



Special Track: **Vision and Robotics for Agriculture**

19th International Symposium on Visual Computing

Lake Tahoe, NV, USA

October 21-23, 2024

<https://www.isvc.net/>

Scope

Increasing population, decreasing arable land, climate change, and a declining skilled workforce pose unprecedented challenges to the ability to satisfy the growing demand for food on a global scale. It is thus becoming more and more important to increase or at the very least maintain current productivity while using fewer inputs, such as water and agrichemicals. Precision agriculture aims to address this issue. In recent years there has been a boom in agricultural robotics, machine vision, artificial intelligence, and allied technology (e.g., vegetation-specific sensor development, digital twins, etc.) employed toward improving agricultural automation outcomes. Such efforts have so far been undertaken in a rather decoupled manner. However, several research labs (both in academic and private sector settings) around the world are increasingly co-designing the actuation and perception systems.

The goal of this special track is to solicit paper submissions and bring together researchers and practitioners developing tools in support of agricultural automation that merge visual sensing with autonomy and are deployed into physical robots and tested in the field. We anticipate including contributions that focus both on development of standalone relevant tools (e.g., vegetation-specific visual sensing) as well as system design and integration. To this end, of particular interest are techniques that integrate machine vision and artificial intelligence into agricultural robotics, but methods that focus into any of the topic areas listed below are also relevant and fit well into the scope of this special track, provided there is clear relevance to precision agriculture.

Topics

Topics of interest include but are not limited to:

- Specialized visual sensor design, deployment, and assessment
- Co-design of actuation and perception for agricultural robotics
- Real-time (multi-modal) data collection and processing
- Sensor selection, placement, and calibration for field data acquisition
- Vision-based deployment of (teams of) robots for information acquisition
- (Multi-modal) Machine vision for precision agriculture
- Digital twins in support of deployment of vision-integrated agricultural robotics
- Design of user interfaces for data collection, logging, and presentation
- Generative artificial intelligence in support of agricultural automation

Organizers

Dimitris Zermas, Sentera, St Paul, Minnesota, USA

Konstantinos Karydis, University of California - Riverside, USA

Nikos Papanikolopoulos, University of Minnesota, USA

Kostas Alexis, Norwegian University of Science and Technology, Norway

George Bebis, University of Nevada - Reno, USA

Important Dates

Same as ISVC deadlines, see <http://www.isvc.net/>

Paper Submission Instructions

Same as ISVC paper submission instructions, see <http://www.isvc.net/index.php/paper-submission/>