



## Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping IV (SI209)

*Conference Chairs:* **J. Alex Thomasson**, Texas A&M Univ. (USA); **Mac McKee**, Utah State Univ. (USA); **Robert J. Moorhead**, Mississippi State Univ. (USA)

*Program Committee:* **Atanu Basu**, Ayata (USA); **Christoph Bauer**, KWS SAAT AG (Germany); **Subodh Bhandari**, California State Polytechnic Univ., Pomona (USA); **Andrew N. French**, Agricultural Research Service (USA); **Yufeng Ge**, Univ. of Nebraska-Lincoln (USA); **Cheryl McCarthy**, Univ. of Southern Queensland (Australia); **Seth C. Murray**, Texas A&M Univ. (USA); **Haly Neely**, Texas A&M Univ. (USA); **Boyan Peshlov**, Climate Corp. (USA); **Carl Salvaggio**, Rochester Institute of Technology (USA); **Michael Sama**, Univ. of Kentucky (USA); **Sindhuja Sankaran**, Washington State Univ. (USA); **Ajay Sharda**, Kansas State Univ. (USA); **Yeyin Shi**, Univ. of Nebraska-Lincoln (USA)

*Conference Cosponsor:* **CLIMATE FIELDVIEW**

The use of photonics technologies in agriculture is a rapidly emerging and promising area of study, given the potential impact these technologies offer for rapid crop improvement through breeding and genetics as well optimization of on-farm crop production. The field is in an exciting period of exploration and expansion, as the use of ground- and air-based sensor platforms now permits revolutionizing measurement of plant traits by adding great detail, high throughput, and concomitantly large data volumes. This conference brings together researchers and practitioners in this field to discuss the latest technologies, methods and findings.

Proximal and remote sensing systems including point and array detectors and automated ground-based and aerial vehicles applied to agriculture and high-throughput phenotyping are within the scope of this conference. Both active and passive sensing methods as well as sensors based on material reflectance and transmission and such physical phenomena as fluorescence are pertinent to this conference. Optical sensing extending from the UV through the IR where thermal imaging becomes an important methodology is yet another area of active research of interest.

This conference will place emphasis on the use of unmanned aerial vehicles (UAVs) and ground-based robotic platforms equipped with various sensing technologies for the purpose of plant and crop phenotyping studies as applied to improving crop characteristics including yield, drought tolerance, stress detection, etc.. Contributions are sought on sensing technologies; sensor platforms; and data collection, analysis and visualization schemes. Contributions are welcome which contain results from field studies on topics such as, but not limited to:

- UAVs for remote sensing in agriculture, including autonomous control issues, imaging workflow issues, and imaging software issues
- Ground-based robots for phenotyping
- Hyperspectral imaging
- Multispectral imaging

- Lidar
- Thermal-infrared cameras
- Fluorescence cameras
- Image analysis, data management and data visualization
- Theoretical and empirical estimation techniques including machine learning

### BEST PAPER AWARDS

The Conference Chair and Program Committee would like to recognize pioneers in the field with a Best Paper Award. Two candidates will be selected: one winner for the Best Paper Award and a Runner-up. This award is open to all authors who present in this conference.

#### 2018 Best Paper Award Winners

##### AWARD WINNER

**Hyperspectral detection of methane stressed vegetation** Margot Accettura, Timothy Bauch, Nina Raqueño, Rochester Institute of Technology (USA); Joseph Mallia, NYSEARCH (USA); Carl Salvaggio, Rochester Institute of Technology (USA)

##### RUNNER-UP

**Behavior of vegetation/soil indices in shaded and sunlit pixels and evaluation of different shadow compensation methods using UAV high-resolution imagery over vineyards** Mahyar Aboutalebi, Alfonso F. Torres-Rua, Mac McKee, Utah State Univ. (USA); William Kustas, Agricultural Research Service (USA); Hector Nieto, Research & Technology Food & Agriculture (Spain); Calvin Coopmans, Utah State Univ. (USA)

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- Commercial papers, papers with no new research/development content, and papers where supporting data or a technical description cannot be given for proprietary reasons will not be accepted for presentation in this conference.
- Please do not submit the same, or similar, abstracts to multiple conferences.

### REVIEW, NOTIFICATION, AND PROGRAM PLACEMENT INFORMATION

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- Conference Chair/Editors reserve the right to reject for presentation any paper that does not meet content or presentation expectations.
- The contact author will receive notification of acceptance and presentation details by e-mail no later than **10 December 2018**.
- Final placement in an oral or poster session is subject to the Chairs' discretion.

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Abstracts Due: **3 OCTOBER 2018**

Manuscript Due Date: **20 MARCH 2019**



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