

Proposal for Special Session at IEEE CASE 2021

Session Title: [Data-Driven Automation in Decision Making for Intelligent Systems]

Goal:

An intelligent system is a collection of Internet-connected machines that has the capacity to gather and analyze data and communicate with other systems. It has been applied extensively in such diverse areas as manufacturing, logistics, transportation, health care and public services. Due to the deep integration of automation and informatization, manufacturing and logistics systems are shifting from primary automatic control of equipment to data-driven automated decision making. In addition to manipulator control, fault diagnosis, AGV path planning and other lower-level execution, data-driven automation is more concerned with production scheduling, logistics network design and other upper-level optimization problems. Traditional modelling and optimization algorithms are now facing challenges such as the “Curse of Dimensionality”, high computational complexity and so on. Data-driven methods, such as swarm intelligence, machine learning, reinforcement learning, network analysis and hybrid heuristic methods, have been widely applied to effectively model and analyze the production and transportation process. The aim of this special session is to provide an opportunity for academia and practitioners to share the latest advances and explore future directions in this field.

Examples of topics covered by the Session include (but are not limited to):

- Big data analytics of intelligent systems
- Complex networks methodology for intelligent systems
- Swarm intelligence and multi-agents for intelligent systems
- Machine learning for intelligent systems
- Reinforcement learning for intelligent systems
- Hybrid learning schemes for intelligent systems
- New approaches for artificial intelligence in intelligent systems
- Application of data-driven intelligent systems

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Contributions:

1. “Dynamic dispatching for interbay material handling by using modified Hungarian algorithm and fuzzy-logic-based control” by Qin, W., et al.

2. “Single-machine group scheduling problem considering learning & forgetting effects and preventive maintenance” by Pan, E.S., et al.
3. “Efficiency and Robustness of weighted air transport networks” by Zhou, Y.M., et al.
4. “Optimization for the joint AGV dispatching and routing in automated container terminals” by Teng, H., Zhuang, Z.L.
5. “A two phase method for container stowage planning problem based on ant colony algorithm” by Lee W.L.W., Chen, Y.
6. “Multi-agent reinforcement learning-based dynamic task assignment for vehicles in urban transportation physical internet” by Qin, W., Sun, Y.N.
7. “The Design of Hybrid Hub-and-spoke Networks for Large-scale Dynamic Express Logistics” by Li, Y., et al.

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More contributions to be added.