IEEE Transactions on Computational Social Systems
CALL FOR PAPERS for Special Issue on Social Manufacturing after ChatGPT

Theme: Social Manufacturing (SM), one of the emerging and fast-growing technologies, has attracted attention from academic and industry experts around the world. AI-powered intelligent manufacturing and personalization are becoming prevalent. Interesting research on SM has been conducted and shows promising application potential in the manufacturing fields. However, SM is still in its infancy when it comes to the applications in the product life cycle of large and complex manufacturing scenarios through AI technologies, and the definition and connation of some basic concepts in Cyber-Physical-Social–Systems (CPSSs) are still under development. Meanwhile, cyber-physical-social-connected and service-oriented SM has been widely accepted as a feasible way to utilize tremendous, socialized manufacturing resources for value co-creation. But it is still challenging to guarantee reliability/controllability/predictability during production execution when self-driven/self-organizing/self-adaptive socialized manufacturing resources are involved. Frontier technologies such as parallel systems, digital twin, foundation models, Internet of Things, bring opportunities to SM. Following the algorithmic intelligence represented by AlphaGo, the large language models such as ChatGPT have achieved impressive performance in human-machine interaction and logical reasoning, showing strong linguistic intelligence. Adopting language models in SM processes should be able to capture user requirements and perform algorithm planning more accurately, thereby improving personalized customization and manufacturing efficiency. In addition, the multimodal foundation models, especially foundation models for decision-making in SM processes, may provide flexible solutions and significantly improve the intelligence and generalization of SM systems. How to utilize these new technologies to improve the efficiency and effectiveness of SM systems requires further exploration. Hence, this special issue is expected to explore a wide range of topics related to SM including the connation and concept architecture of SM, advanced information and AI technologies for SM, and application verification of SM in real industrial scenarios.

This special issue focuses on (but not limited to) the following topics:

- The concept, paradigm, and architecture of the CPSS-driven SM and connation of the social part in the CPSS-driven SM;
- The configuration and operation architecture of CPSS-driven SM from multiple manufacturing resource dimensions, such as equipment level, production line level, factory level, cross factory level;
- Foundation models for SM processes, including language, vision, and decision-making tasks;
- Large language model enhanced SM systems, including ChatGPT driven SM;
- Parallel systems and digital twins for SM;
- Security technologies for SM including blockchain and Decentralized Autonomous Organization (DAO);
- Socialized manufacturing resources, communities and prosumer grouping with business interactions in SM Internet;
- Intelligent and interconnected equipment supporting machine-machine and human-machine interactions in SM systems;
- Novel distributed software model for SM;

- Evaluation for the maturity and performance of SM systems;
- Case study of SM in both testbeds and real industrial scenarios, especially in large and complex manufacturing systems.

Submission Procedure:

Papers should be formatted according to the IEEE Transactions on Computational Social Systems guidelines for authors and manuscripts (2-column is required) should be submitted electronically through the online IEEE manuscript submission system.

Important Dates:

Paper Submission Deadline: January 1, 2024
First Review Completed: April 15, 2024.
Revision Due: June 30, 2024
Second Review completed: August 15, 2024
Final Manuscript Due: October 31, 2024

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