

Proposal for Special Session at IEEE CASE 2022

Goal:

- Advanced manufacturing industries worldwide are revolutionizing from technology-driven to value-driven development, where ICT infrastructure built upon the automation, informatization and digitalization process has gradually become a common setting in manufacturing companies. Due to the data-rich and knowledge-intensive nature, manufacturing companies strive and still struggle to fully mine and discover the value on industrial big data. Meanwhile, emerging technologies, including deep learning, knowledge graph, cognitive computing, enables more autonomous/self-X, flexible and resilient manufacturing towards value-driven sustainability with higher cognitive intelligence. However, how industrial big data and cognitive intelligence can be profitably and protectively utilized in actual manufacturing practices is unclear. Several fundamental issues, such as data and knowledge architectural alignment across multiple processes, entities, stages remain unresolved. This special session aims to bring together specialists in different fields of smart manufacturing, information and communication, artificial intelligence, cognitive computing, and other science and engineering domains to address these pressing yet long-standing industrial needs.

Session Title: [Industrial Big Data and Cognitive Intelligence-enabled Manufacturing]

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Contributions:

1. “A knowledge graph-enabled digital delivery approach for aerospace products” by Tao Peng/Jiaqi Tao/Yuming Xu
2. “Interpretable meta learning for anomaly detection with Siamese Graph convolution network in predictive maintenance” by Liqiao Xia/Pai Zheng
3. “A model-based and data-driven hybrid approach for complex equipment predictive maintenance” by Yongshi Liang/Pai Zheng
4. “Process knowledge-based random forest regression for model predictive control on a nonlinear process” by Linjin Sun/Yangjian Ji
5. “Decentralized autonomous manufacturing: A sustainable mass individualization paradigm” by Jiewu Leng/Weinan Sha/Qiang Liu
6. “Cognition-driven robot decision making method in human-machine collaboration environment” by Rong Zhang/Xinyu Li/Jinsong Bao
7. “Skeleton-based real-time human intention recognition and prediction for human-robot collaborative assembly” by Yaqian Zhang/Kai Ding/Jizhuang Hui
8. “Industrial Internet of Things-enabled monitoring and maintenance mechanism for fully mechanized mining equipment” by Geng Zhang/Chun-Hsien Chen
9. “An integrated framework for Industrial Internet of Things-enabled resource collaboration in smart manufacturing shop-floor” by Geng Zhang/Yingfeng Zhang