

### Call for Participation - ETFA 2026 Workshop

#### Juliet & Romeo: Expressive Event-Driven Automation and Robotics Platform for Industry 5.0

Organizers and Chairs: Amina Gojak, Sandra Collin, Philip Olhager - Cognibotics AB, Sweden

#### FOCUS

Industrial automation is being reshaped by increasing system complexity, rising demands for flexibility, tighter integration of AI, and shorter product life cycles.

This workshop presents Juliet, a high-level automation and motion programming language, and Romeo, a deterministic real-time runtime enabling predictable and reliable industrial execution. Together, they illustrate a modern, event-driven approach to designing scalable, composable, and intelligent automation systems, bridging the gap between advanced software paradigms and real-world industrial deployment in the context of Industry 5.0.

#### TOPICS

- Combining a modern expressive high-level language with real-time execution
- Event-driven automation design
- Robotic motion coordination
- Integration with industrial platforms such as Bosch Rexroth ctrlX
- Integration with legacy technologies like IEC 61131
- Scalable automation architectures
- AI in industrial automation



#### AIM

Give participants a practical and conceptual understanding of how expressive programming languages can modernize industrial control while preserving predictability and reliability.

The session connects software-defined automation, robotics integration, and Industry 5.0 objectives through demonstrations inspired by real deployments and exhibition scenarios.

#### WORKSHOP OUTLINE

- 09:00-10:00 Juliet & Romeo: Modernizing Automation and Robotics Programming - Amina Gojak
- 10:15-11:30 Expressive Automation & Robotics Programming - Sandra Collin
- 13:00-14:15 AI and Scalability in Industrial Robotics and Automation - Philip Olhager
- 14:30-16:00 Industrial Deployment, Robotics Integration & Research Discussion - All organizers

#### WORKSHOP PRESENTERS

- Amina Gojak, MSc – Development Engineer and core contributor to Juliet and Romeo, lead teacher for The Juliet Language for Motion Programming on Coursera, and contributor to the AORTA research project.
- Sandra Collin, MSc – Robotics Engineer and Product Owner of Juliet Robot Systems. Contributor to the AORTA and CAISA research projects.
- Philip Olhager, MSc – Development Engineer specializing in control systems, robust automation design and AI systems in robotics. Contributor to the AORTA research project.

#### ❖ WORKSHOP FORMAT

Workshop based on invited presentations. Full-day workshop: four sessions on September 8, 2026, combining invited academic/industry talks, industrial demonstrations, Q&A, and a final research discussion/panel.

Relevance to ETFA 2026: software-defined automation, event-driven industrial systems, robotics integration, and AI-enabled manufacturing.