Proposal for Special Session at IEEE CASE 2022

Goal:

- Manufacturing is characterized by capital/labor-intensive, the short product life cycle, rapid technology migration, long production lead-time, and complex production networks. These characteristics bring more challenges and difficulties to the manufacturing management. This session focuses on how the data science or machine learning techniques support problem-solving and enhance the core competence in manufacturing industry. The special session focuses on data science in manufacturing. Theoretical research or empirical study are all welcome. The topics in this session include anomaly detection, sampling strategy, price forecast, and fault prognostic, scheduling optimization, etc.

- This session would like to provide a platform that offers opportunities to discuss, debate, and exchange ideas, in particular, in a world-side view of manufacturing system. We invite all the researchers, scholars, and graduates when they would like to develop the mathematical/empirical models and benefit the automation and data science field.

- The topics include but are not limited to: Intelligent and Flexible Manufacturing, AI-Based Methods, Factory Automation, Adaptive automation systems; Agent-based collaborative automation systems; Automated fault detection, diagnostics, and prognostics; Big data, data mining, and machine learning; Cloud-based automation; Cyber physical production systems and industry 4.0; Cybersecurity in automation systems; Modeling, simulation, and optimization of automation systems; Sensor-fusion for intelligent automation systems; Smart factories, smart logistics and supply chains; Smart products with embedded intelligence; Smart automation in construction and manufacturing; Sustainability and green automation, etc.

Session Title: [Manufacturing Data Science]

Organizers:

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Contributions:

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1. “Metaheuristic and Reinforcement Learning for Scheduling Optimization in the Petrochemical Industry”
   by Chia-Yen Lee/ Chieh-Ying Ho/ Yu-Hsin Hung/ Yu-Wen Deng
   This paper is presentation only.

2. “Spatio-Temporal Fault Prognostic for Substrate Strip Map in the Semiconductor Assembly Process”
   by Po-Cheng Shen/ Meng-Xiu Lu/ Chia-Yen Lee
   This paper is presentation only.

3. “Deep Learning for Anomaly Detection in Industrial Robotic Arms”
   by Yi-Wei Lu/ Yi-Ching Yeh/ Chia-Yu Hsu
   This paper is presentation only.

4. “Adaptive Sampling Strategies for Overlay Error Compensation in Semiconductor Manufacturing”
   by Chia-Yu Hsu/ Yin-Chu Yao
   This paper is presentation only.

5. On job shop scheduling with restricted set-up time in steel manufacturers
   by Kuo-Ping Lin/ Yu-Hao Liang
   This paper is presentation only.

6. The price of Nickel prediction using hybrid deep learning model in steel manufacturers
   by Kuo-Ping Lin/ Yu-Chen Wang
   This paper is presentation only