

Modeling, Control, and Scheduling of Manufacturing Systems with Advanced Techniques (Code: w6f9x)

Goal:

It becomes a great challenge to effectively operate manufacturing systems as demands for customized products are increasing and requirements for high product quality are growing. Manufacturing systems, especially for semiconductors, LCDs, batteries, and biopharmaceuticals, also have many production requirements, such as time window constraints, limited buffers, sequence-dependent setup times, transport robots, and quality control. Therefore, advanced techniques, such as mathematical analysis and modeling, branch and bound, search-based methods, and machine learning, are required to operate such complicated manufacturing systems. Modeling, control, and scheduling of those manufacturing systems with advanced techniques can reduce production cost, increase productivity, guarantee safety, improve quality, and save resource and energy. This special session aims to bring researchers, engineers, scientists, and managers engaged in research, development, and operation of manufacturing systems to tackle various modeling, scheduling, operation, and control issues in such systems subject to different settings. Prospective authors are invited to share their academic results and practical experiences to deal with these challenging issues in this area.

Topics:

- Modeling and scheduling of manufacturing systems
- Control of manufacturing systems with reinforcement learning
- Real-time scheduling of manufacturing systems
- Mathematical analysis for manufacturing system control
- AI-based approach for scheduling of manufacturing systems
- Optimization for automated manufacturing systems
- Meta-learning for scheduling of various manufacturing systems
- Modeling and scheduling of material handling systems for manufacturing systems
- Petri nets and formal models for manufacturing systems

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