

Proposal for Special Session at IEEE CASE 2021

Goal:

The industry 4.0 wind has reinforced the interest of the society on manufacturing and its intrinsic need of being efficient and effective, the survival of industrial companies from competition largely depends on this. Among Industry 4.0 pillars, simulation is a relevant enabling technology for fully exploiting data streams to make fast predictions, quantifying continuous improvement actions and making smart decisions in real time. This special session is interested in research contributions on simulation theory and applications to support, embedded in closed-loop controls, complex processes such as production, logistics, service delivery, etc. A particular interest is on the creation, use and update of simulation models in combination with data driven approaches and the temporal term of decision involved. Topics include, but are not limited to, the following: data-driven simulation modeling & validation, production planning and scheduling, real time simulation-based control, simulation-based optimization, cyber-physical systems, digital twins, manufacturing, transportation and logistics, operations and supply chains, maintenance, health care systems, service systems.

Session Title: **Digital Twins in Manufacturing and Services**

Organizers:

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Contributions:

1. “Automated simulation model generation in manufacturing systems” by Matta A. and Lugaresi G.
2. “A Digital Twin-based approach to the real-time assembly line balancing problem” by L. Ragazzini, N. Saporiti, E. Negri, T. Rossi, M. Macchi, G. Pirovano
3. “Comparing production control policies in supply chain dynamics” by Costa A.
4. “Smart quality control powered by machine learning algorithms” by M. Confalonieri, A. Ferrario, M. Foletti, F. Daniele, N. Bonomi, L. Luceri, F. C. de Santana Gaspar, S. Giordano, P. Pedrazzoli