

# UAS Integration for Fire Operation Workshop



**Haiyang Chao**

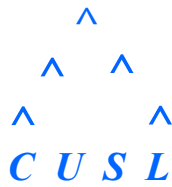
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# Workshop Support & Organization

## **USDA-NIFA National Robotics Initiative (NRI)**

### **Collaborative Autonomy and Safety for Teamed Human- Unmanned Aircraft Systems in Fast Evolving Wildfire Environment**

- Dr. Xiaolin Hu (Georgia State Univ.)
- Dr. Ming Xin (Univ. Missouri)
- Dr. Haiyang Chao (University of Kansas)
- Sheena Parsons (Kansas Biological Survey)

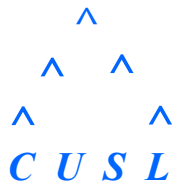


## **NSF Smart and Connected Community (SCC)**

### **SCC-PG: Smart and Safe Prescribed Burning for Rangeland and Farmland Communities**

- Dr. Xiaolin Hu (Georgia State Univ.)
- Dr. Ming Xin (Univ. Missouri)
- Dr. Haiyang Chao (University of Kansas)
- Dr. Walter Fick (Kansas State University)
- Dr. Zifei Liu (Kansas State University)





# Workshop Summary

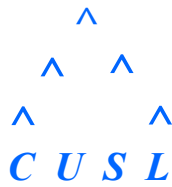
## Objective

- The goal of our workshop is to bring together UAS developers and operators, prescribed fire operators, wildfire fighters, and emergency response agency for idea exchange and discussions on how we can integrate new UAS technology to both wildfire fighting and prescribed fire operations.

## Participants

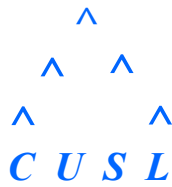
- University researchers on UAS development, robotics, remote sensing, meteorology, rangeland management, and ecology.
- Kansas local prescribed fire burn associations.
- Firefighters.
- Kansas emergency response agency.
- UAS wildfire operators.





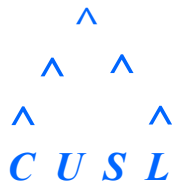
# Workshop Schedule

- Introduction & Opening (8:45-9:00 CDT)
- Plenary talk (9:00-9:30 CDT)
  - “Wildfire-induced cascading geohazards and programming at USDA NIFA for hazards mitigation”, Steven Thomson, USDA NIFA, and Farshid Vahedifard, Mississippi State University
- Technical Presentations (9:30-11:00 CDT)
  - 9:30 – 9:45, “Fire metrics measurement using sUAS”, Haiyang Chao, University of Kansas
  - 9:45 – 10:00, “UAS data enabled operational fire spread simulation”, Xiaolin Hu, Georgia State University
  - 10:00-10:15, “Smoke management for prescribed burning”, Zifei Liu, Kansas State University
  - 10:15-10:30, “Reasons for conducting a prescribed Burn”, Walter Fick, Kansas State University
  - 10:30-10:45, “Prescribed fire setting using multi-rotor UAS”, Carrick Detweiler, University of Nebraska, Lincoln and Drone Amplified
  - 10:45-11:00, “sUAS data sharing guidelines”, Lindsay Barbieri, Earth Science Information Partners (ESIP)



# Workshop Schedule

- UAS for Wildfire Operation Discussion (11:00-12:30 CDT)  
Moderator: Haiyang Chao and Sheena Parsons
  - Objective: UAS safety and wildfire integration challenges/needs
- Lunch Break (12:30-13:30 CDT)
- Prescribed Fire Community Discussions (13:30-15:00 CDT)  
Moderator: Walter Fick and Xiaolin Hu
  - Objective: how to integrate UAS and fire behavior simulation to achieve smarter and safer prescribed burning?
- Open Discussions (15:00-15:30 CDT)
  - UAS and payload demonstration
  - Fire data collection and data sharing



# Workshop Remind

- Please turn off your video and audio unless you are presenting or you are asking a question.
- Please respect other people's opinion.
- Please put your name in the shared GoogleDoc if you don't mind.
- Please use Zoom Chat and/or GoogleDoc for question and answers and for discussion.
- Zoom video will be recorded only for minutes and notes taking.

