

Joshua M. Peschel, Ph.D.

Agricultural and Biosystems Engineering
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Education

2012 Ph.D. Computer Science and Engineering, Texas A&M University (Advisor: Robin R. Murphy)
2004 M.S. Biological and Agricultural Engineering, Texas A&M University
2001 B.S. Biological Systems Engineering, Texas A&M University

Academic Appointments

since 2017 Assistant Professor of Agricultural and Biosystems Engineering
Assistant Professor of Electrical and Computer Engineering (Courtesy)
Assistant Professor of Civil, Construction and Environmental Engineering (Courtesy)
Iowa State University of Science and Technology

2012–2016 Research Assistant Professor of Civil and Environmental Engineering
Carl R. Woese Institute for Genomic Biology (Faculty Affiliate)
Computational Science and Engineering (Faculty Affiliate)
University of Illinois at Urbana-Champaign

Honors and Awards

2019 2019 Pioneer, Named by *Connected World*
2017 Black & Veatch Engineering Faculty Fellow
2015 University List of Teachers Ranked as Excellent
2013 College of Engineering Collins Scholar
2007 Association of Former Students Buck Weirus '42 Award
2004 Montgomery Endowed Fellowship Prize
2004 BAEN Robert E. Stewart Graduate Excellence Award

Research Funding

TOTAL AWARDED AS PI OR CO-PI: \$5,729,201; TOTAL PENDING: \$15,830,580

2019–2022 *MRI: Development of ViSePASE - an Automated Visual Sensemaking Instrument to Advance Precision Animal Science and Engineering*
(pending)
Source: National Science Foundation; Proposed Budget: \$2,455,349
Role: PI (Direct Funds: \$2,455,349); Co-PIs: Anna Butters-Johnson, Stephanie Hansen, Christopher Rademacher, Arun Somani (Iowa State)

2019–2022 *Health Prediction of Individual Animals in Confined Beef Cattle Operations through Automated Visual Activity Recognition*
(pending)
Source: USDA National Institute of Food and Agriculture; Proposed Budget: \$500,000
Role: PI (Direct Funds: \$500,000); Co-PIs: Anna Butters-Johnson, Stephanie Hansen (Iowa State)

- 2019–2021
(pending) *Improving Animal Health Management and Production Efficiency through Automated Visual Sensing to Monitor Grow-Finish Pigs*
Source: National Pork Board; Total Budget: \$229,336
Role: PI (Direct Funds: \$229,336); Co-PIs: Anna Butters-Johnson, Daniel Correia-Lima-Linhares, Christopher Rademacher, Jason Ross (Iowa State)
- 2019–2021
(pending) *Adoption and Application of Engineering Technology in Swine Production Systems*
Source: National Pork Board; Total Budget: \$325,740
Role: co-PI (Direct Funds: \$162,870); PI: Angela Green-Miller (Illinois)
- 2019–2021
(pending) *Remote Monitoring of the Physiological and Behavioral Indicators to Determine Heat Stress Onset*
Source: National Pork Board; Total Budget: \$284,190
Role: co-PI (Direct Funds: \$TBD); PI: Brett Ramirez; Co-PIs: Lance Baumgard, Steve Hoff (Iowa State)
- 2019–2022
(pending) *NRT: The Human-Technology Frontier Traineeship Program for Innovations in Rural Resilience to Transform the Future of Work*
Source: National Science Foundation; Proposed Budget: \$2,966,510
Role: co-PI (Direct Funds: TBD); PI: David Sanders; Co-PIs: Kristen Cetin, Christa Jackson, Deborah Tootle (Iowa State)
- 2019–2024
(pending) *PAWR: AraNet: Wireless Living Lab for Smart and Connected Rural Communities*
Source: National Science Foundation; Proposed Budget: \$9,000,000
Role: co-PI (Direct Funds: TBD); PI: Hongwei Zhang (Iowa State), Multi-Institution Collaborators
- 2019–2020
(pending) *Near-Sensing of Fluorescence Properties Associated with Agricultural Crops, Phase I*
Source: ChemTag LLC; Proposed Budget: \$40,346
Role: PI (Direct Funds: \$40,346); Co-PI: Brian Steward (Iowa State)
- 2019–2020
(pending) *Predictive Biomarkers for Real-Time In Ovo Sexing Technology*
Source: Iowa State University PIRS; Proposed Budget: \$29,109
Role: Co-PI (Direct Funds: \$TBD); PI: Brett Ramirez; Co-PI: Dawn Koltes (Iowa State)
- 2019–2022
(awarded) *Developing High-Throughput Phenotyping Capacity at Fort Valley State University for the Genetic Enhancement of Sugarcane Aphid Resistance in Sorghum*
Source: USDA National Institute of Food and Agriculture; Budget: \$500,000
Role: PI (Direct Funds: \$170,000); PI: Som Punnuri (FVSU), Jason Wallace (Georgia), Xinzhi Ni, Joseph Knoll, Karen Harris-Schultz (USDA)
- 2018–2019
(awarded) *Health Prediction of Individual Animals in Swine Operations through Automated Visual Sensing and Behavioral Sensemaking*
Source: National Pork Board; Total Budget: \$57,000
Role: PI (Direct Funds: \$57,000); Co-PIs: Anna Butters-Johnson, Daniel Correia-Lima-Linhares, Christopher Rademacher, Jason Ross (Iowa State)
- 2018–2019
(awarded) *Harvest Planning Innovations, Phase I*
Source: Deere & Company; Total Funding: \$85,000
Role: PI (Direct Funds: \$85,000); Co-PI: Matthew Darr (Iowa State)
- 2018–2019
(awarded) *Health Prediction of Individual Animals in Confined Beef Cattle Operations through Visual Sensing and Automated Behavioral Recognition*
Source: Iowa Beef Industry Council; Total Funding: \$75,000
Role: PI (Direct Funds: \$75,000); Co-PIs: Anna Butters-Johnson, Stephanie Hansen (Iowa State)

- 2016–2019
(awarded) *Effects of Shrub Expansion in the Arctic on Plant Functional Trait Variation and Belowground Carbon Dynamics*
Source: U.S. Department of Energy; Total Funding: \$578,910
Role: Co-I (Direct Funds: \$10,000); PI: Jennifer Fraterrigo (Illinois), Co-PIs: Feng Sheng Hu (Illinois), Eugenia Euskirchen, Kenneth Tape (Alaska-Fairbanks)
- 2015–2019
(awarded) *TERRA-MEPP (Mobile Energy-crop Phenotyping Platform)*
Source: U.S. Department of Energy (ARPA-E); Total Awarded: \$3,100,000
Role: Co-PI (Direct Funds: \$932,236); PI: Steve Long (Illinois), Co-PIs: Carl Bernacchi, Pat Brown, Don Ort (Illinois), Avidah Zakhori (Berkeley), Edward Buckler, Michael Gore (Cornell)
- 2015–2016
(awarded) *Improved Sense-Making for Agricultural Crop Sub-Canopy Data*
Source: Bill and Melinda Gates Foundation (IGB Sub-Award); Total Awarded: \$50,492
Role: PI (Direct Funds: \$50,492)
- 2014–2015
(awarded) *4D Modeling and Visualization of Agricultural Crop Sub-Canopy Environments*
Source: Microsoft Research; Total Awarded: \$40,000
Role: PI (Direct Funds: \$40,000)
- 2014–2015
(awarded) *A High Resolution Sensing Method for Agricultural Crop Sub-Canopy Environments*
Source: Bill and Melinda Gates Foundation (IGB Sub-Award); Total Awarded: \$70,710
Role: PI (Direct Funds: \$70,710)
- 2014–2015
(awarded) *Linking Remote Sensing, Citizen Science, and Robotics to Address Critical Environmental Problems in Data Sparse Regions*
Source: National Science Foundation; Total Awarded: \$73,311
Role: PI (Direct Funds: \$34,656); Co-PI: Sally Thompson (Berkeley)
- 2014–2017
(awarded) *Fostering Collaborative Drawing and Problem Solving through Digital Sketch and Touch*
Source: National Science Foundation; Total Awarded: \$549,995
Role: Co-PI (Direct Funds: \$274,997); PI: Emma Mercier (Illinois), Co-PI: Geoffrey Herman (Illinois)
- 2014–2017
(awarded) *Exploring Expert and Novice Graphical Communication Through Digital Sketching*
Source: National Science Foundation; Total Funding: \$248,238
Role: Co-PI (Direct Funds: \$124,119); PI: Geoffrey Herman (Illinois)
- 2014–2015
(awarded) *Extending the Curriculum Content of an Existing Sketch Recognition Tutoring System with Immediate Feedback to Engage Cross-Disciplinary Instructors*
Source: College of Engineering; Total Awarded: \$63,973
Role: PI (\$63,973); Co-PIs: Cassandra Rutherford, Megan Konar (Illinois)
- 2014–2015
(awarded) *Bio-Electrochemical Sensor and Control System for Domestic Wastewater Treatment*
Source: CEE Innovation Fund; Total Awarded: \$27,000
Role: Co-PI (Direct Funds: \$13,500); PI: Roland Cusick (Illinois)
- 2013–2014
(awarded) *Computer Vision Algorithm for Combined Sewer Overflow Measurement*
Source: Global Quality Corp, Inc.; Total Awarded: \$25,000
Role: PI (Direct Funds: \$25,000)
- 2013–2014
(awarded) *Surficial Transport and Storage in the Upper Sangamon River Basin: Characterizing Sediment Dynamics Across Gradients of Change*
Source: National Great Rivers Research and Education Center; Total Awarded: \$75,000
Role: Co-PI (Direct Funds: \$5,135); PI: Praveen Kumar (Illinois), Co-PIs: Laura Keefer, Alison Anders, Bruce Rhoads, Gary Parker (Illinois)

- 2013–2014
(awarded) *Measuring Effectiveness and Performance of Green Stormwater Infrastructure*
Source: City of Champaign; Total Awarded: \$3,572
Role: Co-PI (\$3,572); PI: Barbara Minsker (Illinois), Co-PI: Art Schmidt (Illinois)
- 2013–2014
(awarded) *A Flow Net Sketch Recognition Tutoring System: Improved Student Learning through Mobile Active Learning and Immediate Student Feedback*
Source: College of Engineering; Total funding: \$50,000
Role: PI (Direct Funds: \$50,000); Co-PIs: Cassandra Rutherford, Megan Konar (Illinois)
- 2013–2014
(awarded) *CEE Global Leaders - Beijing, China*
Source: CEE Global Leaders Fund; Total Awarded: \$29,000
Role: PI (Direct Funds: \$29,000)
- 2012–2013
(awarded) *Ad Hoc Traffic Monitoring Networks in Post-Disaster Environments Using Unmanned Aerial Systems*
Source: CEE Innovation Fund; Total Awarded: \$27,000
Role: Co-PI (Direct Funds: \$13,500); PI: Dan Work (Illinois)

OTHER COLLABORATIVE RESEARCH FUNDING (NOT INCLUDED IN AWARD TOTALS)

- 2015–2018
(awarded) *Development of an Urban-Scale Instrument for Interdisciplinary Research*
Source: National Science Foundation; Total Awarded: \$3,110,488
Role: Senior Personnel; PI: Charlie Catlett (Argonne)
- 2013–2018
(awarded) *Critical Zone Observatory for Intensively Managed Landscapes*
Source: National Science Foundation; Total Awarded: \$1,986,255
Role: Senior Personnel; PI: Praveen Kumar (Illinois)

Peer-Reviewed Journal Publications

(PUBLICATIONS WITH ADVISED STUDENTS* AND POST-DOCS** AS NOTED)

11. 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*. doi:10.1007/s11119-018-9601-6.
10. Erkan Kayacan**, Wouter Saeys, Herman Ramon, Calin Belta, and **Joshua M. Peschel**. (2018) “Experimental Validation of Embedded Linear and Nonlinear MPC: As Applied to Articulated Unmanned Ground Vehicle.” *IEEE Transactions on Mechatronics*. doi:10.1109/TMECH.2018.2854877.
9. Erkan Kayacan**, Sierra N. Young*, **Joshua M. Peschel**, and Girish Chowdhary. (2018) “High Precision Control of Tracked Field Robots in the Presence of Unknown Traction Coefficients.” *Journal of Field Robotics*. doi:10.1002/rob.21794.
8. Fernanda P. Maciel* and **Joshua M. Peschel**. (2018) “A GIS-Based Tool for Bioaccumulation Risk Analysis and Its Application to Study Polychlorinated Biphenyls in the Great Lakes.” *AMS Environmental Science*, 5(1): 1–23. doi:10.3934/environsci.2018.1.1.
7. 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.
6. Erkan Kayacan**, **Joshua M. Peschel**, and Girish Chowdhary. (2017) “A Self-Learning Disturbance Observer for Nonlinear Systems in Feedback-Error Learning Scheme.” *Engineering Applications of*

Artificial Intelligence, 62. doi:10.1016/j.engappai.2017.04.013.

5. Christopher M. Chini*, James F. Canning*, Kelsey L. Schreiber, **Joshua M. Peschel**, and Ashlynn S. Stillwell. (2017) "The Green Experiment: Cities, Green Stormwater Infrastructure, and Sustainability." *Sustainability*, 9(1). doi:10.3390/su9010105. (Selected as Cover Article).
4. Tyler A. DeNooyer, **Joshua M. Peschel**, Zhenxing Zhang, and Ashlynn S. Stillwell. (2016) "Integrating Water Resources and Power Generation: The Energy-Water Nexus in Illinois." *Applied Energy*, 162(15). doi:10.1016/j.apenergy.2015.10.071.
3. Christopher M. Chini*, Jeff F. Wallace, Cassandra J. Rutherford, and **Joshua M. Peschel**. (2015) "Shearing Failure Visualization via Particle Tracking in Soft Clay using a Transparent Soil." *ASTM Geotechnical Testing Journal*. 38(5). doi:10.1520/GTJ20140210.
2. **Joshua M. Peschel** and Robin R. Murphy. (2013) "On the Human-Machine Interaction of Unmanned Aerial System Mission Specialists." *IEEE Transactions on Human-Machine Systems*. 43(1): 53–62. doi:10.1109/TSMCC.2012.2220133.
1. **Joshua M. Peschel**, Patricia K. Haan, and Ronald E. Lacey. (2006) "Influences of Soil Data Set Resolution on Hydrologic Modeling." *Journal of the American Water Resources Association*. 42(5): 1371–1389. doi:10.1111/j.1752-1688.2006.tb05307.x.

PEER-REVIEWED JOURNAL PUBLICATIONS IN REVIEW

(PUBLICATIONS WITH ADVISED STUDENTS* AND POST-DOCS** AS NOTED)

8. Sierra N. Young* and **Joshua M. Peschel**. (2018) "Human-Machine Interaction for Telemanipulation in Small Unmanned Systems." *IEEE Transactions on Human-Machine Systems*, in review. (Download Pre-Print).
7. **Joshua M. Peschel**, Brittany A. Duncan, and Robin R. Murphy (2018) "A Mission Specialist Interface for Micro Unmanned Aerial Systems." *IEEE Transactions on Human-Machine Systems*, in review. (Download Pre-Print).
6. **Joshua M. Peschel** and Tianyu He*. (2018) "Comparing a Dual Drainage Model (DDM) with SWMM: A Case Study Examining Green Infrastructure Sensitivity." *Frontiers in Built Environment*. (Invited Manuscript). (Download Pre-Print).
5. 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." *Hydrologic Processes*. (Download Pre-Print).
4. **Joshua M. Peschel** and Meng Han*. (2018) "A Visual Sensing Approach for Combined Sewer Overflow Monitoring." *ASCE Journal of Computing in Civil Engineering*. (Download Pre-Print).
3. **Joshua M. Peschel** and Elizabeth E. Depwe*. (2018) "Data Mining Street-Level Images for Stormwater Infrastructure Management." *ASCE Journal of Computing in Civil Engineering*. (Download Pre-Print).
2. Samuel J. Rivera*, **Joshua M. Peschel**, and Lelitha Devi. (2018) "Real-Time Monitoring of Heterogeneous Traffic Conditions." *ASCE Journal of Transportation Engineering*. (Download Pre-Print).
1. **Joshua M. Peschel** and Saki Handa*. (2018) "Human-Machine Interfaces for Unmanned Surface Systems." *IEEE Transactions on Human-Machine Systems*. (Download Pre-Print).

Book Chapters

1. **Joshua M. Peschel** and Robin R. Murphy. (2015) “Human Interfaces in Micro and Small Unmanned Aerial Systems.” In *Handbook of Unmanned Aerial Vehicles*, Kimon P. Valavanis and George J. Vachtsevanos, editors. pp. 2389–2403, Springer Netherlands. doi:10.1007/978-90-481-9707-1_127.

Other Publications

PEER-REVIEWED CONFERENCE PROCEEDINGS

(PUBLICATIONS WITH ADVISED STUDENTS* AND POST-DOCS** AS NOTED)

25. Erkan Kayacan** and **Joshua M. Peschel**. (2016) “Robust Model Predictive Control of Systems by Modeling Mismatched Uncertainty”. In *Proceedings of the 10th IFAC Symposium on Nonlinear Control Systems (NOLCOS)*, International Federation of Automatic Control, August 25–28, 2016, Monterrey, CA, USA. 49(18), pp-265-269, doi:10.1016/j.ifacol.2016.10.175.
24. Erkan Kayacan**, **Joshua M. Peschel**, and Erdal Kayacan. (2016) “Centralized, Decentralized and Distributed Nonlinear Model Predictive Control of a Tractor-Trailer System: A Comparative Study”. In *Proceedings of the 2016 American Control Conference (ACC)*, American Control Conference, July 6–8, 2016, Boston, MA, USA. pp. 4403-4408, doi:10.1109/ACC.2016.7525615.
23. Fernanda P. Maciel Yo* and **Joshua M. Peschel**. (2015) “ArcBEST: A GIS-Based Tool for Bioaccumulation Risk Analysis”. In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
22. Jeff F. Wallace, Christopher M. Chini*, Cassandra J. Rutherford, and **Joshua M. Peschel**. (2015) “Visualizing the Failure Surface of a Laboratory Vane Shear in Soft Clay Using Transparent Soil”. In *Proceedings of the 3rd International Symposium on Frontiers in Offshore Geotechnics*, June 10–12 2015, Oslo, Norway.
21. Jeff F. Wallace, Christopher M. Chini*, Cassandra J. Rutherford, and **Joshua M. Peschel**. (2015). “Failure Mechanism of a T-Bar Penetrometer Visualized in Soft Clay Using Transparent Soil”. In *Proceedings of the 2015 International Foundations Congress and Equipment Exposition*, March 17–25, 2015, San Antonio, TX, USA.
20. **Joshua M. Peschel**. (2012) “Quantifying Sustainability in Civil Engineering Through Joint Cognitive Systems”. In *Proceedings of the NSF Workshop on the Sciences Behind Sustainability Quantification for Building and Infrastructure Design, Engineering and Construction*, November 7–9, 2012, Dallas, TX (*Invited Paper*).
19. **Joshua M. Peschel**. (2012) “Towards Physical Object Manipulation by Small Unmanned Aerial Systems”. In *Proceedings of the 10th IEEE International Symposium on Safety, Security, and Rescue Robotics*, November 5–8, 2012, College Station, TX, USA (*Invited Paper*).
18. Robin R. Murphy, **Joshua M. Peschel**, Clint Arnett, and David Martin. (2012) “Projected Needs for Robot-Assisted Chemical, Biological, Radiological, or Nuclear (CBRN) Incidents”. In *Proceedings of the 10th IEEE International Symposium on Safety, Security, and Rescue Robotics*, November 5–8, 2012, College Station, TX, USA (*Nominated for Best Paper Award*).
17. **Joshua M. Peschel**, Brittany A. Duncan, and Robin R. Murphy. (2012) “Exploratory Results for a Mission Specialist Interface in Micro Unmanned Aerial Systems”. In *Proceedings of the International Workshop on Collaborative Robots and Human-Robot Interaction*, May 21–25, Denver, CO, USA.

16. **Joshua M. Peschel** and Robin R. Murphy. (2012) "Mission Specialist Interfaces in Micro and Small Unmanned Aerial Systems". In *Proceedings of the International Conference on Unmanned Aircraft Systems*, June 12–15, 2012, Philadelphia, PA, USA.
15. **Joshua M. Peschel** and Robin R. Murphy. (2011) "Mission Specialist Interfaces in Unmanned Aerial Systems". In *Proceedings of the 6th ACM/IEEE International Conference on Human-Robot Interaction*, March 6–9, 2011, Lausanne, Switzerland.
14. **Joshua M. Peschel** and Robin R. Murphy. (2011) "Mission Specialist Human-Robot Interaction in Micro Unmanned Aerial Systems". In *Proceedings of the 6th ACM/IEEE International Conference on Human-Robot Interaction Pioneers Workshop*, March 6–9, 2011, Lausanne, Switzerland.
13. **Joshua M. Peschel**, Kelly Brumbelow, and Anthony T. Cahill. (2011) "A Real-Time System for Railway Hydraulic Hazard Forecasting". In *Proceedings of the 2011 World Environmental and Water Resources Congress, American Society of Civil Engineers*, May 22–26, 2011, Palm Springs, CA, USA.
12. Tracy Hammond, Drew Logsdon, **Joshua M. Peschel**, Joshua Johnston, Paul Taele, Aaron Wolin, and Brandon Paulson. (2010). "A Sketch Recognition System for Recognizing Free-Hand Course-of-Action Diagrams". In *Proceedings of the 22nd Conference on Innovative Applications of Artificial Intelligence*, July 11–15, 2010, Atlanta, GA, USA (Acceptance Rate: 39%).
11. Tracy Hammond, Drew Logsdon, **Joshua M. Peschel**, Joshua Johnston, Paul Taele, Aaron Wolin, and Brandon Paulson. (2010). "A Sketch Recognition Interface that Recognizes Hundreds of Shapes in Course-of-Action Diagrams". In *Proceedings of the 28th ACM Annual Conference on Human Factors in Computing Systems*, April 10–15, 2010, Atlanta, GA, USA (Acceptance Rate: 57%).
10. **Joshua M. Peschel**, Brandon Paulson, and Tracy Hammond. (2009) "A Surfaceless Pen-Based Interface". In *Proceedings of the 7th ACM SIGCHI Annual Conference on Creativity and Cognition*, October 27–29, 2009, Berkeley, CA, USA.
9. Paul Taele, **Joshua M. Peschel**, and Tracy Hammond. (2009) "A Sketch Interactive Approach to Computer-Assisted Biology Instruction". In *Proceedings of the Intelligent User Interfaces Conference Workshop on Sketch Recognition*, February 8–11, 2009, Sanibel Island, FL, USA (Acceptance Rate: 67%).
8. **Joshua M. Peschel** and Tracy Hammond. (2008) "STRAT: A Sketched-Truss Recognition and Analysis Tool". In *Proceedings of the Visual Languages and Computing Special Session on Sketch Computing*, September 4–6, 2008, Boston, MA, USA (Acceptance Rate: 58%).
7. **Joshua M. Peschel**, Ron Mierau, Stephen Bourne, Kelly Brumbelow, Ken Stewart, and Jack Hampson. (2008) "Real-Time Water Budget Assessment in South Florida". In *Proceedings of the AWRA GIS and Water Resources V Conference*, March 17–19, 2008, San Mateo, CA, USA.
6. **Joshua M. Peschel**, Luciana R. Barroso, Anthony T. Cahill, and James R. Morgan. (2007) "An Online Real-Time Quiz System for Readiness Assessment Testing". In *Proceedings of the American Society for Engineering Education Annual Conference and Exposition*, June 24–27, 2007, Honolulu, HI, USA.
5. **Joshua M. Peschel** and Anthony T. Cahill. (2005) "An Instructional Framework for Introducing Wavelet-Based Problem Solving Techniques to Advanced Civil Engineering Students". In *Proceedings of the American Society for Engineering Education Annual Conference and Exposition*, June 12–15, 2005, Portland, OR, USA (Selected as Top Mathematics Division Paper and Nominated for 2005 Best Paper Award).

4. **Joshua M. Peschel** and Patricia K. Haan. (2005) “An Instructional Framework for Introducing Spatially Distributed Hydrologic Design Concepts”. In *Proceedings of the American Society for Engineering Education Annual Conference and Exposition*, June 20–23, 2004, Salt Lake City, UT, USA.
3. Ronald E. Lacey, Jacqueline E. Price, and **Joshua M. Peschel**. (2003). “A Mini-Robot Sumo Competition to Teach Mechatronics to Engineering Undergraduates”. In *Proceedings of the ASAE Annual International Meeting*, Paper No. 033131, July 27–30, 2003, Las Vegas, NV, USA.
2. **Joshua M. Peschel**, Patricia K. Haan, and Ronald E. Lacey. (2003) “A SSURGO Pre-Processing Extension for the ArcView Soil and Water Assessment Tool”. In *Proceedings of the ASAE Annual International Meeting*, Paper No. 032123, July 27–30, 2003, Las Vegas, NV, USA.
1. **Joshua M. Peschel** and Paul N. Roschke. (2001) “Neuro-Fuzzy Model of a Large Magnetorheological Damper”. In *Proceedings of the Texas Section ASCE Spring Meeting*, March 2001, San Antonio, TX, USA.

PRESENTATIONS AND POSTERS

(PUBLICATIONS WITH ADVISED STUDENTS* AND POST-DOCS** AS NOTED)

48. 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.
47. 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, July 29–August 1, 2018, Detroit, MI, USA.
46. Sierra N. Young*, Jacob Riesen* and **Joshua M. Peschel**. (2018) “*In Situ* Measurement of Soil-Water Parameters using a Micro Unmanned Aerial Vehicle”. *2018 World Environmental and Water Resources Congress*, American Society of Civil Engineers, June 3–7, 2018, Minneapolis, MN, USA.
45. **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.
44. Sierra N. Young* and **Joshua M. Peschel**. (2016) “Bathymetric Mapping with a Small Unmanned Surface System”. *2016 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 22–26, 2016, West Palm Beach, FL, USA.
43. Alex Vande Loo*, Ben Burright*, Joe Early*, Josh Lacoma*, Jack Wilkinson*, Sierra N. Young* and **Joshua M. Peschel**. (2018). “Design and Control of Small Manipulators for Unmanned Aerial Vehicles (UAVs)”. Iowa State University Research Day, April 25, 2018, Ames, IA, USA.
42. Ryan Lanciloti*, Noah Brady*, Dakota Berbrich*, Daniel Myers*, Sierra N. Young* and **Joshua M. Peschel**. (2018). “Water Measurement System for Unmanned Surface Vehicles”. Iowa State University Research Day, April 25, 2018, Ames, IA, USA.
41. Samuel Hassebroek*, Jamie Peterson*, Anthony Rosenhamer*, Sierra N. Young* and **Joshua M. Peschel**. (2018). “Unmanned Aerial Vehicle Interface Development”. Iowa State University Research Day, April 25, 2018, Ames, IA, USA.

40. Robert Steiner*, Jacob Riesen*, Sierra N. Young* and **Joshua M. Peschel**. (2018). "Design of a Soil Sampling Mechanism for Unmanned Aerial Vehicles". Iowa State University Research Day, April 25, 2018, Ames, IA, USA.
39. 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.
38. Sierra N. Young* and **Joshua M. Peschel**. (2015) "Canopy Measurements with a Small Unmanned Aerial System". American Geophysical Union Fall Meeting, December 14–18, 2015, San Francisco, CA, USA.
37. 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.
36. Tyler A. DeNooyer*, Ashlynn S. Stillwell, and **Joshua M. Peschel**. (2015) "Integrating Water Resources and Power Generation: The Energy-Water Nexus in Illinois". In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
35. Adam J. Burns* and **Joshua M. Peschel**. (2015) "A High Resolution Sensing Method for Agricultural Crop Sub-Canopy Environments". In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
34. **Joshua M. Peschel**. (2015) "Environmental Sensor Placement in Tree Canopies Using Small Unmanned Aerial Systems". In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
33. Tianyu He*, Fernanda P. Maciel Yo*, and **Joshua M. Peschel**. (2015) "Sensitivity of Coupled Drainage to Green Infrastructure". In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
32. Christopher M. Chini*, **Joshua M. Peschel**, and Ashlynn S. Stillwell. (2015) "On Green Infrastructure Assessment and Policy Between Major United States Cities". In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
31. Elizabeth E. Depwe*, Meng Han*, and **Joshua M. Peschel**. (2015) "Extracting Curbside Storm Drain Locations from Street-Level Images". In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
30. Meng Han*, **Joshua M. Peschel**, and Sudhir Kshirsagar. (2015) "A Visual Sensing Approach for Storm Sewer Overflow Detection and Measurement". In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
29. Saki Handa* and **Joshua M. Peschel**. (2015) "Agricultural Tile Drain Outlet Mapping with a Small Unmanned Surface System". In *Proceedings of the 2015 World Environmental and Water Resources Congress*, American Society of Civil Engineers, May 17–21, 2015, Austin, TX, USA.
28. **Joshua M. Peschel** and Anthony T. Cahill. (2011) "On the Fair Partitioning of Soil Data Sets for Multi-Scale Soil Water Flow Analysis", American Geophysical Union Fall Meeting, December 5–9, 2011, San Francisco, CA, USA.

27. **Joshua M. Peschel**, Robin R. Murphy, and J. Robert McKee. (2011) "Visual Common Ground in Small Unmanned Aerial Systems". Texas Research Exchange Fest, September 26, 2011, College Station, TX, USA.
26. **Joshua M. Peschel** and Tracy Hammond. (2010) "A Surfaceless Pen-Based Interface". Texas A&M University Student Research Week Conference, March 31–April 2, 2010, College Station, TX, USA (*First Place Session and Overall Winner in University-Wide Computational Sciences Oral Division*).
25. **Joshua M. Peschel** and Tracy Hammond. (2010) "A Pen-Based Approach for Water Resources Model User Interfacing". In *Proceedings of the AWRA GIS and Water Resources V Conference*, March 29–31, 2010, Orlando, FL, USA.
24. **Joshua M. Peschel**, Brandon Paulson, and Tracy Hammond. (2010) "A Surfaceless Pen-Based Interface". Texas A&M University Department of Computer Science and Engineering Industrial Affiliates Program, March 2, 2010, College Station, TX, USA.
23. **Joshua M. Peschel**, Patrick Robinson, and Tracy Hammond. (2010) "A BioSocial Networking Device", Texas A&M University Department of Computer Science and Engineering Industrial Affiliates Program, March 2, 2010, College Station, TX, USA.
22. Martin Field, Drew Logsdon, **Joshua M. Peschel**, Aaron Wolin, Tracy Hammond, and Anthony T. Cahill. (2010) "Civil Engineering Sketch Workbook", Texas A&M University Department of Computer Science and Engineering Industrial Affiliates Program, March 2, 2010, College Station, TX, USA.
21. Drew Logsdon, Tracy Hammond, **Joshua M. Peschel**, Joshua Johnston, Paul Taelle, Aaron Wolin, and Brandon Paulson. (2010) "COASketch: A System for Sketching Course-of-Action Diagrams", Texas A&M University Department of Computer Science and Engineering Industrial Affiliates Program, March 2, 2010, College Station, TX, USA.
20. **Joshua M. Peschel**, Katie Dahmen, Paul Taelle, and Tracy Hammond. (2008) "Integration Sketch Recognition Technologies into Your Classroom". In *Proceedings of the American Society for Engineering Education Frontiers in Education Conference*, October 22–25, 2008, Saratoga Springs, NY, USA.
19. Anthony T. Cahill and **Joshua M. Peschel**. (2008) "Relative Importance of Network Structure and Spatial Correlation of Runoff on Stream Flow Distribution Tails". American Geophysical Union Fall Meeting, December 15–19, 2008, San Francisco, CA, USA.
18. **Joshua M. Peschel** and Tracy Hammond. (2008) "A Sketched-Truss Recognition and Analysis Tool". Texas A&M University Student Research Week Conference, March 25, 2008, College Station, TX, USA (*Winner of Interdisciplinary Research Recognition Award for Computational Sciences Division*).
17. **Joshua M. Peschel**, Tracy Hammond, Kelly Brumbelow, and Anthony T. Cahill. (2008) "A Sketch-Based Interface for Rapid Floodplain Assessment". In *Proceedings of the AWRA GIS and Water Resources V Conference*, March 17–19, 2008, San Mateo, CA, USA (*Winner of Most Outstanding Student Participant Award*).
16. **Joshua M. Peschel**, Patricia K. Smith, and Ronald E. Lacey. (2007) "The Effects of Urbanization on Recharge Levels in the Semi-Arid Edwards Aquifer Region of Texas". In *Proceedings of the First International Conference on Sustainable Urbanism*, April 1, 2007, College Station, TX, USA.

15. **Joshua M. Peschel** and Anthony T. Cahill. (2007) “Probe Length Effects on Thermally-Biased TDR Measurements”. American Geophysical Union Joint Assembly Meeting, May 22–25, 2007, Acapulco, Mexico.
14. **Joshua M. Peschel**, Patricia K. Smith, and Ronald E. Lacey. (2007) “The Effects of Urbanization on Recharge Levels in the Semi-Arid Edwards Aquifer Region of Texas”. Texas A&M University Student Research Week, March 2007, College Station, TX, USA (*Placed Third in Division Oral Presentation Competition*).
13. Patricia K. Smith and **Joshua M. Peschel**. (2006) “Impacts of Land Cover Change on Natural Recharge Levels in the Semi-Arid Edwards Aquifer Region of Texas”. American Geophysical Union Fall Meeting, December 11–15, 2006, San Francisco, CA, USA.
12. **Joshua M. Peschel** and Patricia K. Smith. (2006) “Estimating Natural Recharge Levels in the Semi-Arid Edwards Aquifer Region of Texas Using the SWAT Model”. In *Proceedings of the AWRA GIS and Water Resources IV Conference*, May 8–10, 2006, Houston, TX, USA.
11. Karen S. Sell, **Joshua M. Peschel**, Matthew E. Simmons, and Bruce E. Herbert. (2006) “Enhancing Undergraduate Education in Earth and Environmental Science through Information Technology (IT)-Supported Authentic Inquiry”. Education Research Exchange (ERE), College Station, TX, USA.
10. **Joshua M. Peschel** and Anthony T. Cahill. (2005) “On the Diffusivity of Water Vapor Under Thermal Gradients in Soils”. American Geophysical Union Fall Meeting, December 5–9, 2005, San Francisco, CA, USA.
9. Kelly Brumbelow, **Joshua M. Peschel** and Anthony T. Cahill. (2005) “A Soft Computing Approach for Estimating Natural Recharge Levels in the Semi-Arid Edwards Aquifer of Texas”. American Geophysical Union Fall Meeting, December 5–9, 2005, San Francisco, CA, USA.
8. Karen S. Sell, **Joshua M. Peschel**, Matthew E. Simmons, and Bruce E. Herbert. (2005) “IT-Supported Authentic Inquiry in Undergraduate Science and Engineering Education”. American Geophysical Union Fall Meeting, December 5–9, 2005, San Francisco, CA, USA.
7. Karen S. Sell, Heather R. Miller, Shari Hilding-Kronforst, Sandra Metoyer, Rachel Butzler, **Joshua M. Peschel**, Cynthia Warren, Bruce E. Herbert, Carol Stuessy, and Janie Schielack. (2005) “Transforming the Science Ph.D. Experience: The Role of Educational Partnerships in Developing STEM Education Experience. National Science Foundation Teaching and Learning Centers Principal Investigator Meeting”. Washington, DC, USA.
6. Ronald E. Lacey, **Joshua M. Peschel**, Urs P. Kreuter, Patricia K. Haan, J. Richard Conner, Ronald J. Branyon, and Keight L. Olenick. (2004). “Effects of Urbanization on Ecological Services in a Semi-Arid Region of the United States”. NASA Land Cover and Land Use Change (LCLUC) Fall Meeting, January 2004, Baltimore, MD, USA.
5. Ronald J. Branyon, Patricia K. Haan, **Joshua M. Peschel**, and Ronald E. Lacey. (2004) “Modeling the Effects of Urbanization and Vegetative Changes on Recharge to the Edwards Aquifer”. ASAE Annual International Meeting, Poster No. 042135-210-7, August 1–4, 2004, Ottawa, Canada.
4. **Joshua M. Peschel** and Ronald E. Lacey. (2003) “Wavelet Analysis of Aquifer Levels in a Semi-Arid Region”. The Texas Water Summit, Austin, TX, USA.
3. **Joshua M. Peschel**, Ronald E. Lacey, and Patricia K. Haan. (2003) “Quantifying Urbanization in a Semi-Arid Region Using Land Cover and Census Data”. First Annual Pathways Research Symposium, Galveston, TX, USA.

2. **Joshua M. Peschel**, Ronald E. Lacey, Patricia K. Haan, and Urs P. Kreuter. (2002) “Quantifying Land Cover Features of the Sabinal River Watershed Using ANFIS”. American Geophysical Union Fall Meeting, December 13–17, 2004, San Francisco, CA, USA.
1. **Joshua M. Peschel**, Ronald E. Lacey, Urs P. Kreuter, J. Richard Conner, and Patricia K. Haan. (2002) “Quantifying Landscape Elements in a Semi-Arid Region: A GIS-based Approach. NASA Land Cover and Land Use Change (LCLUC) Fall Meeting”, November 2002, Baltimore, MD, USA.

Invited Talks

45. “Visual Sensemaking for Precision Animal Science.” Invited Speaker, Precision Livestock Farming Workshop, Iowa State University, Ames, IA, USA, December 6, 2018.
44. “Robot-Assisted Data Collection in Cyber-Physical-Human Systems for Agriculture.” Invited Departmental Seminar Speaker, Bioproducts and Biosystems Engineering, University of Minnesota, Minneapolis, MN, USA, October 18, 2018.
43. “Robot-Assisted Visual Sensing and Sensemaking for Water Resources in Agricultural, Natural, and Urban Systems.” Invited Keynote Speaker, Korea International Water Week, Daegu Metropolitan City, South Korea, September 18, 2018.
42. “Integrating Human-Robot Interaction for Cyber-Physical-Human Systems in Agriculture.” Invited Departmental Seminar Speaker, Plant and Soil Sciences, University of Delaware, Newark, DE, USA, August 31, 2018.
41. “Human-Robot Interaction in Cyber-Physical-Human Systems.” Invited Keynote Speaker, IEEE International Conference on Robotics and Automation, Workshop on Human-Robot Interaction with UAVs: Challenges and Frontiers, Brisbane, Queensland, Australia, May 20, 2018.
40. “Robot-Assisted Data Collection in Cyber-Physical-Human Systems.” Invited Speaker, Iowa State University Big Data Summer School - Foundations Track, Ames, IA, USA, May 17, 2018.
39. “LivestockCV: Towards Automated Visual Behavioral Screening for Livestock.” Invited Speaker, Iowa State University Big Data Summer School - Digital Agriculture Track, Ames, IA, USA, May 17, 2018.
38. “Designing a Visual Sensing and Sensemaking Classifier for Beef Cattle.” Invited Speaker, Iowa State University Big Data Summer School - Digital Agriculture Track, Ames, IA, USA, May 17, 2018.
37. “Sensing and Sensemaking in Cyber-Physical-Human Systems.” Invited Departmental Seminar Speaker, Civil and Environmental Engineering, Vanderbilt University, Nashville, TN, USA, May 8, 2018.
36. “Robots Lend a Hand.” Invited Keynote Speaker and Panelist, Human Skillset Academy, Iowa State University, Ames, IA, USA, April 13, 2018.
35. “From Disney to Digital Livestock.” Invited Speaker, Iowa State University Faculty Research Day, Ames, IA, USA, January 29, 2018.

34. “The Future of Phenomics-Enabled Biology: Key Takeaways from Phenome 2018.” Invited Seminar Speaker (with Dr. Carolyn Lawrence-Dill), Plantae Seminar Series Live Broadcast, March 6, 2018.
33. “Human-Robot Interaction in Unmanned Systems.” Invited Departmental Seminar Speaker, Electrical and Computer Engineering, Iowa State University, Ames, IA, USA, January 29, 2018.
32. “Rise of the Robots!” Invited Seminar Speaker, Iowa State University Honors Program, Ames, IA, USA, January 24, 2018.
31. “Integration of Distributed Visual Sensing and Sensemaking for Improving Animal Health and Agricultural Water Management.” Invited Keynote Speaker, Innovative Strategies for Sustainable Water Management, Lovely Professional University, Phagwara, Punjab, India, November 17, 2017.
30. “Human-Infrastructure Interaction: Sensing and Sensemaking for Agricultural, Natural, and Urban Systems.” Invited Seminar Speaker, Iowa State University Engineering Ambassador and Mentor Program, Ames, IA, USA, November 2, 2017.
29. “Robots, Robots Everywhere!” Invited Seminar Speaker, Iowa State University Honors Program, Ames, IA, USA, October 26, 2017.
28. “Socio-Hydrologic Understanding in Data Deserts Using Robots.” Invited Seminar Speaker, Carnegie Mellon University School of Computer Science, Pittsburgh, PA, USA, April 20, 2017.
27. “Turning Little Data Deserts into Big Data Rainforests.” Invited Panelist, Midwest Big Data Hub Machine Learning Farm-to-Table Workshop, Urbana, IL, USA, April 28, 2017.
26. “Robot-Assisted Measurement for Hydrologic Understanding in Data Sparse Regions.” Invited Speaker, Iowa State University Celebration of Science and Scholarship, Ames, IA, USA, April 13, 2017.
25. “Human-Infrastructure Interaction: Sensing and Sense-Making for Agricultural, Natural, and Urban Systems.” Invited Speaker, Agricultural Systems and Environmental Stewardship Meeting, Ames, IA, USA, April 3, 2017.
24. “Transportation Robotics.” Invited Speaker, The 65th Illinois Traffic Engineering and Safety Conference (TES), Urbana, IL, USA, October 20, 2016.
23. “Robot-Assisted Inspection of Public Works Infrastructure.” Invited Speaker, Annual Meeting of the American Public Works Association - Illinois Chapter, Peoria, IL, USA, May 5, 2016.
22. “Robot-Assisted Measurements in Data Sparse Regions.” Invited Speaker, Hydrology and Earth Sciences in Data Scarce Regions Session, American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 16, 2015.
21. “Drones and Rovers.” Invited Keynote Speaker, The 102nd Illinois Transportation and Highway Engineering (THE) Conference, Urbana, IL, USA, February 24, 2016.
20. “Implementing a Legacy Engineering Model in Azure ML for the City of Chicago.” Invited Speaker, Machine Learning, Analytics & Data Science Conference, Microsoft Research, Redmond, WA, USA, December 7, 2015.
19. “Smart Sensing for Sense-Making.” Invited Departmental Colloquium Speaker, Department of Computer Science and Engineering, University of Nebraska, Lincoln, NE, USA, December 3, 2015.

18. “Sustainability Initiatives for University-Airport Partnerships: A Focus on Chicago O’Hare International Airport.” Invited Keynote Speaker, 2015 Airports Going Green Conference, Chicago, IL, USA, October 26, 2015.
17. “Robot-Assisted Measurement of Geophysical Information.” Invited Speaker, CUAHSI Workshop on the Role of Runoff and Erosion on Soil Carbon Stocks: From Soils to Landscapes, Purdue University, West Lafayette, IN, USA, October 21, 2015.
16. “Real-World Data Collection for Cortana Analytics.” Invited Speaker, Microsoft Cortana Analytics Workshop, Microsoft Research, Redmond, WA, USA, September 10, 2015.
15. “Robot-Assisted Sensing and Sense-Making.” Invited Speaker, Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore, India, June 12, 2015.
14. “Sensing and Sense-Making for Agricultural, Natural, and Urban Systems.” Invited School Colloquium Speaker, School of Ecology and Conservation Colloquium, University of Agricultural Sciences, Bangalore, India, June 9, 2015.
13. “Making Water and Green Infrastructure Smart.” Invited Speaker, Illinois Science & Technology Institute, Lake View High School, Chicago, IL, USA, December 15, 2014.
12. “Emerging Technologies for Civil and Environmental Engineering.” Invited Distinguished Alumni Speaker, Sealy High School, Sealy, TX, USA, December 15, 2014.
11. “Human-Infrastructure Interaction and Emerging Technologies.” Invited Speaker, NTU-UIUC Global Issues Forum, National Taiwan University, Taipei Taiwan, November 1, 2014.
10. “Rise of the Civil Robots: Applications of Low-Cost Robotics Technologies for Civil and Environmental Engineering.” Invited Keynote Speaker, American Society of Civil Engineers Central Illinois Meeting & Banquet, Memorial Stadium, Champaign IL, USA, September 30, 2014.
9. “Human-Robot Investigation of Waterways with Small USVs.” Invited Speaker, Summer Institute on Flooding, Center for Emergency Informatics, College Station, TX, USA, June 4, 2014.
8. “Rise of the Civil Robots: Applications in Civil and Environmental Engineering.” Invited Departmental Seminar Speaker, Environmental Engineering & Science Seminar, Northwestern University, Evanston, IL, USA, May 16, 2014.
7. “Human-Robot Interaction for Civil and Environmental Engineering.” Distinguished Alumni Speaker, ACM/IEEE International Conference on Human-Robot Interaction Pioneers Workshop, Bielefeld University, Germany, March 3, 2014.
6. “Rise of the Civil Robots.” Invited Seminar Speaker, Center for Information Technology Research in the Interest of Society (CITRIS) Fall 2013 Research Exchange Seminar Series, University of California, Berkeley, CA, USA, October 23, 2013.
5. “Computational Thinking for Environmental Hydrology and Hydraulic Engineering.” Invited Seminar Speaker, Ven Te Chow Hydrosystems Seminar, University of Illinois, Urbana, IL, USA, September 27, 2013.
4. “Rise of the Civil Robots (With Drone Flying Demo).” Invited Seminar Speaker, Illinois State Geological Survey (ISGS), Urbana, IL, USA, September 23, 2013.

3. “Robots and Water Really Do Mix: Applications for Water Resources Engineering.” Invited Seminar Speaker, Department of Hydraulic Engineering, Tsinghua University, Beijing, China, May 17, 2013.
2. “Robots and Water Really Do Mix.” Invited Seminar Speaker, Ven Te Chow Hydrosystems Seminar, University of Illinois, Urbana, IL, USA, October 5, 2012.
1. “Human-Robot Interaction in Small Unmanned Aerial Systems.” Invited Expert Speaker, Board of Human-System Integration (BOHSI), National Academy of Science, Washington DC, USA, November 15, 2012.

Instruction

CURRENT PH.D. STUDENTS

Ms. Divya Handa (Iowa State ABE); anticipated graduation: December 2021
 Mr. Armin Maraghehmoghaddam (Iowa State ABE); anticipated graduated: December 2019
 Mr. Harman Sangha (Iowa State ABE); anticipated graduated: December 2021
 Mr. Abdullah Sourav (Iowa State ABE); anticipated graduation: December 2019

CURRENT M.S. THESIS STUDENTS

Ms. Joy Lee (Iowa State ABE); anticipated graduation: December 2019
 Mr. Prabhu Pichaikutty (Iowa State ECpE); anticipated graduation: December 2019

PAST POST-DOCTORAL RESEARCH ASSOCIATES

Dr. Erkan Kayacan (University of Illinois at Urbana-Champaign)
 Supervised: December 2015 – January 2017
 First Position: Research Associate; Computer Science and Artificial Intelligence Laboratory (CSAIL); Massachusetts Institute of Technology; Cambridge, MA, USA

GRADUATED PH.D. STUDENTS

Dr. Sierra N. Young (University of Illinois at Urbana-Champaign, December 2018)
 Dissertation Title: “Human-Robot Interaction for Telemanipulation by Small Unmanned Aerial Systems”
 First Position: Assistant Professor; Biological and Agricultural Engineering; North Carolina State University; Raleigh, NC, USA

GRADUATED M.S. THESIS STUDENTS

Ms. Caylee Coffman Mercado; August 2016
 Thesis Title: “A Sociotechnical-Based Economic Model for Mobile Rapid Phenotyping”
 First Position: Project Manager; Nationwide Shotcrete, Inc.; Newhall, CA, USA

Mr. Adam J. Burns (SRIS Fellow); December 2015
 Thesis Title: “Autonomous Ground-Based Robotic Navigation for an Agricultural Row Crop Environment”
 First Position: Co-Founder and Engineer; Agrible, Inc.; Chicago, IL, USA

Ms. Tianyu He; December 2015
 Thesis Title: “Comparing Dual Drainage Model (DDM) with SWMM: A Case Study in John Street Watershed, Champaign IL”
 First Position: Technical Staff; Green Metro Planning, LLC; Aurora, IL, USA

Ms. Sierra N. Young; December 2015
Thesis Title: "Robot-Assisted Measurement in Data-Sparse Regions"
First Position: Ph.D. Program (Chair: J.M. Peschel), University of Illinois at Urbana-Champaign

Ms. Elizabeth E. Depwe; August 2015
Thesis Title: "Extracting Curbside Storm Drain Locations from Street-Level Images"
First Position: Structural Project Engineer; DCI Engineering; Austin, TX, USA

Ms. Saki Handa; August 2015
Thesis Title: "Human-Machine Interaction for Unmanned Surface Systems"
First Position: Engineer II; Hatch Mott MacDonald, Akron, OH, USA

Ms. Fernanda P. Maciel Yo (Fulbright Scholar); August 2015
Thesis Title: "Spatially Distributed Bioaccumulation Risk Analysis: A GIS-Based Tool and a Case Study of Polychlorinated Biphenyls in the Great Lakes"
First Position: Ph.D. Program (Chair: M.H. Garcia), University of Illinois at Urbana-Champaign

Mr. Christopher M. Chini (SRIS Fellow; CEE Distinguished Fellow; NSF Grad Fellow); May 2015
Thesis Title: "An Experimental Method for Visualizing Undrained Shearing Failure in a Transparent Soft Clay Surrogate"
First Position: Ph.D. Program (Chair: A.S. Stillwell), University of Illinois at Urbana-Champaign

Mr. Meng Han; December 2014
Thesis Title: "A Computer Vision Approach for Combined Sewer Overflow Monitoring"
First Position: Technical Staff; Microsoft, Redmond, WA, USA

UNDERGRADUATE STUDENTS SUPERVISED

Mr. Greg Fabry (ECE Undergraduate Research Assistant); August 2015 – present
Project Title: A Collaborative Table and Mobile Sketch Interface

Mr. Jai Chung (CEE REU); Fall 2014
Report Title: A Causal Entropic Model for Qualitative Infrastructure Resilience Estimates

Ms. Tianyu He (CEE REU); Fall 2013
Report Title: Measuring Suspended Sediment Concentration with Time-Domain Reflectometry

Mr. Fred Plinke (CEE REU); Spring 2013
Report Title: Shear Testing and Three Dimensional Visualization in Silica Gel

Mr. Lance Langer (CEE REU); Summer 2012
Report Title: Sketch Recognition for Groundwater and Contaminant Modeling

PH.D. DISSERTATION COMMITTEES

Ms. Hao Liu (CEE EHHE, Chair: Arthur Schmidt); Final Exam TBD
Mr. Ren Wang (CEE SRIS, Chair: Daniel Work); Final Exam July 15, 2015
Mr. Yanning Li (CEE SRIS, Chair: Daniel Work); Final Exam July 28, 2017

TEACHING

(DEVELOPMENT OF A NEW COURSE* AS NOTED)

Spring 2018; Instructor, *ABE 690 Visual Sensing and Sensemaking**
Spring 2019; Lecture-laboratory course that provides a theoretical and practical introduction for 2D and 3D visual sensing for automated sensemaking with a focus on agricultural, natural, and urban systems;

it is for graduate students in a science or engineering discipline who desire to understand both the theoretical concepts and practical applications of computer vision for measuring, manipulating, and managing complex systems.

- Fall 2017–Spring 2019 Instructor, *ABE 415 Agricultural and Biosystems Engineering Design I*
Lecture-discussion course for upper-level undergraduate students for the identification of current design problems in agricultural and biosystems engineering. Development of alternate solutions using creativity and engineering analysis and synthesis techniques.
- Fall 2017–Spring 2019 Instructor, *ABE 416 Agricultural and Biosystems Engineering Design II*
Lecture-discussion course for upper-level undergraduate students for the identification of current design problems in agricultural and biosystems engineering. Development of alternate solutions using creativity and engineering analysis and synthesis techniques. Continuation of ABE 415.
- Spring 2016;
Spring 2015 Instructor, *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.
- Fall 2015 Instructor, *CEE 457 Groundwater*
Lecture-discussion course for upper-level undergraduates and graduate students on the physical properties of groundwater and aquifers, principles and fundamental equations of porous media flow and mass transport, well hydraulics and pumping test analysis, role of groundwater in the hydrologic cycle, groundwater quality and contamination.
- Spring 2015 Instructor, *CEE 498 Civil Information Systems**
Lecture-laboratory course for upper-level undergraduates and graduate students on the experimental instrumentation, acquisition, processing, and storage of data at multiple scales of volume, variety, velocity, and veracity; projects provided a working knowledge of modern informatics (e.g., GIS, cloud computing, etc.) as applied to the domain of civil and environmental engineering.
- Spring 2014;
Spring 2013 Instructor, *CEE 498 Sensors and Measurements**
Lecture-laboratory course for upper-level undergraduates and graduate students on the experimental approaches to information acquisition and processing for civil and environmental engineering applications, including analog and digital electronics, signal processing, time series analyses, communication networks, and data assimilation.
- Spring 2014;
Spring 2013 Instructor, *CEE 498 Global Leaders**
Lecture-laboratory course for upper-level undergraduates and graduate students to provide a global perspective and real-world experience by completing a hands-on international project. In Spring 2013, I took the class to worked on design problems in Chennai, India; In Spring 2014, I took the class to and worked on design problems in Beijing, China.
- Spring 2013;
Fall 2013 Instructor, *CEE 498 Geographic Information Systems**
Lecture-laboratory course for upper-level undergraduates and graduate students to provide a thorough overview of modern geographical information systems (GIS), specifically to analyze and develop solutions to open-ended design problems in primarily cyber-physical system areas as applied to the domain of civil and environmental engineering.

Service to the Profession

APPOINTED OR ELECTED LEADERSHIP

- 2018 Secretary, Emerging Information Systems (ITSC-254) Committee, American Society of Agricultural and Biological Engineers, Detroit, MI
- 2018 Secretary, Sustainability Committee, ASCE World Environmental and Water Resources Congress, Minneapolis, MN
- 2018 Vice Chair, Emerging and Innovative Technologies Committee, ASCE World Environmental and Water Resources Congress, Minneapolis, MN
- 2017 Secretary, Emerging and Innovative Technologies Committee, ASCE World Environmental and Water Resources Congress, Sacramento, CA
- 2016 Session Chair, Robot-Assisted Applications in Environmental and Water Resources Engineering, ASCE World Environmental and Water Resources Congress, West Palm Beach, FL
- 2015 Session Chair, Robot-Assisted Measurement of Geophysical Information, American Geophysical Union Fall Meeting, San Francisco, CA
- 2015 Program Committee, ACM International Conference on Human-Robot Interaction Pioneers Workshop, Portland, OR
- 2015 Program Committee, Fourth International Symposium on New Frontiers in Human-Robot Interaction, Canterbury, United Kingdom
- 2014 Organizing Committee and Registration Chair, ACM International Conference on Human-Robot Interaction, Bielefeld, Germany
- 2013 Organizing Committee and Registration Chair, ACM International Conference on Human-Robot Interaction, Tokyo, Japan
- 2012 General Chair, Special Session of Human-Robot Interaction, IEEE Symposium of Safety, Security, and Rescue Robotics, College Station, TX
- 2012 General Chair, ACM International Conference on Human-Robot Interaction Pioneers Workshop, Boston, MA

EDITORIAL BOARDS, EDITORSHIPS, AND REVIEWING ACTIVITIES

- since 2018 Associate Editor, *Transactions of the ASABE*
- since 2018 Editorial Board, *Nature Scientific Reports*
- since 2015 Editorial Board, *Sustainable and Resilient Infrastructure*
- 2015 Panel Reviewer, National Science Foundation Cyberlearning Program
- 2015 Reviewer, *Journal of Human-Robot Interaction*
- 2014 Associate Editor, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- 2014 CAREER Reviewer, National Science Foundation Perception, Action, and Cognition (PAC) Program
- since 2012 Reviewer, ACM/IEEE International Conference on Human-Robot Interaction
- since 2012 Reviewer, IEEE International Symposium on Safety, Security, and Rescue Robotics
- since 2013 Reviewer, *IEEE Transactions on Human-Machine Systems*
- since 2008 Reviewer, *Computer-Aided Design*
- since 2007 Reviewer, *Journal of Environmental Management*
- since 2007 Reviewer, *Water Resources Research*

IOWA STATE UNIVERSITY CAMPUS SERVICE

- since 2018 Member, University Precision Livestock Farming Steering Committee
- since 2018 Member, COE *Ad Hoc* Committee on Critical Infrastructure
- since 2018 Member, Faculty Senate IT Committee
- since 2018 Member, Faculty Senate University Services Committee
- since 2017 Member, ABE International Programs Committee
- since 2017 Member, ABE Compute Education Committee

UNIVERSITY OF ILLINOIS CAMPUS SERVICE

2015 Coordinator, Sustainable and Resilient Infrastructure Systems Seminar Series
since 2014 Member, University Water Council
since 2014 Member, Smart and Future Cities Vision-Strategy Group
since 2014 Working Group for Big Data Undergraduate Education
since 2013 Water and Sanitation Liaison, UILabs City Digital Initiative
2013 Admissions Co-Coordinator, Sustainable and Resilient Infrastructure Systems Program
2013 Admissions Co-Coordinator, Energy-Water-Environment Sustainability Program
2013 Coordinator, Ven Te Chow Hydrosystems Laboratory Seminar Series
2012-2015 Steering Committee, Sustainable and Resilient Infrastructure Systems, Energy-Water-Environment Sustainability, Societal Risk Management Programs
2012-2014 Faculty Mentor, ENG 198 Grand Challenge

MEMBERSHIP IN PROFESSIONAL AND HONORARY SOCIETIES

since 2017 International Association of Hydrological Sciences
since 2007 Institute of Electrical and Electronics Engineers
since 2007 Association for Computing Machinery
since 2005 American Society of Civil Engineers
since 2005 American Water Resources Association
since 2004 American Society of Engineering Education
since 2002 American Geophysical Union
since 2000 American Society of Agricultural and Biological Engineers
2011 National Honor Society Upsilon Pi Epsilon
2006 National Honor Society Chi Epsilon
2003 National Honor Society Alpha Epsilon
2001 National Honor Society Gamma Sigma Delta

MEMBERSHIP IN SERVICE ORGANIZATIONS

2013-2016 City of Champaign Historic Preservation Commission – Appointed Commissioner
since 2012 Roboticists Without Borders – University Chartered Member

CONSULTING ACTIVITIES

2015 Microsoft Research, Redmond, WA
2015 Software Engineering Institute, Pittsburgh, PA
2015 UILabs City Digital, Chicago, IL
2015 District of Columbia Water and Sewer Authority (DC Water), Washington, D.C.
2015 Greater Cincinnati Water Works (GCWW), Cincinnati, OH
2015 SC4, Inc., Champaign, IL
2014-2015 Global Quality Corp., Palo Alto, CA
2007-2010 TDI-Brooks International, Inc., College Station, TX
2007-2008 South Florida Water Management District, West Palm Beach, FL
2006 EMB Citrus, Huangjin, Chongqing Municipality, China
2006-2007 J-San Construction, LLC, Houston, TX
2004-2006 Imdecit, Monterrey, Nuevo Leon, Mexico