From Farm to Takeoff: Small Unmanned Robots for Agricultural and Biological Systems
Sierra Young
Assistant Professor and Extension Specialist, Department of Biological and Agricultural Engineering
North Carolina State University

Monday, December 9th, 2019
114 Gates Hall, Ithaca, NY
11:30 am – Networking & Lunch
12:00 – 12:45 pm – Presentation with Live Stream: https://cornell.zoom.us/j/776293354
12:45 – 1:00 pm – Q&A

Abstract:

Biological and agricultural environments are dynamic, unstructured, and uncertain, posing challenges for data collection at the necessary spatial and temporal scales to enable meaningful systems analysis. Small unmanned systems, however, can overcome some of these challenges by enabling autonomous or human-assisted image-based and in situ data collection. This talk will present a suite of technologies that leverage robotics and computer vision to broaden sensing and sensemaking across different types of biological and agricultural environments. Demonstrative case studies in each system will be presented, including rapid mobile phenotyping of row crops and focused human-robot interaction studies for aerial telemanipulation, with a focus on their potential in precision agriculture. The material covered in this talk will illustrate how the strategic, user-focused design of robotics and automated systems to overcome unique data collection challenges can enable better understanding and decision-making for dynamic biological and agricultural systems.

Bio:
Dr. Sierra Young is an Assistant Professor and Extension Specialist in the Biological and Agricultural Engineering Department at North Carolina State University. Broadly speaking, her research focuses on the use of robotics and automation for sensing and sense-making in agricultural and natural systems, and human-robot interaction for small unmanned systems. Before arriving at North Carolina State, she worked as a Visiting Scholar in the Agricultural and Biosystems Engineering Department at Iowa State University. Dr. Young received her Ph.D. in Civil Engineering as a Department of Defense NDSEG Fellow with a focus on the human-robot interaction for physical object manipulation by small unmanned aerial systems from the University of Illinois at Urbana-Champaign in 2018.

**Background on the Cornell Initiative for Digital Agriculture:**

An interdisciplinary group of Cornell University faculty began meeting in early 2017 to formulate an Initiative for Digital Agriculture (DA), believing that Cornell is uniquely equipped to lead in this emerging arena that will benefit the public for generations. We define DA to mean the application of computational and information technologies coupled with nanotechnology, biology, systems engineering and economics to both the research and operational sides of agriculture and food production. With approximately 100 faculty from 5 Cornell colleges participating, we are collaborating with external stakeholders to shape and implement a research agenda for DA that will build a pipeline of discovery and innovations for the next 10+ years. Please contact Tim Vanini at tv37@cornell.edu with any questions.