Proposal for Special Session at CASE 2022

Goal: The complexity of manufacturing and service systems is embedded through inter-connected components and units and resource-coupled process. Although substantial efforts have been devoted to research and practice of modelling, analysis, design, control, and optimization in manufacturing and service systems, at the advent of Industry 4.0 era, manufacturers gradually change products to platforms as they implement and promote Industry 4.0 technologies. These products then become carriers of communication between manufacturers and customers. Consequently, manufacturers earn revenue not only for sales of their products, but also for the service and utility delivered by those products.

This special session will serve as a forum for researchers and practitioners in this area around the world to share their latest development in manufacturing and service systems.

The organization of the special session will be led by Dr. Liang Zhang (University of Connecticut, USA), Dr. Chao-Bo Yan (Xi'an Jiaotong University, China), Dr. Zhi Pei (Zhejiang University of Technology, China), etc., all of whom are well-recognized scholars that have been working in this field for years.

Session Title: [Manufacturing and Service Systems in the New Era]

Track topics: This session focuses on the modeling, analysis, optimization, and control of manufacturing and service systems. The advancement of new information technologies, such as internet of things, big data, cloud and edge computing, 5G enabled manufacturing, digital twin, manufacturing servitization, and artificial intelligence, which enable more powerful model-based and data-driven methods. And it has generated numerous opportunities to tackle the intractable issues. Submissions of qualitative and quantitative results from researchers and practitioners are strongly encouraged. The topics include, but are not limited to:

- Flexible manufacturing and service systems
- Energy efficient and environment friendly manufacturing and service systems
- Collaborative robots in manufacturing systems
- Smart logistics management in manufacturing and service systems
- Human-machine interaction for production optimization
- Industry 4.0, IoT, cloud & AI for smart production and service
- Complex system modeling and design optimization
- Performance evaluation and continuous improvement
- Real-time control and scheduling
- Smart sensing and control in manufacturing systems
- Real-time control of production and service process
- Dynamic maintenance decision making
- Data-driven modeling, monitoring and control of production and service process
- Service-oriented smart manufacturing and Robot as a Service (RaaS)
- AI-based design and optimization in production and service system
- Digital-twin technology and service-oriented manufacturing technology
- Advanced data analytics for manufacturing and service systems
- Applications and case studies

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Contributions:

1. "Resilience Modeling of Multistage Manufacturing Systems" by Yang Li
2. "Layer time optimization design of large-scale additive manufacturing with fiber reinforced polymer composites" by Eonyeon Jo, Lu Liu, Feng Ju, Dylan Hoskins, Deepak Kumar Pokkalla, Vlastimil Kunc, Uday Vaidya, and Seokpum Kim
3. "Data-based Modeling, Analysis, and Improvement of a Manual Labor-Intensive Production System" by Yuting Sun and Liang Zhang
4. "Production Flow Data Monitoring and Error Correction in Two-Machine Bernoulli Production Lines" by Tianyu Zhu and Liang Zhang
5. "Analysis and Improvement of Batch-Batch Production Systems" by Lingchen Liu and Chao-Bo Yan
6. "An Efficient Heuristic Algorithm for Flexible Job-Shop Scheduling Problem with Due Window" by Yi Ai and Chao-Bo Yan
7. "A Heuristic algorithm for the vehicle routing problem with two-dimensional loading constrains and time windows" by Shunqian Zhou, Chao-Bo Yan, and Junhu Wei
8. "Leader-Follower Based Two-AGV Cooperative Transportation System" by Xuke Fu and Chao-Bo Yan
9. "Efficient and Accurate Simulation of Queues in Communication Systems" by Mingsheng Ma, Shuaipeng Li, and Chao-Bo Yan

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