Sierra N. Young, Ph.D.

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Education

2018 Ph.D. Civil Engineering, University of Illinois at Urbana-Champaign
2015 M.S. Civil Engineering, University of Illinois at Urbana-Champaign
2014 B.S. Civil and Environmental Engineering, Cornell University

Academic Appointments

2019 Assistant Professor of Biological and Agricultural Engineering
North Carolina State University

2017-2018 Visiting Scholar of Agricultural and Biosystems Engineering
Iowa State University

Publications

Refereed Journal Articles

5. **Sierra N. Young** and Joshua M. Peschel. (2018) "Human-Machine Interaction for Telemanipulation in Small Unmanned Aerial Systems." *IEEE Transactions on Human-Machine Systems*, under review.

4. **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*, 1-26. doi:10.1007/s11119-018-9601-6.

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.

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.

Publications in Preparation

2. **Sierra N. Young**, Ryan Lanciloti, and Joshua M. Peschel. "Human-Robot Interaction for Telemanipulation Tasks by Small Unmanned Aerial Systems." *IEEE Transactions on Human-Machine Systems.*

1. **Sierra N. Young**. "Advancements and Challenges in Technology and Data Management Practices of Field-Based, High-Throughput Phenotyping." *Sensors: Selected Papers from Phenome 2019.*

Awards and Fellowships

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
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
2015 ARPA-E Energy Innovation Summit Student Program, U.S. Department of Energy ARPA-E

Invited Talks and Seminars

8. "Advancements and Challenges in Technology and Data Management Practices of Field-Based, High-Throughput Phenotyping." *Phenome 2019*, American Society of Plant Biologists, February 6-9, 2019, Tucson, AZ, USA.

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." Biological and Agricultural 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 and Posters

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) "Telemanipulation 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. (oral)

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. (poster)

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. (oral)

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. (poster)

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." (2016) **Sierra N. Young**, and Joshua Peschel. Illinois Water Day, April 8, 2016, Urbana, IL, USA.

Instruction

Teaching Experience

Spring 2019 Co-Instructor, North Carolina State University, *BAE 401 Sensors and Controls*
Lecture and lab-based course for undergraduate and 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.

Spring 2018 Co-Instructor, Iowa State University, *ABE 690 Visual Sensing and Sensemaking*
Lecture and lab-based course for 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.

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 in a robotics and sensing lab. Intended for freshmen and sophomores with membership in the University Honors Program.

Spring 2016 Teaching Assistant, UIUC, *CEE 592 Sustainable Urban Systems*
Lecture-discussion course for 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 2019, Tucson, AZ, USA, February 6-9, 2019.

"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 Technical Committee on Agricultural Robotics and Automation, IEEE RAS

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, ASPB

2018-2019 Unmanned Systems for Environmental and Water Resources Task Committee, ASCE EWRI

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

2015-2018 Committee Member, Graduate Women in the Society of Women Engineers

2015-2017 Organizer and Volunteer, Women Exploring Graduate Opportunities in CEE

2017 Committee Member, Women Empowered in STEM Conference (weSTEM) Organizing Committee

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

Community Outreach and 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.