

# Advances and Challenges in Agricultural Cyber-Physical Systems

Soumik Sarkar, Baskar Ganapathysubramanian

Iowa State University

Pavithra Prabhakar

Kansas State University

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# Agricultural Cyber-Physical Systems

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- ❖ Advances in sensing and computation are transforming traditional plant and animal based agriculture to sophisticated cyber-physical systems.
- ❖ What are the critical advancements agricultural CPS has seen?
- ❖ What are the challenges for the future?

# Keynote Speakers & Panel

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- ❖ Government:

- ❖ Dr. Steven J Thomson (USDA/NIFA),

- ❖ Dr. Angelica Van Goor (AAAS Fellow - USDA/NIFA)

- ❖ Academic Perspective:

- ❖ Prof. Jayne Wu (University of Tennessee - Knoxville)

- ❖ Industrial Perspective:

- ❖ Prof. Asheesh Singh (Iowa State University)

- ❖ George Kantor (Carnegie Mellon University)

- ❖ Girish Chowdhary (University of Illinois at Urbana Champaign)

- ❖ Marin Kobilarov (Johns Hopkins University)

- ❖ Ajay Sharda (Kansas State University)

- ❖ Simone Silvestri (University of Kentucky)

# Advancements/Challenges in CPS-Agriculture

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- ❖ Identification of CPS relevant agricultural applications both in plant based and animal based agriculture
- ❖ Success stories in sensing, robotic data acquisition, data analytics, decision making
- ❖ Boosted by joint NSF/USDA-NIFA programs

# Challenges in CPS-Agriculture

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- ❖ One size fits all solutions would not be appropriate
- ❖ Limited connectivity, especially, in parts of the rural communities
- ❖ Data benchmarking, sharing and standardization
- ❖ Technology adoption (cost, but also social and behavioral aspects)
- ❖ Intelligent manipulation (existential problem for certain ag industries)
- ❖ Environmental impact (nitrogen cycles)
- ❖ Regulations
- ❖ Scalability and profitability