Special Session Proposal for the Polish Control Conference 2026

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Proposed Session Title: "CLARA: Control, Learning, Automation and Robotics for Agriculture"

Abstract:

As the global demand for food increases in the face of climate change, dwindling arable land, and a shrinking agricultural workforce, the role of automation, robotics and control in agriculture has never been more crucial. This special session will explore cutting-edge advances in agricultural automation, control systems, and robotics—technologies that are transforming how we produce food while promoting sustainability and efficiency.

Description:

The session will provide an excellent opportunity for researchers to share and discuss their knowledge and develop new ideas that encompass theory and applications of control and decision systems, automation, robotics, machine learning and IA to the improvement of agricultural processes and tasks.

Topics include agricultural systems modeling, simulation, real-time monitoring, data-driven control, environment-aware planning, sensing and actuation, autonomous robotic systems, automation and control algorithms and methodologies for seeding, weeding, pruning, thinning, fertilizer application, crop monitoring and harvesting.

Attendees will gain insights into the latest research and developments at the intersection of precision agriculture, control systems, automation, robotics from academic and industrial perspectives, as well as the open challenges in the field, the gaps between theory and practice, and novel approaches to tackle the gaps. This workshop will also provide a forum for researchers beyond the agricultural automation and robotics community to learn about this field, encouraging them to apply their expertise in this challenging domain.

By facilitating technical exchange and cross-disciplinary collaboration, this session aims to accelerate the development and deployment of robust, scalable, and intelligent agricultural control and decision systems capable of reducing input usage, increasing productivity, and enhancing resilience in modern farming.