

ARCAI 2026 Special Sessions Proposal Form

Format: Maximum 4 pages. All pages are formatted to letter paper size with margins of one inch on every side. All texts use single space, Times New Roman, and a font size of 11.

Success of SS: At least 6 accepted & registered papers with authors from at least 2 independent institutions (other than the organizers institutions) should be required for each SS.

Submission: This form should be submitted to icarcai.info@gmail.com once completed.

Special Session on “Innovative Approaches to Modeling, Optimization, Control and Monitoring in Industrial Processes”

Organized by

Principal Organizer(s): (Names with email address and affiliation)

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➤ Technical Outline of the Session and Topics (100-150 words):

The era of Big Data and the rise in machine learning approaches has further transformed modeling and optimization in industrial processes. By analyzing large volumes of operational data, these methods reveal hidden patterns, offering a deeper understanding of system dynamics. Integrating innovative modeling with optimization and control frameworks is crucial for addressing challenges such as process uncertainty and nonlinearity. Advanced monitoring techniques, enhanced by digital tools, facilitate predictive maintenance, reduce downtime, and improve safety. However, a significant gap remains between theoretical frameworks and practical applications. Bridging this gap is essential for advancing the field and ensuring that innovative solutions address the challenges faced by modern industries.

Therefore, this Special Issue aims to highlight original research in this field, with a focus on practical applications. Topics of interest include the following:

- The development of novel modeling techniques for complex industrial processes, including chemical, energy, and manufacturing systems;
- Advanced optimization methods for process improvement, scheduling, and resource allocation;
- State-of-the-art control strategies for nonlinear, high-dimensional, or uncertain systems.
- Safety control theories and applications for industrial processes;
- Innovative monitoring technologies for real-time analysis, fault detection, and predictive maintenance;
- Security and robustness of data-driven models in process monitoring systems;

Accepted and presented papers will be submitted for inclusion into Springer-Lecture Notes in Networks and Systems subject to meeting its scope and quality requirements and indexed by EI Compendex and Scopus. Selected papers will be invited to SCI Journal Special Issues.

2026 3rd International Conference on Advanced Robotics, Control, and Artificial Intelligence

- The integration of modeling, optimization, and control for sustainable energy-efficient processes;
 - Case studies showcasing the applications of innovative methodologies to real-world industrial challenges.
- Outline of the Session

Remark: Ultimately, in accordance with the number of papers permitted by the journal, we will recommend selected high-quality papers to the SCI journal *Processes*.

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