

## Call for Papers - SS 12

# SS12 – Human-Centric Smart Automation: Generative AI and LLM-Driven Human–Robot Collaboration

### Organized and Chaired by

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### FOCUS.

This special session explores human-centric smart automation powered by Generative AI in the context of Industry 5.0. While industrial digitalization is transforming manufacturing, its success depends on effectively integrating advanced technologies with human skills, organizational structures, and management practices. The session highlights the role of Large Language Models (LLMs) and Vision-Language Models (VLMs) in improving human–robot interaction through natural communication, visual understanding, and adaptive decision-making. It also addresses key challenges such as trust, safety, workforce re-skilling, and organizational integration to support resilient and human-centric manufacturing systems.

### TOPICS

- ❖ Generative AI for human-centric smart automation in Industry 5.0
- ❖ Large Language Models (LLMs) for human–robot collaboration in manufacturing
- ❖ Vision–Language Models (VLMs) for visual understanding in industrial environments
- ❖ AI-enabled contextual reasoning and adaptive task planning in manufacturing systems
- ❖ Explainable AI for human–robot interaction and decision support
- ❖ Knowledge transfer and learning in AI-assisted manufacturing systems
- ❖ Trust, transparency, and safety in AI-driven industrial automation
- ❖ Human-in-the-loop AI systems for intelligent manufacturing
- ❖ Multi-modal AI (language, vision, sensor data) for smart factories
- ❖ Resilient and human-centric manufacturing systems powered by Generative AI
- ❖ Ethical and responsible use of Generative AI in industrial automation.

❖ **AIM.** To invite high-quality research contributions that explore the use of Generative AI - particularly Large Language Models and Vision-Language Models, for enabling human-centric smart automation, improved human–robot collaboration, and resilient manufacturing systems in the era of Industry 5.0.

❖ **CONFERENCE FORMAT.** The conference will comprise multi-track sessions for regular papers, to present significant and novel research results with a prospect for a tangible impact on the research area and potential implementations.

### ❖ AUTHOR'S SCHEDULE (2026)

#### ❖ Regular and special sessions papers

Submission deadline ..... April 19  
 Acceptance notification ..... May 25  
 Deadline for final manuscripts ..... July 4

#### ❖ Work-in-progress/Industry practice papers

Submission deadline ..... May 31  
 Acceptance notification ..... June 19  
 Deadline for final manuscripts ..... July 4

### SS Program Committee

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