Proposal for IFAC MIMS 2025 Invited Session

Bridging the Gap: Innovative Approaches to Education in Manufacturing and Supply Chain Automation

Session Overview

This session aims to explore innovative approaches to education in manufacturing automation, addressing the evolving needs of Industry 4.0 and beyond. We will discuss innovative teaching methodologies, curriculum design, and industry collaborations that prepare students for the rapidly changing landscape of automated manufacturing.

Key Topics and Subtopics

1. *Integrating Digital Twins in Manufacturing Education*
2. *AI and Machine Learning in Manufacturing Curricula*
3. *Virtual and Augmented Reality in Manufacturing Training*
4. *Industry-Academia Partnerships for Real-World Learning*
5. *Adaptive Learning Systems in Manufacturing Education*
6. *Cybersecurity in Manufacturing Automation Education*
7. *Automation of Manufacturing Supply Chains*

a. Internet of Things (IoT) in Supply Chain Management:

b. Artificial Intelligence and Machine Learning in Supply Chain Optimization:

c. Blockchain Technology in Supply Chain Traceability

d. Robotic Process Automation (RPA) in Supply Chain Operations

e. Autonomous Vehicles and Drones in Logistics

f. Digital Twins for Supply Chain Simulation:

g. Advanced Analytics and Big Data in Supply Chain Visibility

h. Cloud Computing and Edge Computing in Supply Chain Management

i. Cybersecurity in Automated Supply Chains

j. Sustainable and Circular Supply Chain Automation

These topics cover a wide range of technologies and concepts crucial to the automation of manufacturing supply chains. They address both the technological aspects and the strategic implications of supply chain automation, providing students with a comprehensive understanding of this critical area in modern manufacturing.

Relevance and Impact

As manufacturing continues to evolve with advancements in automation, AI, and IoT, there is a critical need to adapt educational approaches to prepare the workforce of the future. This session will provide valuable insights for educators, industry professionals, and policymakers involved in shaping the future of manufacturing education.

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The potential impact of this session on education in manufacturing automation are significant and multifaceted:

1. *Addressing the Skills Gap*

2. *Enhancing Economic Competitiveness*

3. *Promoting Interdisciplinary Learning*

4. *Fostering Industry-Academia Collaboration*

5. *Accelerating Technology Adoption*

6. *Addressing Ethical and Social Implications*

Targeted Audience

This session is designed to benefit a diverse audience involved in manufacturing education and workforce development:

1. *Educators and Academic Leaders*

2. *Industry Professionals*

3. *Policymakers and Government Representatives*

4. *Educational Technology Providers*

5. *Research and Development Professionals*

6. *Students and Early Career Professionals*

Expected Outcomes

Attendees will gain insights into:

- Innovative educational technologies and methodologies in manufacturing automation
- Strategies for aligning academic curricula with industry needs.
- Best practices for integrating hands-on, practical experiences in automation education.
- Approaches to address the skills gap in the evolving manufacturing landscape.

Session organizers:

Prof. Dr. Hulya Julie Yazici, hyazici@fgcu.edu, Florida Gulf Coast University

Prof. Dr. Sadan Kulturel Konak, sadan@psu.edu, Penn State University

Prof. Dr. Gerhard-Wilhelm Weber, gerhard.weber@put.poznan.pl, Poznan University of Technology

Prof. Dr. Marielle Christiansen , marielle.christiansen@iot.ntnu.no, Norwegian University of Science and Technology