

# Sierra N. Young

Agricultural and Biosystems Engineering  
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## Education

- 2018 (expected) Ph.D. Civil and Environmental Engineering, University of Illinois at Urbana-Champaign  
Dissertation: *Telemanipulation in Small Unmanned Aerial Systems* (Chair: Joshua M. Peschel)
- 2015 M.S. Civil and Environmental Engineering, University of Illinois at Urbana-Champaign
- 2014 B.S. Civil and Environmental Engineering, Cornell University

## Academic Appointments

- since 2017 Visiting Scholar, Agricultural and Biosystems Engineering, Iowa State University

## Fellowships

- 2016 National Defense Science and Engineering Graduate Fellowship, U.S. Department of Defense
- 2016 FMC Educational Fund Fellowship, FMC Technologies, University of Illinois at Urbana-Champaign

## Publications

### REFEREED JOURNAL ARTICLES

- 5. **Sierra N. Young**, Joshua M. Peschel, and Erkan Kayacan. (2018) "Design and Field Evaluation of a Ground Robot for High-Throughput Phenotyping of Energy Sorghum." *Precision Agriculture*, (accepted with minor revisions).
- 4. **Sierra N. Young** and Joshua M. Peschel. (2018) "Human-Machine Interaction for Telemanipulation Tasks in Micro Unmanned Aerial Systems." *IEEE Transactions on Human-Machine Systems*, under review.
- 3. Gopal Penny, Veena Srinivasan, Apoorva R., Joshua M. Peschel, **Sierra N. Young**, and Sally E. Thompson. (2018) "A Process-Based Hydrologic Reconstruction to Understand Streamflow Decline in a Human-Dominated Semiarid Catchment." *Hydrological Processes*, under review.
- 2. Erkan Kayacan, **Sierra N. Young**, Joshua Peschel, and Girish Chowdhary. (2018) "High Precision Control of Tracked Field Robots in the Presence of Unknown Traction Coefficients." *Journal of Field Robotics*, 1-13. [doi.org/10.1002/rob.21794](https://doi.org/10.1002/rob.21794).
- 1. **Sierra N. Young**, Joshua M. Peschel, Gopal Penny, Sally Thompson, and Veena Srinivasan. (2017) "Robot-Assisted Measurement for Hydrologic Understanding in Data Sparse Regions." *Water*, 9(7). [doi:10.3390/w9070494](https://doi.org/10.3390/w9070494).

## Awards and Honors

2018	Global Water Security for Agriculture and Natural Resources Conference Travel Award, ASABE
2018	Graduate College Travel Award, University of Illinois at Urbana-Champaign
2017	Springer Best Oral Presentation Award, Innovative Strategies for Sustainable Water Management
2015	ARPA-E Energy Innovation Summit Student Program, U.S. Department of Energy ARPA-E

## Invited Talks and Seminars

7. “Unmanned Systems for Sensing and Sense-Making in Agricultural and Natural Environments.” Food, Agricultural and Biological Engineering Departmental Seminar, The Ohio State University, April 10, 2018, Columbus, OH, USA.
6. “Robotics and Automation for Sensing in Agricultural and Natural Systems.” Biosystems and Engineering Departmental Seminar, North Carolina State University, March 19, 2018, Raleigh, NC, USA.
5. “Robotics and Automation for Sensing in Agricultural and Natural Systems.” Biosystems Engineering Departmental Seminar, Auburn University, March 8, 2018, Auburn, AL, USA.
4. “Human-Machine Interaction in Robotics and Automation for Sensing and Sense-Making.” Agricultural and Biosystems Engineering Departmental Seminar, Purdue University, February 26, 2018, West Lafayette, IN, USA.
3. “Design and Evaluation of a Ground Vehicle for Field-Based Phenotyping of Energy Sorghum.” *Phenome 2018*, American Society of Plant Biologists, February 14-17, 2018, Tucson, AZ, USA.
2. “Robot-Assisted Measurements in a Data-Sparse Region of India.” Ven Te Chow Hydrosystems Seminar, University of Illinois, Urbana, IL, USA, April 15, 2016.
1. “Bathymetric Data Collection Using Multiple Robotics Platforms: UAVs, USVs, and Kite Aerial Photography.” Linking Robotics, Citizen Science and Remote Sensing to Advance Water Science in Data-Scarce Regions Seminar, Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore, Karnataka, India, June 12, 2015.

## Conference Presentations

10. **Sierra N. Young**, Ryan Lanciloti, and Joshua M. Peschel. (2018) “Unmanned Systems for Agricultural Water Measurement and Management.” Global Water Security for Agricultural and Natural Resources (ASABE Global Initiative Conference), October 3-6, 2018, Hyderabad, India. (oral)
9. **Sierra N. Young**, Karun Koppula, Ryan Lanciloti, Jacob Riesen, and Joshua M. Peschel. (2018) “Tele-manipulation by Unmanned Aerial Vehicles for Agricultural Data Applications.” American Society of Agricultural and Biological Engineers (ASABE) International Meeting, July 29-August 1, 2018, Detroit, MI, USA. (oral)
8. **Sierra N. Young**, Jacob Riesen, and Joshua M. Peschel. (2018) “In Situ Measurement of Soil-Water Parameters using a Micro Unmanned Aerial Vehicle.” *World Environmental and Water Resources Congress*, American Society of Civil Engineers, June 3-7, 2018, Minneapolis, MN USA. (oral)

7. Joshua M. Peschel and **Sierra N. Young**. (2017). "Human-Robot Teaming for Hydrologic Data Gathering at Multiple Scales." American Geophysical Union Fall Meeting, December 11–17, 2017, New Orleans, LA, USA.
6. **Sierra N. Young**. (2017) "Field Application of Small, Low-Cost Robots for Remote Surface Data Collection." Innovative Strategies for Sustainable Water Management, November 17-18, 2017, Phagwara, Punjab, India. ***\*Best Oral Presentation and Springer Abstract Award.***
5. Joshua M. Peschel and **Sierra N. Young**. (2016). "Robot-Assisted Socio-Hydrologic and Water Quality Understanding in Data Sparse Regions." American Geophysical Union Fall Meeting, December 12–16, 2016, San Francisco, CA, USA.
4. **Sierra N. Young** and Joshua M. Peschel. (2016) "Bathymetric Mapping with a Small Unmanned Surface System." *World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 22–26, 2016, West Palm Beach, FL, USA. (poster)
3. **Sierra N. Young** and Joshua M. Peschel. (2015) "Waterway-View Imaging with a Small Unmanned Surface System." American Geophysical Union Fall Meeting, December 14–18, 2015, San Francisco, CA, USA. (poster)
2. Joshua Peschel, **Sierra N. Young**, Gopal Penny, Sally Thompson, and Veena Srinivasan. (2015) "Robot-Assisted Measurements in Data Sparse Regions." American Geophysical Union Fall Meeting, December 14–18, 2015, San Francisco, CA, USA.
1. Gopal Penny, Sally E. Thompson, Veena Srinivasan, Joshua M. Peschel, and **Sierra N. Young**. (2015) "Streamflow Generation in a Drying Catchment Outside Bangalore, India." American Geophysical Union Fall Meeting, December 14–18, 2015, San Francisco, CA, USA.

## Campus Presentations

5. "Design and Control of Small Manipulators for Unmanned Aerial Vehicles (UAVs)." (2018) Alex Vande Loo, Ben Burright, Joe Early, Josh Lacoma, Jack Wilkinson, **Sierra N. Young**, and Joshua Peschel. Iowa State University Research Day, April 25, 2018, Ames IA, USA.
4. "Water Measurement System for Unmanned Surface Vehicles." (2018) Ryan Lanciloti, Noah Brady, Dakota Berbrich, Daniel Myers, **Sierra N. Young**, and Joshua Peschel. Iowa State University Research Day, April 25, 2018, Ames IA, USA.
3. "Unmanned Aerial Vehicle Interface Development." (2018) Samuel Hassebroek, Jamie Peterson, Anthony Rosenhamer, **Sierra N. Young**, and Joshua Peschel. Iowa State University Research Day, April 25, 2018, Ames IA, USA.
2. "Design of a Soil Sampling Mechanism for Unmanned Aerial Vehicles." (2018) Robert Steiner, Jacob Riesen, **Sierra N. Young**, and Joshua Peschel. Iowa State University Research Day, April 25, 2018, Ames IA, USA.
1. "Robot-Assisted Hydrologic Measurements in Data Sparse Regions." (2018) **Sierra N. Young**, and Joshua Peschel. Illinois Water Day, April 8, 2016, Urbana, IL, USA.

## Instruction

### UNDERGRADUATE STUDENTS SUPERVISED

Mr. Jacob Riesen (Iowa State); Spring and Summer 2018

Project Title: An *In Situ* Soil Sensing Payload for Use with an Unmanned Aerial Vehicle

Mr. Ryan Lanciiloti (Iowa State); Spring and Summer 2018

Project Title: Unmanned Surface Vehicle for Automated Water Quality Measurement

Mr. Karun Koppula (Illinois); May 2017 – January 2018

Project Title: Modeling and Control of a Quadcopter Capable of Manipulation

Mr. Lukai Jin (Illinois); June 2017 – December 2017

Report Title: Design, Fabrication, and Control of a Robotic Manipulator for Aerial Applications

Ms. Katelyn Schoedl (CEE REU, Illinois); Spring 2017

Report Title: Review of the Human-Robot Interaction for Manipulating Unmanned Aerial Vehicles

Mr. Nick Lofdahl (Illinois); Spring 2016

Report Title: Power Supply and Consumption Analysis of a Ground Robot

### TEACHING EXPERIENCE

- Spring 2018 Co-Instructor, Iowa State University, *ABE 690 Visual Sensing and Sensemaking*  
Lecture and lab-based course for 38 graduate students serving as an introduction for two- and three-dimensional visual sensing for automated sensemaking in agricultural, natural, and urban systems. Focuses on understanding both the theory and hands-on aspects of computer vision for measuring and managing complex systems.
- Spring 2018 Co-Instructor, Iowa State University, *HON 290H Honors Program*  
Independent study research-based course on topics of an interdisciplinary nature. Provides an introduction to research methodology and hands-on experience with various projects in a robotics and sensing lab. Intended for freshmen and sophomores who have membership in and permission of the University Honors Program.
- Spring 2016 Teaching Assistant, UIUC, *CEE 592 Sustainable Urban Systems*  
Lecture-discussion course for 37 graduate students on the fundamental concepts of sustainability and resilience in urban systems, including the complex interactions among human, engineered, and natural systems. Project-based format, focusing on real-world problems solicited from government agencies, industry, and non-governmental organizations in the City of Chicago.

### WORKSHOPS

“Hardware and Sensors.” Instructor, Phenome Digital Phenotyping Workshop, Phenome 2018, Tucson, AZ, USA, February 13-14, 2018.

“Unmanned Aerial Vehicles in Intensively Managed Landscapes.” Instructor, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI), Role of Runoff and Erosion on Soil Carbon Stocks Workshop, Purdue University, West Lafayette, IN, USA, October 20-21, 2015.

## Service to the Profession

### APPOINTED OR ELECTED LEADERSHIP

2019	Secretary, Emerging Information Systems (ITSC-254) Committee, American Society of Agricultural and Biological Engineers, Boston, MA
2016-2018	Director and Liaison, Graduate Women in the Society of Women Engineers, University of Illinois at Urbana-Champaign
2015-2016	Representative, Civil and Environmental Engineering Graduate Student Advisory Committee, University of Illinois at Urbana-Champaign
2014-2015	Team Lead, University of Illinois Department of Energy Race to Zero Competition Team

### COMMITTEE MEMBERSHIP INVOLVEMENT

since 2018	Emerging and Innovative Technologies Committee, ASCE EWRI
since 2018	Emerging Information Systems Committee (ITSC-254), ASABE
2018-2019	Phenome 2019 Conference Program Committee
2018-2019	EWRI Unmanned Systems for Environmental and Water Resources Task Committee

### MEMBERSHIP IN PROFESSIONAL AND HONORARY SOCIETIES

since 2017	American Society of Agricultural and Biological Engineers
since 2017	Institute of Electrical and Electronics Engineers
since 2015	American Geophysical Union
since 2014	National Honor Society Tau Beta Pi
since 2013	National Honor Society Chi Epsilon
since 2013	Society of Women Engineers
since 2012	American Society of Civil Engineers

## Departmental and University Service

### UNIVERSITY OF ILLINOIS CAMPUS SERVICE

2016	Organizer and Volunteer, Girls' Adventures in Mathematics, Engineering, and Science Camp
2016	Organizer and Volunteer, Booker T. Washington Elementary School STEM Academy
2015-2016	Volunteer, Nanoscale Science and Technology Resources for Community Teaching
2014-2016	Volunteer, University of Illinois Engineering Open House
since 2015	Organizer and Volunteer, Women Exploring Graduate Opportunities in CEE
since 2015	Committee Member, Graduate Society of Women Engineers

## Community Involvement

### PUBLIC LECTURES

2. "Blow-Up and Robot Stories." PechaKucha Night Champaign-Urbana, Volume 23, February 11, 2017, Urbana, IL, USA.
1. "Robots in the Wild." Girl Scouts of Central Illinois Camp Kiwanis Instructional Facility at Lake of the Woods, October 1, 2016, Mahomet, IL, USA.