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## Open Invited Track on: Agro-Automation

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This OIT-proposal was defined in the TC8.1 Control in Agriculture –meeting in Seattle USA August 15, 2016.

**Abstract:** This proposal is for an open invited track (OIT) on the problem of sensing, automation and control in agriculture. For robotics in Agriculture, there is a parallel OIT. The main goals of this OIT are to discuss and analyze system level research on sensing, control and automation in different areas of agriculture for increasing agricultural productivity, improving worker health and safety, optimizing resource utilization, and reducing labor requirements. The systems should be tested in real context.

Increasing population, along with growing affluence around the world, will significantly increase the demand for food, feed, fiber, and fuel, which need to be met with static or decreasing agricultural resources, including water, and nutrients. Decreasing availability and increasing cost of labor is another limitation the world is facing today for sustainable agriculture.

Sensing, control, automation and mechanization have been an important means for increasing agricultural productivity, improving worker health and safety, optimizing resource utilization, and reducing labor requirements. The track will provide an opportunity for learning the state-of-the-art and for discussion on past achievements, and future directions in precision and automated agriculture. The conference is also expected to provide a venue for leveraging the advances in other lateral technologies for enhancing the productivity in agriculture.

Characteristic for automation in agriculture is need for robust operation due to changing and harsh conditions, low cost due to seasonal use of systems and clear Human Machine Interface. Usually here constructive research methodology is applied. Firstly, a real world problem is identified. Secondly, a proposed solution is designed. Finally, the constructed solution is evaluated. Subsystems can be tested properly only in connection of whole working systems.

### Specific themes in Agro-automation

1. Crop Phenomics and dynamics
2. Soil, Plant and Environment Sensing
3. Pest and Disease Detection and Management
4. Crop Yield Estimation/Monitoring/Mapping
5. Internet of Things
6. Wireless Sensor Network
7. Big Data and Cloud Computing
8. Decision Support Systems
9. Sensing and Automation for Precision Irrigation
10. Sensing and Automation in Plant Factory, Protected Cultivation and Greenhouses
11. Sensing and Automation in Animal Farming
12. Sensing, Automation for Post-Harvest/Processing

13. Nanotechnology for Precision and Automated Agriculture

14. Crop Systems/Canopy Architectures, Breeding and Genetics for Precision and Automated Agriculture

Web site: none

Code for submitting contributions:

Full description: This file