swarm intelligence, cognitive science, causal inference and complex network
- Big data analytics and machine intelligence for operations research and decision-making in complex systems
- Big data analytics and machine intelligence for performance evaluation and control of complex systems
- Big data analytics and machine intelligence for manufacturing quality control, process monitoring and online decision-making
- Big data analytics and machine intelligence enabled human-robot cooperation in complex systems

- Innovative applications of big data analytics and machine intelligence in production, logistics, health care, or transport systems

Organizers:

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Contributions:

1. “A novel reinforcement learning based hyper-heuristic for heterogeneous vehicle routing problem” by Qin W., et al.
2. “Big data analytics with complex network and Fermat distance for uncovering multimode characteristics of manufacturing systems” by Sun, Y. N., et al.
3. “Data-driven adaptive prediction model for multi-batch wafer yield in semiconductor manufacturing” by Xu H. W., et al.
4. “Network-based dynamic dispatching rule generation mechanism for real-time production scheduling problems” by Zhuang, Z. L., et al.
5. “Heuristic rules for integrated scheduling of automatic container terminal based on complex network” by Zhang Z. L., et al.

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More contributions to be added.