

Sierra N. Young, Ph.D.

Biological and Agricultural Engineering
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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

since 2019	Assistant Professor	Biological and Agricultural Engineering	NC State University
2018	Visiting Scholar	Agricultural and Biosystems Engineering	Iowa State University

Awards and Honors

2020 [US Frontiers of Engineering Symposium](#) Invited Speaker & Participant, National Academy Engineering, *by nomination and invitation only*
2020 New Faces of the American Society of Agricultural and Biological Engineering (ASABE) Class of 2020 and Top Honoree
2018 Global Water Security for Agriculture and Natural Resources Conference Travel Award, ASABE
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

Peer-Reviewed Journal Publications

[†] indicates corresponding author(s)
Publications with advised students* and postdocs** as noted

- [11] **S. Young[†]**, R. Lanciloti, and J. Peschel, “The effects of interface views on performing aerial telemanipulation tasks using small UAVs,” *International Journal of Social Robotics (accepted)*, 2021.
- [10] Y. Lu^{†**}, T. Walker, K. Payn, J. Acosta, **S. Young**, P. Pandey*, and A. Heine, “Prediction of freeze damage and minimum winter temperature of the seed source of loblolly pine seedlings using hyperspectral imaging,” *Forest Science (in press)*, 2021. DOI: [10.1093/forsci/fxab003](https://doi.org/10.1093/forsci/fxab003).
- [9] P. Pandey*, H. Dakshinamurthy*, and **S. Young[†]**, “Autonomy in detection, actuation, and planning for robotic weeding systems,” *Transactions of the ASABE (in press)*, 2021. DOI: [10.13031/trans.14085](https://doi.org/10.13031/trans.14085).
- [8] R. Aharoni, V. Klymiuk, B. Sarusi, **S. Young**, T. Fahima, B. Fishbain, and S. Kendler, “Spectral light-reflection data dimensionality reduction for timely detection of yellow rust,” *Precision Agriculture*, 2020, ISSN: 1573-1618. DOI: [10.1007/s11119-020-09742-2](https://doi.org/10.1007/s11119-020-09742-2).

- [7] G. Penny, V. Srinivasan, R. Apoorva, K. Jeremiah, J. Peschel, **S. Young**, and S. Thompson, "A process-based approach to attribution of historical streamflow decline in a data-scarce and human-dominated watershed," *Hydrological Processes*, vol. 34, no. 8, pp. 1981–1995, 2020. DOI: [10.1002/hyp.13707](https://doi.org/10.1002/hyp.13707).
- [6] **S. Young** and J. Peschel, "Review of human-machine interfaces for small unmanned systems with robotic manipulators," *IEEE Transactions on Human-Machine Systems*, vol. 50, no. 2, pp. 131–143, 2020. DOI: [10.1109/THMS.2020.2969380](https://doi.org/10.1109/THMS.2020.2969380).
- [5] Y. Lu** and **S. Young**, "A survey of public datasets for computer vision tasks in precision agriculture," *Computers and Electronics in Agriculture*, vol. 178, p. 105760, 2020. DOI: [10.1016/j.compag.2020.105760](https://doi.org/10.1016/j.compag.2020.105760).
- [4] **S. Young**[†], "A framework for evaluating field-based, high-throughput phenotyping systems: A meta-analysis," *Sensors*, vol. 19, no. 16, p. 3582, 2019. DOI: [10.3390/s19163582](https://doi.org/10.3390/s19163582).
- [3] **S. Young**, E. Kayacan, and J. Peschel, "Design and field evaluation of a ground robot for high-throughput phenotyping of energy sorghum," *Precision Agriculture*, vol. 20, no. 4, pp. 697–722, 2019. DOI: [10.1007/s11119-018-9601-6](https://doi.org/10.1007/s11119-018-9601-6).
- [2] E. Kayacan, **S. Young**, J. Peschel, and G. Chowdhary, "High-precision control of tracked field robots in the presence of unknown traction coefficients," *Journal of Field Robotics*, vol. 35, no. 7, pp. 1050–1062, 2018. DOI: [10.1002/rob.21794](https://doi.org/10.1002/rob.21794).
- [1] **S. Young**, J. Peschel, G. Penny, S. Thompson, and V. Srinivasan, "Robot-assisted measurement for hydrologic understanding in data sparse regions," *Water*, vol. 9, no. 7, p. 494, 2017. DOI: [10.3390/w9070494](https://doi.org/10.3390/w9070494).

Non-Peer-Reviewed Publications

- [4] P. Pandey*, K. Payn, Y. Lu**, A. J. Heine, T. D. Walker, and **S. Young**, "High throughput phenotyping for fusiform rust disease resistance in loblolly pine using hyperspectral imaging," in *2020 ASABE Annual International Virtual Meeting*, American Society of Agricultural and Biological Engineers, 2020. DOI: doi.org/10.13031/aim.202000872.
- [3] P. Pandey*, H. Dakshinamurthy*, and **S. Young**, "A literature review of non-herbicide, robotic weeding: A decade of progress," White Paper, 2020, [Online]. Available: https://cottoncultivated.cottoninc.com/wp-content/uploads/2020/06/Robotic-Weeding-LitReview-White_Paper_Pandey_Dakshinamurthy_Young_2020.pdf.
- [2] Y. Lu**, K. G. Payn, P. Pandey*, J. J. Acosta, A. J. Heine, T. D. Walker, and **S. Young**, "Hyperspectral imaging-enabled high-throughput screening of loblolly pine (pinus taeda) seedlings for freeze tolerance," in *2020 ASABE Annual International Virtual Meeting*, American Society of Agricultural and Biological Engineers, 2020. DOI: [doi:10.13031/aim.202001072](https://doi.org/10.13031/aim.202001072).
- [1] E. Barnes, G. Morgan, K. Hake, J. Devine, R. Kurtz, T. Griffin, G. Ibendahl, A. Sharda, G. Rains, K. Fue, J. Snider, A. Bruce, A. Ermanis, J. Maja, D. Daly, C. Chiu, M. Cutulle, M. Burce, J. Griffin, A. Thomasson, H. Gharakhani, E. Kimura, B. Ayre, T. Raper, **S. Young**, M. Pelletier, J. Wanjura, and G. Holt, "Current and potential robotic applications to improve cotton production," in *Proceedings of the 2020 Beltwide Cotton Conferences*, Beltwide Cotton Conferences (BCCS), 2020.

Publications Currently In Review

- [3] S. Saia, N. Nelson, **S. Young**, S. Parham, and M. Vandegrift, “Ten simple rules for researchers who want to develop web apps,” *PLOS Computational Biology* (in review, submitted), 2021.
- [2] Y. Lu^{†**}, K. Payn, P. Pandey^{*}, J. Acosta, A. Heine, T. Walker, and **S. Young**, “Hyperspectral imaging-enabled high-throughput screening of loblolly pine (*Pinus taeda* L.) seedlings for freeze tolerance,” *Biosystems Engineering* (in review, resubmitted), 2021.
- [1] S. Kronberg, F. Provenza, S. van Vliet, and **S. Young**, “Closing nutrient cycles for animal production—current and future agroecological and socio-economic issues,” *Animal* (in review, resubmitted), 2021.

RESEARCH FUNDING

Total funding received: as PI: \$1,450,463; as Co-PI: \$360,113. Current projects listed below.

USDA NIFA via NSF National Robotics Initiative, *NRI: INT: Towards the Development of a Customizable Fleet of Autonomous Co-Robots for Advancing Aquaculture Production*. Total Funding: \$1,018,596. 11/2020 to 10/2024. Role: PI, Co-PIs: S. Hall, J.P. Ore, C. Castro-Bolinaga, & N. Nelson (NCSU).

NC Department of Transportation, *Low-Cost Visual Sensing of Stormwater Outlet Flow*. Total Funding: \$168,479. 7/2021 to 5/2024. Role: Sole PI.

NC Clean Water Management Trust Fund, *Optimizing Floating Treatment Wetland Deployment to Improve Water Quality*. Total Funding: \$100,000. 2/2021 to 7/2023. Role: Co-PI; PI: W. Hunt (NCSU).

Cotton Incorporated, *A Large-scale Public Image Database of Cotton Weeds for Machine Vision Based Robotic Weeding*. Total Funding: \$61,000. 1/2020 to 12/2021. Role: Sole PI.

NC SweetPotato Commission, *Computer Vision and Robotics Based Automatic Slip Handling for Sweet-potato Field Transplanting*. Total funding: \$7,664. 3/2020 to 8/2021. Role: PI; Co-PI: M. Boyette (NCSU)

NC Department of Agriculture & Consumer Services, *Protocol for UAV Inspection of Potential Pesticide Drift Crop Damage*. Total Funding: \$38,945. 6/2020 to 6/2021. Role: Co-PI, PI: G. Roberson (NCSU); Co-PIs: J. Ward (NCSU)

NC Agricultural Foundation, *Optimizing the Harvest Window: Determining Timing to Maximize CBD Production in Hemp*. Total Funding: \$33,020. 7/2020 to 6/2021. Role: Co-PI; PI: D. Suchoff (NCSU), Co-PIs: X. Li (NCSU).

National Pork Board, *Accurate and Rapid Assessment of Pig Body Weight*. Total Funding: \$128,148. 12/2019 to 6/2021. Role: Co-PI; PI: J. Holt (NCSU), Co-PIs: M. Knauer (NCSU).

NC Center for Turfgrass Environmental Research and Education, *Evaluation of Drought-Tolerant Warm-Season Zoysiagrass Response to Water-Saving Irrigation Scheduling Methods*. Total Funding: \$60,000. 7/2019 to 6/2021. Role: Co-PI; PI: C. Sayde (NCSU), Co-PIs: G. Miller (NCSU).

PRESENTATIONS

Invited Talks and Seminars

- [17] “Using robotics, sensing, and automation to improve the throughput of phenotyping,” Donald Danforth Plant Science Center’s Autumn 2021 Seminar Series (Virtual, *upcoming*), Sep. 22, 2021.
- [16] “Precision technologies for automated visual and physical sensing in agricultural systems,” Virginia Tech University, School of Plant and Environmental Sciences Seminar Series (Virtual, *upcoming*), Apr. 16, 2021.
- [15] “From farm to takeoff: Small unpiloted robots for precision sensing in agricultural systems,” Columbia University, Department of Mechanical Engineering Seminar Series (Virtual), Nov. 20, 2020.
- [14] “Precision technologies for physical and visual sensing in agricultural and biological systems,” University of Illinois at Urbana-Champaign I4 Seminar Series (Virtual), Oct. 9, 2020.
- [13] “Analyzing sensor data at the source,” Invited Session Titled: “Instructional Case Studies with Data Sets for YOUR Instruction”, ASABE Annual International Meeting (Virtual), Jul. 15, 2020.
- [12] “From farm to takeoff: Aerial robots for visual and physical sensing in agricultural applications,” NC State University, Department of Crop and Soil Science Seminar (Virtual), Jul. 12, 2020.
- [11] “Towards Enabling Remote Telemanipulation by Uncrewed Aerial Systems (UAS) in Unknown Environments,” RSS Robots in the Wild Workshop: Challenges in Deploying Robust Autonomy for Robotic Exploration (Virtual), Jul. 12, 2020.
- [10] “Using robotics, sensing, and automation to improve the throughput of phenotyping,” NC State University INTRINsyC Seminar Series (Virtual), Jun. 26, 2020.
- [9] “From farm to takeoff: Small unmanned robots for agricultural and biological systems,” Cornell Initiative for Digital Agriculture (CIDA) Seminar Series, Ithaca, NY, Dec. 9, 2019.
- [8] “Using robotics and automation to improve the throughput of field-based phenotyping,” Syngenta RTP Plant Expression Community Seminar Series, Raleigh, NC, Nov. 12, 2019.
- [7] “From farm to takeoff: Ground and aerial robots for biological systems analysis,” Carnegie Mellon University Field Robotics Center Seminar Series, Pittsburgh, PA, May 21, 2019.
- [6] “Advancements and challenges in technology and data management practices of field-based, high-throughput phenotyping,” Phenome 2019 Invited Speaker, American Society of Plant Biologists, Tucson, AZ, Feb. 8, 2019.
- [5] “Unmanned systems for sensing and sense-making in agricultural and natural environments,” Invited Seminar Speaker, Department of Food, Agricultural and Biological Engineering, The Ohio State University, Columbus, OH, Apr. 10, 2018.
- [4] “Human-machine interaction in robotics and automation for sensing and sense-making,” Invited Seminar Speaker, Department of Agricultural and Biosystems Engineering, Purdue University, West Lafayette, IN, Feb. 26, 2018.
- [3] “Design and evaluation of a ground vehicle for field-based phenotyping of energy sorghum,” Phenome 2018 Invited Speaker, American Society of Plant Biologists, Tucson, AZ, Feb. 15, 2018.
- [2] “Robot-assisted measurements in a data-sparse region of india,” Ven Te Chow Hydrosystems Seminar, University of Illinois, Urbana, IL, Apr. 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 Series, Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore, India, Jun. 12, 2015.

Conference Presentations from Accepted Abstracts

- [13] H. Dakshinamurthy* and **S. Young**, “Automated soil moisture content measurement using unpiloted aerial vehicles,” in *ASABE Annual International Meeting (upcoming, accepted)*, (Virtual), Jul. 2021.
- [12] A. Nguyen*, M. Knauer, J. Holt, T. Abner, and **S. Young**, “Accurate and rapid assessment of pig body weights using a handheld, mobile stereo imaging system,” in *ASABE Annual International Meeting (upcoming, accepted)*, (Virtual), Jul. 2021.
- [11] T. Stephenson, **S. Young**, L. Guertault, and G. Roberson, “NCSU BAE: The Good, the Bad, and the Takeaways from Online Laboratory Instruction,” in *ASABE Annual International Meeting (upcoming, accepted)*, (Virtual), Jul. 2021.
- [10] R. Smith*, S. Hall, and **S. Young**, “Collaborative aerial and surface vehicles for water quality sensing in aquatic environments,” in *ASCE 2021 EWRI Congress (upcoming, accepted)*, (Virtual), Jun. 2021.
- [9] E. Smith*, S. Hall, and **S. Young**, “Water quality monitoring using collaborative aerial and surface systems in nearshore aquaculture production environments,” in *ASABE Annual International Meeting*, (Virtual), Jul. 2020.
- [8] H. N. Dakshinamurthy* and **S. Young**, “In situ precision measurements of soil moisture content using an unmanned aerial vehicle,” in *ASABE Annual International Meeting*, (Virtual), Jul. 2020.
- [7] Y. Lu**, P. Pandey*, K. Payn, A. Heine, T. Walker, and **S. Young**, “Hyperspectral imaging-enabled high-throughput screening of loblolly pine (*pinus taeda*) seedlings for freeze tolerance,” in *ASABE Annual International Meeting*, (Virtual), Jul. 2020.
- [6] P. Pandey*, K. Payne, T. Walker, A. Heine, and **S. Young**, “High throughput phenotyping for fusiform rust disease resistance in loblolly pine using hyperspectral imaging,” in *ASABE Annual International Meeting*, (Virtual), Jul. 2020.
- [5] E. Smith*, S. Hall, and **S. Young**, “Water quality testing using collaborative unmanned surface vehicle-unmanned aerial vehicle systems in coastal environments,” in *ASCE World Environmental and Water Resources Congress*, (Accepted Abstract; Conference Cancelled due to COVID19), May 2020.
- [4] **S. Young**, R. Lanciloti, and J. Peschel, “Unmanned systems for agricultural water measurement and management,” in *Global Water Security for Agricultural and Natural Resources (ASABE Global Initiative Conference)*, (Hyderabad, India), Oct. 5, 2018.
- [3] **S. Young**, K. Koppula, R. Lanciloti, J. Riesen, and J. Peschel, “Telemanipulation by unmanned aerial vehicles for agricultural data applications,” in *ASABE International Meeting*, (Detroit, MI), Jul. 30, 2018.
- [2] **S. Young**, J. Riesen, and J. Peschel, “In situ measurement of soil-water parameters using a micro unmanned aerial vehicle,” in *ASCE World Environmental and Water Resources Congress*, (Minneapolis, MN), Jun. 4, 2018.
- [1] **S. Young**, “Field application of small, low-cost robots for remote surface data collection,” in *Innovative Strategies for Sustainable Water Management*, (Phagwara, Punjab, India), ***Best Oral Presentation and Springer Abstract Award**, Nov. 18, 2017.

Conference Posters from Accepted Abstracts

- [13] P. Pandey*, K. Payn, and **S. Young**, “Design of a pollinating robotic system,” in *ASABE Annual International Meeting (upcoming, accepted)*, (Virtual), Jul. 2021.
- [12] P. Pandey*, K. Payn, Y. Lu**, J. Acosta, T. Walker, A. Heine, and **S. Young**, “High-throughput phenotyping of loblolly pine: Analysis of hyperspectral images at the plant organ level for fusiform rust disease incidence,” in *North American Plant Phenotyping Network (NAPPN) Annual Meeting*, (Virtual), Feb. 2021.

- [11] A. Nguyen*, V. Abner, M. Knauer, J. Holt, and **S. Young**, “Accurate and rapid assessment of pig body weights using stereo vision and advanced image processing,” in *ASABE Annual International Meeting*, (Virtual), Jul. 2020.
- [10] A. Hillman*, **S. Young**, and C. Sayde, “High resolution assessment of miscanthus production environmental impacts,” in *ASABE Annual International Meeting*, (Virtual), Jul. 2020.
- [9] P. Pandey*, K. Payn, and **S. Young**, “A UAV platform for mass production of control crosses in Loblolly Pine,” in *ASABE Annual International Meeting*, (Virtual), Jul. 2020.
- [8] H. Lin, J. Neal, G. Roberson, **S. Young**, and R. Leon, “Evaluating spray nozzles at lower heights and pressures for circular application,” in *Weed Science Society of America*, (Hawaii), Mar. 2020.
- [7] **S. Young** and J. Peschel, “Advancing remote manipulation with unmanned aerial vehicles for agricultural applications,” in *ASABE Annual International Meeting*, (Boston, MA), Jul. 9, 2019.
- [6] J. Peschel and **S. Young**, “Human-robot teaming for hydrologic data gathering at multiple scales,” in *AGU Fall Meeting Abstracts*, (New Orleans, LA), 2017.
- [5] **S. Young** and J. Peschel, “Bathymetric mapping with a small unmanned surface system,” in *ASCE World Environmental and Water Resources Congress*, (West Palm Beach, FL), 2016.
- [4] J. Peschel and **S. Young**, “Robot-assisted socio-hydrologic and water quality understanding in data sparse regions,” in *AGU Fall Meeting Abstracts*, (San Francisco, CA), 2016.
- [3] **S. Young** and J. Peschel, “Waterway-view imaging with a small unmanned surface system,” in *AGU Fall Meeting Abstracts*, (San Francisco, CA), 2015.
- [2] G. Penny, S. Thompson, V. Srinivasan, J. Peschel, **S. Young**, K. Jeremiah, *et al.*, “Stream-flow generation in a drying catchment outside bangalore, india,” in *AGU Fall Meeting Abstracts*, (San Francisco, CA), 2015.
- [1] J. Peschel, **S. N. Young**, G. Penny, S. Thompson, and V. Srinivasan, “Robot-assisted measurements in data sparse regions,” in *AGU Fall Meeting Abstracts*, (San Francisco, CA), 2015.

EXTENSION & EDUCATION

Peer-Reviewed Extension & Education Publications

- [2] **S. Young**[†], “Data science teaching module: Analyzing sensor data at the source,” *ASABE Technical Library of Teaching Modules (accepted)*, 2021.
- [1] R. Smith*, S. Hall, and **S. Young**, “The use of uncrewed vehicles in coastal aquaculture,” *NCSU Extension Fact Sheet*, 2020. [Online]. Available: <https://content.ces.ncsu.edu/the-use-of-uncrewed-vehicles-in-coastal-aquaculture>.

Extension & Education Publications Currently in Review

- [3] A. Hillman*, C. Mari, C. Sayde, and **S. Young**, “Miscanthus: An environmental choice for marginal lands,” *NCSU Extension Fact Sheet (in review)*, 2021.
- [2] N. Von Tress, N. Nelson, and **S. Young**, “Detecting blue-green algal blooms with satellite imagery,” *NCSU Extension Fact Sheet (in review)*, 2021.
- [1] S. Saia, N. Nelson, **S. Young**, and S. Hall, “Shellfish leases and harvest closures along the north carolina coast,” *NCSU Extension Fact Sheet (in review)*, 2021.

Extension Presentations

- [8] **S. Young**, “Automated slip handling,” in *NC SweetPotato Virtual Field Day*, Oct. 2020.
- [7] —, “Advances in machine learning and robotics for autonomous weeding,” in *NC Soybean Producers Association Virtual Field Day*, Aug. 2020.
- [6] —, “Redefining food systems panel,” in *MBA FoodCon*, (Raleigh, NC), Jan. 23, 2020.
- [5] —, “Current and future uses for ground and aerial robots in precision agriculture,” in *Southeast Regional Fruit & Vegetable Conference, Strawberry Educational Session*, (Savannah, GA), Jan. 10, 2020.
- [4] —, “Robotics and automation: Opportunities for peach production,” in *Southeast Regional Fruit & Vegetable Conference, Peach Educational Session*, (Savannah, GA), Jan. 10, 2020.
- [3] —, “Robotic crop monitoring and spraying technologies: Current uses and future trends,” in *Southeast Regional Fruit & Vegetable Conference, Caneberry Educational Session II*, (Savannah, GA), Jan. 10, 2020.
- [2] **S. Young**, C. Reberg-Horton, J. Ward, and G. Roberson, “Digital ag tools for on-farm research,” in *NC Extension Conference*, (Raleigh, NC), Oct. 28, 2019.
- [1] **S. Young** and J. Ward, “Tools for phenotyping, precision agriculture, and machine systems,” in *International Union of Forest Research Organizations Tree Biotechnology Conference, Suggs Lab Tour*, (Raleigh, NC), Jun. 26, 2019.

Workshops

- [4] “Hardware and sensors,” (Tucson, AZ), Instructor and Organizer, Phenome Digital Phenotyping Workshop, Phenome Conference, Feb. 6, 2019.
- [3] “Future directions: Robotic applications for ag sensing,” (Raleigh, NC), Instructor, Data Science for Ag Extension Agents Workshop, Booth Field Learning Lab, Jan. 16, 2019.
- [2] “Hardware and sensors,” (Tucson, AZ), Instructor, Phenome Digital Phenotyping Workshop, Phenome Conference, Feb. 13, 2018.
- [1] “Unmanned aerial vehicles in intensively managed landscapes,” (West Lafayette, IN), Instructor, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI), Role of Runoff and Erosion on Soil Carbon Stocks Workshop, Purdue University, Oct. 20, 2015.

SERVICE

Service to the Profession

APPOINTED OR ELECTED LEADERSHIP

2021-2023	Executive Board Member, North American Plant Phenotyping Network (NAPPN)
since 2020	Chair, Emerging Information Systems (ITSC-254) Committee, ASABE
since 2020	Vice Chair, Emerging and Innovative Technologies Committee, ASCE EWRI
2016-2018	Director and Liaison, Graduate Women in the Society of Women Engineers, University of Illinois

COMMITTEE MEMBERSHIP INVOLVEMENT

- since 2020 ITSC-02 Steering Committee, ASABE
- since 2020 Mechatronics and Robotics (ITSC-318), ASABE
- since 2020 Unmanned Aerial Systems (MS-60), ASABE
- since 2018 Technical Committee on Agricultural Robotics and Automation (AgRA), IEEE RAS
- since 2018 Emerging and Innovative Technologies Committee (EITC), ASCE EWRI
- since 2018 Emerging Information Systems Committee (ITSC-254), ASABE
- 2018-2019 Unmanned Systems for Environmental and Water Resources Task Committee, ASCE EWRI

CONFERENCE ORGANIZATION INVOLVEMENT

- 2020 AGU Session Co-Convener
- 2020 ASABE AIM ITSC Invited Session Co-Moderator
- 2019 Program Committee Member, ASPB Phenome 2019 Conference

MEMBERSHIP IN PROFESSIONAL AND HONORARY SOCIETIES

- since 2017 American Society of Agricultural and Biological Engineers (ASABE)
- since 2017 Institute of Electrical and Electronics Engineers (IEEE)
- since 2015 American Geophysical Union (AGU)
- since 2014 National Honor Society Tau Beta Pi
- since 2013 National Honor Society Chi Epsilon
- since 2013 Society of Women Engineers (SWE)
- since 2012 American Society of Civil Engineers (ASCE)

EDITORSHIPS AND REVIEWING ACTIVITIES

- 2020-2021 Guest Editor, Plant Phenomics and Precision Agriculture Call for Papers, *PLOS ONE*
- Ongoing Reviewer: *Transactions of the ASABE*, *Applied Engineering in Agriculture*, *Plant Methods*, *IEEE Robotics and Automation Letters*, *HardwareX*, *Remote Sensing*, *Frontiers in Earth Science*.

University and Community Service

NC STATE CAMPUS SERVICE

- 2021 Volunteer and Instructor, NCSciFest SciMatch Program
- 2021 Organizer and Instructor, BAE Agricultural Robotics and Technology Summer Camp
- 2020-Present Member, GLBT Advocate Program
- 2020 Volunteer, Virtual State 4-H Presentation Judging for Electric and Wheels and Engines
- 2020 Volunteer and Panel Member, Virtual State 4-H Electric Congress
- 2020-Present Volunteer and Presenter, K-12 NC Public School Science Classes (virtual)
- 2019 Volunteer, VEX Robotics Triangle League Competitions
- 2019 Volunteer, BAE Ecological and Environmental Engineering Summer Camps
- 2019 Volunteer, ASABE Rally in Raleigh Panel Moderator

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
- 2015-2016 Volunteer, Nanoscale Science and Technology Resources for Community Teaching
- 2014-2016 Volunteer, University of Illinois Engineering Open House

MENTORSHIP

CURRENT PH.D. STUDENTS

Hemanth Dakshinamurthy	Anticipated graduation: May 2022
Piyush Pandey (co-advised)	Anticipated graduation: May 2022

CURRENT M.S. STUDENTS

Anh Nguyen	Anticipated graduation: May 2021
Russell Smith (co-advised)	Anticipated graduation: May 2021
Andrew Hillman (co-advised)	Anticipated graduation: August 2021

GRADUATE STUDENT COMMITTEE MEMBERSHIP

Eric Linder	M.S.	Horticultural Science	Anticipate graduation: May, 2022
Jimmy Larson	Ph.D.	Horticultural Science	Anticipated graduation: May, 2022
Victoria Abner	M.S.	Animal Science	Anticipated graduation: May, 2021
Ryan Phillips	M.S.	Biological & Agricultural Engineering	Graduated December, 2020
Kaelin Saul	Ph.D.	Biological & Agricultural Engineering	Graduated May, 2020

OTHER MENTORSHIP ACTIVITIES

2020-2021, Faculty Advisor, NC State BAE ASABE Student Club
2019-2021, Senior Design Faculty Sponsor
since 2019, Mentored 7 undergraduate students on various projects

TEACHING

Since 2019, Instructor, North Carolina State University, *BAE 401/501 Sensors and Controls*
Lecture and lab-based course for undergraduate and graduate students; teaches basic concepts of sensors and controls for biological systems, including: transducers and circuits used in biological and agricultural engineering applications; concepts of error, accuracy and precision, linearity and other instrument characteristics by electronic models; introduction to system identification, control theory, and controller design.

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.