

MICHAEL PATRICK SAMA, Ph.D., P.E.

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CURRENT POSITION

Associate Professor, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. July 2019 to present.

EDUCATION

Doctor of Philosophy, Biosystems and Agricultural Engineering, University of Kentucky, August 2008 to July 2013. Dissertation: Precise Evaluation of GNSS Position and Latency Errors in Dynamic Agricultural Applications. Advisor: Timothy S. Stombaugh, Ph.D., P.E. GPA: 3.93

Master of Science, Biosystems and Agricultural Engineering, University of Kentucky, August 2004 to July 2008. Thesis: Low-Cost System for Remote Sensing in Agriculture. Advisor: Timothy S. Stombaugh, Ph.D., P.E. GPA: 3.84

Bachelor of Science, Computer and Systems Engineering, Rensselaer Polytechnic Institute, August 2000 to May 2004. Concentration: Signal Processing. GPA: 3.08

PROFESSIONAL EXPERIENCE

Associate Professor, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. July 2019 to Present. Supervisor: Michael D. Montross, Ph.D., P.E.

Assistant Professor, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. July 2013 to June 2019. Supervisors: Michael D. Montross, Ph.D., P.E. (2017-2019), Sue E. Nokes, Ph.D., P.E. (2013-2017).

Adjunct Instructor, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. January 2010 to July 2013. Supervisors: Sue E. Nokes, Ph.D., P.E. (2011-2013), Scott A. Shearer, Ph.D., P.E. (2010-2011).

Engineer Associate, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. February 2007 to July 2013. Supervisors: Timothy S. Stombaugh, Ph.D., P.E. (2008-2013), Richard S. Gates, Ph.D., P.E. (2007-2008).

Graduate Research Assistant, University of Kentucky, Department of Biosystems and Agricultural Engineering, Lexington, KY. July 2004 to February 2007. Supervisor: Timothy S. Stombaugh, Ph.D., P.E.

LICENSURE AND CERTIFICATION

Professional Engineer, Electrical and Computer Engineering, Commonwealth of Kentucky. License Number 28355. December 2011 to present.

Engineer in Training, Commonwealth of Kentucky. Certificate Number 14063. December 2010 to December 2011.

Remote Pilot, Federal Aviation Administration. Certificate Number 3982198. March 2017 to present.

SUMMARY**Grants^a**

Role	2013-present	< 2013	Total
PI ^β Nationally Competitive	\$1,595,218 (5)	-	\$1,595,218 (5)
Co-PI Nationally Competitive	\$3,280,630 (8)	-	\$3,280,630 (8)
PI ^β Other	\$150,536 (9)	\$149,981 (3)	\$300,517 (12)
Co-PI Other	\$297,000 (7)	\$269,400 (5)	\$566,400 (12)
Total	\$5,323,384 (29)	\$419,381 (8)	\$5,742,765 (37)

^aNumber of grants in parenthesis. ^β Includes dollar amounts to scope projects when I serve as PI on the scope project.

Refereed Publications^a

Status	2013-present	< 2013	Total
Published	20 (10)	4 (0)	24 (10)
In Press	1 (0)	-	1 (0)
In Review	5 (1)	-	5 (1)
Total	26 (11)	4 (0)	30 (11)

^aPublications in parenthesis are as first author or when graduate student under direct supervision is first author.

GRANTS AND CONTRACTS (\$5,742,765 total, \$1,595,218 to my program)***Nationally Competitive (\$4,875,848)******Current***

1. Hoagg, J.B., Bailey, S.C., Martin, A., **Sama, M.P.** 2019. CPS: Medium: Data-Driven Adaptive Real-Time (DART) Flow-Field Estimation Using Deployable UAVs. NSF CPS^{1,3}. **\$1,199,150**. 9/1/19-8/31/22. Sama: Co-PI. (PI on \$272,389 scope project).
2. Hoagg, J., Jackson, J.J., **Sama, M.P.**, Yang, R. 2017. NRI: INT: Autonomous Unmanned Aerial Robots for Livestock Heath Monitoring. USDA-NIFA National Robotics Initiative^{1,3}. **\$899,907**. 8/1/17-7/31/20. Sama: Co-Investigator (PI on \$202,883 scope project).
3. Luck, J.D., Kruger, G.R., Pitla, S.K., **Sama, M.P.**, 2017. Next-Generation Spray Drift Mitigation via Field-Deployable Real-Time Weather Monitoring and Novel Spray Nozzle Control Technology. USDA-NIFA AFRI^{1,3}. **\$500,000**. 7/1/17-6/30/21. Sama: Co-Investigator (PI on \$54,070 sub-contract from UNL).

4. Dvorak, J.S., **Sama, M.P.**, Montross, M.D., Goff, B.M., Jackson, J.J., Williamson, J. 2016. LIDAR and Photogrammetry to Map Alfalfa Yield and Quality using Unmanned Aircraft Systems. USDA-NIFA Alfalfa and Forage Research Program^{1,3}. **\$250,000**. 9/1/16-8/31/19. Sama: Co-Investigator.
5. **Sama, M.P.**, Montross, M.D, Dvorak, J.S., McNeill, S.G., Mark, T.B. 2015. Development of a CAN-Based Data Management and Decision Support System for Optimal Equipment and Harvest Timing from Grain Harvest to Storage. USDA-NIFA Agriculture and Food Research Initiative^{1,3}. **\$500,000**. 11/1/15-10/31/18. Sama: Principal Investigator

Completed

1. Smith S.W., Hoagg, J.B., Bailey, S.C., **Sama, M.P.**, Guzman, M.I. 2015. NSF RII Track-2 FEC: Unmanned Aircraft System for Atmospheric Physics. Oklahoma State University^{1,3,7}. **\$1,400,000** (Subcontract on \$5,995,869 NSF Research Infrastructure Improvement grant). 8/1/15-7/31/19. Sama: Co-Investigator (PI on \$305,359 scope project).
2. Taraba, J.L, **Sama, M.P.**, Reed. M.R. 2015. Proposal to Host Borlaug Fellow from Mexico on Greenhouse Gas (GHG) Emissions from Ruminant Manure. USDA Borlaug Fellowship Program^{1,3}. **\$29,028**. 2/8/16-12/29/17. Sama: Co-Investigator.
3. Pitla, S.K., **Sama, M.P.**, Luck, J.D. 2012. AgStatMonitor: A Mobile Device Application for Agricultural Machine Monitoring. ASABE Mobile App Challenge^{1,6}. **\$9,397**. 12/1/12-8/31/13. Sama: Co-Principle Investigator.

Pending (not included in total)

Regionally Competitive (\$150,000)

Current

Completed

1. Wendroth, O.O., **Sama, M.P.**, Lee, C., Knott, C., Murdock, L., Vellidis, G., Porter, W., Leib, B., Ortiz, B., Delaney, D., Knappenberger, T. 2016. Developing Irrigation Management Strategies for Soybean Production in Humid Regions of the Southern US. Southern Soybean Research Program^{1,5}. **\$150,000**. 3/1/16-2/28/19. Sama: Co-Investigator.

Locally Competitive (\$288,366)

Current

1. **Sama, M.P.**, Jackson, J.J., 2019. Enabling a Citizen Science Contribution to Meteorology Using Small Unmanned Aircraft Systems. NASA KY Space Grant Consortium^{1,4}. **\$40,000**. 1/1/19-12/31/19. Sama: Principle Investigator
2. McGrath, J., Ritchey, E., **Sama, M.P.**, Shockley, J., Poffenbarger, H. 2018. Nitrogen Rate Decision Support for Kentucky Corn Grain Production. Kentucky Corn Growers Association.^{1,5}. **\$88,366**. 4/1/18-12/01/19. Sama Co-Investigator.

Completed

1. Taraba, J.L., Lee, B., Edwards, D., **Sama, M.P.** 2015. Phosphorus Runoff Potential and Nitrogen Flux Emissions from Compost Generated in Compost Bedded Pack Barns. USDA-NRCS-KYSO Kentucky State CIG^{1,3,4}. **\$75,000**. 9/1/15-8/31/18. Sama: Co-Investigator.
2. Dvorak, J.S., **Sama, M.P.** 2016. Efficient Routing with Multiple Vehicles for Agricultural Area Coverage Tasks. KSEF Research Development Excellence Program^{1,4}. **\$30,000**. 7/1/16-6/30/17. Sama: Co-Investigator
3. Luck, J.D., **Sama, M.P.**, McGrath, J.M., Luck, B.D., Fulton, J.P. 2015. Precision Agriculture Farm Management Software and Field Hardware Training for Kentucky Soybean, Corn, and Wheat Producers. KY Soybean Board^{1,5}. **\$5,000**. 1/1/15-12/31/16. Sama: Co-Investigator.
4. **Sama, M.P.**, Bailey, S.C. 2014. Wildlife Conservation UAV Challenge. NASA Kentucky Space Grant Consortium^{1,4}. **\$10,000**. 1/1/14-12/31/15. Sama: Principle Investigator.

UK Internally Competitive (\$312,717)

Current

Completed

1. Tumlin, K.I., Pekarchik, K., **Sama, M.P.**, 2018. Characterization of Real and Simulated Forces on Back Biomechanics to Promote Safety in Horse Racing Jockeys. Central Appalachian Regional Education and Research Center (CARERC) Pilot Funds^{2,7}. **\$12,000**. 8/1/18-6/30/19. Sama: Co-Investigator.
2. **Sama, M.P.** 2017. High-Throughput Soil Sampling System. VPR Minor Equipment Competition^{2,7}. **\$39,336**. 1/1/18-6/30/18. Sama: Principal Investigator.
3. **Sama, M.P.**, Shearer, C.A., Caudill, R.K., Hubbard, S., Walker, J. 2015. Machine Systems Senior Design Project. Charles E. Barnhart Fund for Excellence². **\$1,000**. 7/1/15-6/30/16. Sama: Principal Investigator.
4. **Sama, M.P.**, Stombaugh, T.S., Luck, J.D. 2010. Scalable Control and Data Acquisition for Variable-Rate Applications. USDA-NIFA Special Grant^{2,3}. **\$48,710**. 9/1/10-8/31/13. Sama: Principle Investigator.
5. Luck, J.D., Pitla, S.K., **Sama, M.P.**, Shearer, S.A. 2010. Sprayer Controller Evaluation for Improving Spatial Application of Pesticides. USDA-NIFA Special Grant^{2,3}. **\$49,976**. 9/1/10-8/31/13. Sama: Co-Investigator.
6. Zandonadi, R.S., Stombaugh, T.S., **Sama, M.P.** 2009. Reduced Equipment Set for Multiple Vehicle Guidance. USDA-CSREES Special Grant^{2,3}. **\$49,992**. 9/1/09-8/31/12. Sama: Co-Investigator.

7. Luck, J.D., Pitla, S.K., **Sama, M.P.**, Shearer, S.A. 2009. A Pneumatic Nozzle Control System for Variable-Rate Pesticide Application. USDA-CSREES Special Grant^{2,3}. **\$49,432**. 9/1/09-8/31/12. Sama: Co-Investigator.
8. **Sama, M.P.**, Stombaugh, T.S. Shearer, S.A. 2008. A System for Implementing Dynamic Accuracy Standards for Machine Guidance Technology in Agriculture. USDA-CSREES Special Grant^{2,3}. **\$62,271**. 9/1/08-8/1/11. Sama: Principle Investigator.

Non-Competitive (\$244,200)

Completed

1. **Sama, M.P.** 2017. Wildcat Pulling Team Equipment Donation. Danfoss Power Solutions^{8,9}. **\$5,000**. 1/1/17-12/31/17. Sama: Principal Investigator.
2. **Sama, M.P.** 2016. Educational Laboratory Equipment Grant. UK College of Engineering². **\$8,200**. 1/1/16-12/31/16. Sama: Principal Investigator.
3. Montross, M.D., **Sama, M.P.**, Dvorak, J.S. 2016. Evaluation of Crop Logistics. Case New Holland America LLC^{1,8}. **\$20,000**. 1/1/16-12/31/16. Sama: Co-Investigator.
4. **Sama, M.P.**, Day, G.B. 2015. Fan Assessment Numeration Systems (FANS) for Agricultural Building Ventilation Measurement in Emissions Testing. Contract with University of Arkansas^{1,7}. **\$15,000**. 8/1/15-7/31/16. Sama: Co-Investigator.
5. **Sama, M.P.** 2015. 6 Seats of CANalyzer PRO V8.5. Vector CANtech, Inc^{8,9}. **\$27,000**. 1/1/15-12/31/15. Sama: Principal Investigator.
6. Taraba, J.L., **Sama, M.P.**, Bewley, J.M. 2015. Computational Fluid Dynamics for Analysis of Compost Bedded Pack (CBP) Dairy Barns. KAES Research Activity Award². **\$5,000**. 1/1/15-6/30/15. Sama: Co-Investigator.
7. **Sama, M.P.** 2014. 1 CASE IH 8240 Combine Cab, CNH Industrial^{8,9}. **\$5,000**. Sama: Principal Investigator.
8. **Sama, M.P.**, Day, G.B. 2011. Fan Assessment Numeration Systems (FANS) for Agricultural Building Ventilation Measurement in Emissions Testing. Individual Contracts with UIUC (1), IASU (1), UGPH (1), UDEL (1)^{1,7}. **\$39,000**. 1/1/11-8/31/11. Sama: Principle Investigator.
9. Gates, R.S., **Sama, M.P.** 2007. Fan Assessment Numeration Systems (FANS) for Agricultural Building Ventilation Measurement in Emissions Testing. Contract with Purdue University^{1,7}. **\$60,000**. 3/1/07-11/30/07. Sama: Co-Investigator.
10. Gates, R.S., **Sama, M.P.** 2007. Fan Assessment Numeration Systems (FANS) for Agricultural Building Ventilation Measurement in Emissions Testing. Individual Contracts with ISU(2), SDSU(1), UMN(1), UAR(1), USDA-ARS-MS(1)^{1,7}. **\$60,000**. 1/1/07-8/31/07. Sama: Co-Investigator.

Multistate and Hatch Projects

Current

1. S1069. 2016. Research and Extension for Unmanned Aircraft Systems (UAS) Applications in U.S. Agriculture and Natural Resources. 10/1/16-9/30/21. Sama: Principal-Investigator and member of the proposal development team.
2. NCERA180. 2016. Precision Agriculture Technologies for Food, Fiber, and Energy Production. 10/01/16-9/30/21. Sama: Co-Investigator.
3. **Sama, M.P.** 2014. Development of a Distributed Control and Data Acquisition System for Variable-Rate Applications in Precision Agriculture. KAES KY005038. 10/1/14-9/30/18. Sama: Principal-Investigator.

Completed

1. Stombaugh, T.S., **Sama, M.P.**, Shearer, S.A. 2009. Standardized Testing of Global Navigation Satellite System Technology. KAES KY005032. 6/1/09-5/31/13. Sama: Co-Investigator

Non-Awarded Grant Proposals (not included in total)

1. Hoagg, J., **Sama, M.P.**, Bailey, S.C., Martin, A., Hayes, M. 2018. CPS: Medium: Data-Driven Adaptive Real-Time (DART) Flow-Field Estimation for Livestock Welfare Management. NSF CPS^{1,3}. **\$999,759**. 1/1/19-12/32/21. Sama: Co-Principle Investigator.
2. Chilson, P.B., Allen, B.D., Ardanuy, P., Avery, M., Bailey, S.C., Basara, J., Brewster, K., Carson, K., Fiebrich, C., Frazier, A., Huck, R., Jacob, J., Kimball, S., Klein, P., Montalvo, C., Pillar-Little, E., **Sama, M.P.**, Smith, S.W., Weber, M., Yearly, M. 2018. 4D Sampling and Modeling of the Earth's Lower Atmosphere using Small Unmanned Aircraft Systems. NASA EVS3^{1,3}. **\$12,000,000**. 1/1/19-12/31/22. Sama: Co-Investigator
3. Crofcheck, C., Brion, G.M, Escobar, I.C., Ford, W., Lynn, B.C., **Sama, M.P.**, Wang, Y.T. 2017. An Agroecosystems Approach for Protecting Water from Harmful Algal Blooms to Sustain Food Production. USDA-NIFA-AFRI Water for Food Production Systems Challenge Area. **\$5,177,814**. 3/1/18-2/28/23. Sama: Co-Investigator.
4. Dvorak, J.S., Wendroth, O.O., Edwards, D., **Sama, M.P.**, Shockley, J.M., Knott, C. 2017. SMART FARM – Agricultural Water Management for the Right Amount and Quality of Water Entering and Leaving the Farm. USDA-NIFA-AFRI Water for Food Production Systems Challenge Area. **\$4,990,410**. 11/1/17-10/31/22. Sama: Co-Investigator.
5. Day, G.B., Smith, T., **Sama, M.P.**, Bewley, J.M., Coyne, M.S. 2017. Air Injection and Renovation Tillage System for Compost Bedded Pack Barns in Kentucky. UK Sustainability Challenge Grant^{2,7}. **\$33,546**. 1/1/18-12/31/18. Sama: Co-Principal Investigator. Submitted 10/13/17. Sama: Co-Principal Investigator.
6. Smith, S.W., **Sama, M.P.**, Hoagg, J.B., Bailey, S.C., Dvorak, J.S., Jacobs, N., Dadi, G., Gibson, J.B., Guzman, M.I. 2017. Center for Autonomous Systems Research. University of

- Kentucky. **\$450,000** (including \$150,000 internal matching). Submitted 4/1/17. Sama: Co-Principal Investigator and Executive Director.
7. Hoagg, J.B., Bailey, S.C., Martin, A., **Sama, M.P.** 2017. CPS: Medium: Data-Driven Adaptive Real-Time (DART) Flow Field Estimation using Deployable UAVs. NSF Cyber Physical Systems^{1,3}. **\$998,867**. 8/1/17-8/31/20. Submitted 3/7/17. Sama: Co-Principal Investigator.
 8. Dvorak, J.S., Goff, B.M., Mark, T.B., Montross, M.D., **Sama, M.P.** 2017. CPS: Medium: Enabling Real-Time Analysis of Complex Agricultural Systems using Automated Cyber-Physical Systems. NSF Cyber Physical Systems^{1,3}. **\$948,113**. 10/1/17-9/30/20. Submitted 3/7/17. Sama: Co-Principal Investigator.
 9. Dvorak, J.S., **Sama, M.P.**, Montross, M.D., Jackson, J.J., Goff, B.M., Mark, T.B., Shockley, J.M., Burdine, K.H. 2017. NRI: INT: Accessing the Tradeoffs in Quality, Timeliness and Economics between Unmanned Aerial and Ground Platforms in Crop Monitoring^{1,3}. **\$628,393**. 10/1/17-9/30/20. Submitted 2/2/17. Sama: Co-Principal Investigator.
 10. Renfro, M.W., Jacob, J.D., **Sama, M.P.**, Smith, S.W., Hoagg, J.B. 2017. NRT: Interdisciplinary Cohort Training in Autonomous Mobile Platforms and Systems. NSF DGE-NSF Research Traineeship (NRT)^{1,3}. **\$3,000,000**. 9/1/17-8/31/22. Submitted 2/9/17. Sama: Co-Principal Investigator.
 11. Dvorak, J.S., **Sama, M.P.**, Wendroth, O.O., Edwards, D.R., Green, J.D. 2016. SMART FARM – Agricultural Water Management for the Right amount and Quality of Water Entering and Leaving the Farm. USDA-NIFA Water for Agriculture^{1,3}. **\$4,998,729**. 2017-2021. Submitted 8/4/16. Sama: Co-Investigator.
 12. Saraswat, D., Ault, A., Buckmaster, D., Krogmeier, J., Dvorak, J.S., Dvorak, T., **Sama, M.P.**, Shockley, J.M., Mark, T.B., Sharda, A., Flippo, D. 2016. Computation Skills Development for Next Generation AgriScience Professionals for Sustaining Data Driven Agriculture. USDA-NIFA HEC^{1,3}. **\$749,939**. 2016-2020. Submitted 4/27/16. Sama: Co-Investigator.
 13. Hoagg, J.B., Bailey, S.C., Martin, A., **Sama, M.P.** 2016. CPS: Synergy: Data-Driven Adaptive Real-Time (DART) Flow Field Estimation using Deployable UAVs. NSF Cyber Physical Systems^{1,3}. **\$999,571**. 2016-2019. Submitted 6/7/16. Sama: Co-Principal-Investigator.
 14. **Sama, M.P.**, Smith, S.W., Renfro, M.W., Agouridis, C.T. 2016. Hands-On UAS Skills Training for Kentucky – A Kentucky Work Ready Skills Initiative Pre-Proposal. KWRSI^{1,4}. **\$5,000,000**. 2016-2019. Submitted 8/12/16. Sama: Principal Investigator.
 15. **Sama, M.P.** 2016. Optimizing Agriculture Water Use Efficiency with Unmanned Aircraft Systems. Foundation for Food and Agriculture Research¹. **\$300,000** (\$300,000 institutional match). 2016-2019. Submitted 3/7/16. Sama: Principal Investigator.

16. Hoagg, J.B., Jackson, J.J., **Sama, M.P.**, Yang, R. 2016. NRI: Autonomous Unmanned Aerial Robots for Livestock Heath Monitoring. NSF National Robotics Initiative^{1,3}. **\$996,185**. 2016-2019. Submitted 3/7/16. Sama: Co-Principal Investigator.
17. Renfro, M.W., Hoagg, J.B., Jacob, J.D., **Sama, M.P.**, Smith, S.W. 2016. NRT-INFEWS: Unmanned Systems and Science (US2): Interdisciplinary Training for Leadership in Science, Engineering, and Policy. NSF DGE-NSF Research Traineeship (NRT)^{1,3}. **\$3,000,000**. 2016-2021. Submitted 2/9/16. Sama: Co-Principal-Investigator.
18. **Sama, M.P.**, Dvorak, J.S., Wendroth, O.O. 2015. Identifying Water Stress in Agricultural Row-Crop Production using Narrow-Band Multispectral Remote Sensing. KSEF^{1,4}. **\$30,000**. 2016-2017. Submitted 12/15/15. Sama: Principal-Investigator.
19. **Sama, M.P.**, Dvorak, J.S., Wendroth, O.O. 2014. Identifying Water Stress in Agricultural Row-Crop Production using Narrow-Band Multispectral Remote Sensing. KSEF^{1,4}. **\$30,000**. 2015-2016. Submitted 12/19/14. Sama: Principal-Investigator.
20. Dvorak, J.S., Hoagg, J.B., **Sama, M.P.** 2014. Multi-vehicle Coordination Algorithm Testing for Agricultural Area Coverage with Simulations, Aerial Vehicles and Ground Vehicles. KSEF^{1,4}. **\$30,000**. 2015-2016. Submitted 12/22/14. Sama: Co-Investigator.
21. Taraba, J.L., Bewley, J.M., Coyne, M.S., **Sama, M.P.**, Halich, G.S., Burdine, K.H., Ward, S.H. 2014. Assessing Compost Bedded Dairy Barn Management Alternatives on Performance and Economics of Dairy Cow Farm Production System. Southern SARE^{1,3}. **\$283,822**. 2014-2016. Submitted 6/2/14. Sama: Co-Investigator.
22. Luck, B.D., **Sama, M.P.**, Ward, J.K. 2014. Identification of Alfalfa Abiotic Stress Via Remote Sensing Techniques. USDA-NIFA Special Research Grant^{1,3}. **\$164,790**. 2014-2015. Submitted 7/11/14. Sama: Co-Investigator.
23. **Sama, M.P.**, Taraba, J.L., Day, G.B., Bewley, J.M. 2014. Assessing the Performance of Mixing and Aeration Strategies for Composting Bedding/Manure in a Compost Bedded Dairy Pack Barn. USDA-NIFA Agriculture and Food Research Initiative^{1,3}. **\$317,082**. 2014-2017 Submitted 4/8/14. Sama: Principal Investigator.
24. Dvorak, J.S., Stombaugh, T.S., **Sama, M.P.**, Dillon, C.R., Williams, M. 2014. Enabling Robot and Human Worker Collaboration in Agricultural Fields. USDA-NIFA Agriculture and Food Research Initiative^{1,3}. **\$499,676**. 2014-2017. Submitted 4/8/14. Sama: Co-Investigator.
25. Dvorak, J.S., Stombaugh, T.S., **Sama, M.P.**, Dillon, C.R., Williams, M. 2014. NRI: Enabling Robot and Human Worker Collaboration in Agricultural Fields. NSF National Robotics Initiative^{1,3}. **\$844,951**. 2014-2017. Submitted 1/21/14. Sama: Co-Investigator.

PUBLICATIONS***Refereed (25 total)******Published***

1. Barbieri, L.* , Kral, S.T., Bailey, S.C.C., Frazier, A.E., Jacob, J.D., Reuder, J., Brus, D., Chilson, P.B., Crick, C., Detweiler, C., Doddi, A., Elston, J., Foroutan, H., Gonzalez-Rocha, J., Greene, B.R., Guzman, M.I., Houston, A.L., Islam, A., Kemppinen, O., Lawrence, D., Pillar-Little, E., Ross, S.D., **Sama, M.P.**, Schmale, D.G., Schuyler, T.J., Shankar, A., Smith, S.W., Waugh, S., Dixon, C., Borenstein, S., de Boer, G. 2019. Intercomparison of Small Unmanned Aircraft System (sUAS) Measurements for Atmospheric Science during the LAPSE-RATE Campaign. *Sensors*. Vol. 19(9), 2179. Impact Factor: N/A
2. Luck, J.D.* , Shearer, S.A., **Sama, M.P.** 2019. Development and Preliminary Evaluation of an Integrated Individual Nozzle Direct Injection/Carrier Flow Rate Control System for Pesticide Applications. *Transactions of the ASABE*. Vol. 62(2): 505-514. Impact Factor: N/A.
3. Dasika, S.S.† , **Sama, M.P.*** , Pampolini, L.F.† , Good, C.B.† 2019. Performance Validation of a Multi-Channel LiDAR Sensor: Assessing the Effect of Target Height and Sensor Velocity on Measurement Error. *Transactions of the ASABE*. Vol. 62(1): 231-244. Impact Factor: N/A.
4. Hamidisepehr, A.† , **Sama, M.P.*** 2019. Moisture Content Classification of Soil and Stalk Residue Samples from Spectral Data using Machine Learning Algorithms. *Transactions of the ASABE*. Vol. 62(1): 1-8. Impact Factor: N/A.
5. Turner, A.P., **Sama, M.P.**, Bryson, L.S., Montross, M.D.* 2018. Effect of Pre-Processing on the Bulk Compression Behaviour of Switchgrass and Miscanthus. *Biosystems Engineering*. 175: 52-62. Impact Factor: 2.132.
6. **Sama, M.P.*** , Weiss, A.M.‡ , Benedict, E.K.‡ 2018. Validating Spray Coverage Rate Using Liquid Mass on a Spray Card. *Transactions of the ASABE*. 61(3): 887-895. Impact Factor: 1.118.
7. Hamidisepehr, A.† , **Sama, M.P.*** , Turner, A.P.† , Wendroth, O.O. 2017. A Method for Reflectance Index Wavelength Selection from Moisture Controlled Soil and Crop Residue Samples. *Transactions of the ASABE*. 60(5): 1479-1487. Impact Factor: 1.118.
8. Evans, J.T.† , **Sama, M.P.*** , Taraba, J.L., Day, G.B. 2017. Automated Calibration of Electrochemical Oxygen Sensors for use in Compost Bedded Pack Barns. *Transactions of the ASABE*. Vol. 60(3): 957-962. Impact Factor: 1.118.
9. **Sama, M.P.*** , Day, G.B., Pepple, L.M., Gates, R.S. 2017. Fourth-Generation Fan Assessment Numeration System (FANS) Design and Performance Specifications. *Transactions of the ASABE*. Vol. 60(2). Impact Factor: 1.118.

1 External, 2 Internal, 3 Federal, 4 State, 5 Commodity Group, 6 Professional Organization, 7 University, 8 Corporation, 9 Gift
 * Corresponding author, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

10. Mains, T.P., Payne, F.A.* , **Sama, M.P.** 2017. Monitoring Yogurt Culture Fermentation and Predicting Fermentation Endpoint with Fluorescence Spectroscopy. *Transactions of the ASABE*. Vol. 60(2). Impact Factor: 1.118.
11. Seyyedhasani, H., Dvorak. J.S.* , **Sama, M.P.**, Stombaugh, T.S. 2016. Mobile Device-Based Location Services Accuracy. *Applied Engineering in Agriculture*. Vol. 32(5): 539-547. Impact Factor: 0.505.
12. Turner, A.P., Montross, M.D.* , McNeill, S.G., **Sama, M.P.**, Casada, M.E., Boac, J.M., Bhadra, R., Maghirang, R.G., Thompson, S.A. 2016. Modeling the Compressibility Behavior of Hard Red Wheat Varieties. *Transactions of the ASABE*. Vol. 59(3): 1029-1038. Impact Factor: 0.975.
13. **Sama, M.P.*** , Evans, J.T.† , Turner, A.P.† , Dasika, S.S.‡ 2016. As-Applied Estimation of Volumetric Flow Rate from a Single Sprayer Nozzle Series using Water Sensitive Spray Cards. *Transactions of the ASABE*. Vol. 59(3): 861-869. Impact Factor: 0.975.
14. Luck, J.D.* , Shearer, S.A., Luck, B.D., **Sama, M.P.** 2016. Recalibration Methodology to Compensate for Changing Fluid Properties in an Individual Nozzle Direct Injection System. *Transactions of the ASABE*. Vol. 59(3) 847-859. Impact Factor: 0.975.
15. Kesterson, M.A., Luck, J.D.* , **Sama, M.P.** 2015. Development and Preliminary Evaluation of a Spray Deposition Sensing System for Improved Pesticide Application. *Sensors*. Vol. 15(12): 31965-31972. Impact Factor: 2.033.
16. Luck, J.D.* , Shearer, S.A., **Sama, M.P.**, Pitla, S.K. 2015. Control System Development and Response of an Electronically Actuated Variable-Orifice Nozzle for Agricultural Pesticide Application. *Transactions of the ASABE*. Vol. 58(4): 997-1008. Impact Factor: 0.913.
17. **Sama, M.P.*** , Luck, J.D., Stombaugh, T.S. 2015. Scalable Control Architecture for Variable-Rate Turn Compensation. *Applied Engineering in Agriculture*. Vol. 31(3): 425-435. Impact Factor: 0.429.
18. Luck, J.D.* , Pitla, S.K., **Sama, M.P.**, Shearer, S.A. 2015. Flow, Spray Pattern and Droplet Spectra Characteristics of an Electronically Actuated Variable-Orifice Nozzle. *Transactions of the ASABE*. Vol. 58(2): 261-269. Impact Factor: 0.975.
19. **Sama, M.P.*** , Stombaugh, T.S. 2014. Performance Evaluation of a Tracking Total Station as a Position Reference for Dynamic GNSS Accuracy Testing. *Applied Engineering in Agriculture*. Vol. 30(4): 557-563. Impact Factor: 0.405.
20. **Sama, M.P.*** , Stombaugh, T.S., Lumpp, J.E. 2013. A Hardware Method for Time-Stamping Asynchronous Serial Data Streams Relative to GNSS Time. *Computers and Electronics in Agriculture*. Vol. 97: 56-60. Impact Factor: 1.486.

* Corresponding Author, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

21. Maupin, T.P., Agouridis, C.T. *, Edwards, D.R., Barton, C.D., Warner, R.C., **Sama, M.P.** 2013. Specific Conductivity Sensor Performance: II. Field Evaluation. *International Journal of Mining, Reclamation and Environment*. Vol. 27(5): 345-364. Impact Factor: 0.531.
22. Zandonadi, R.S. *, Luck, J.D., Stombaugh, T.S., **Sama, M.P.**, Shearer, S.A. 2011. A Computational Tool for Estimating Off-Target Application Areas in Agricultural Fields. *Transactions of the ASABE*. Vol. 54(1): 41-49. Impact Factor: 1.033.
23. Luck, J.D. *, Pitla, S.K., Zandonadi, R.S., **Sama, M.P.**, Shearer, S.A. 2011. Estimating Off-Rate Pesticide Application Errors Resulting from Agricultural Sprayer Turning Movements. *Precision Agriculture*. Vol. 12(4): 534-545. Impact Factor: 1.549.
24. Zandonadi, R.S. *, Stombaugh, T.S., Shearer, S.A., Queiroz, D.M., **Sama, M.P.** 2010. Laboratory Performance of a Mass Flow Sensor for Dry Edible Bean Harvesters. *Applied Engineering in Agriculture*. Vol. 26(1): 11-20. Impact Factor: 0.507.

In-Press

1. Bailey, S.C.C. *, Canter, C.A., **Sama, M.P.**, Houston, A.L., Smith, S.W. 2019. Unmanned Aerial Vehicles Reveal Impact of Total Solar Eclipse on Atmospheric Surface Layer. *Proceedings of the Royal Society A*. In-Press. Impact Factor: 4.304.

In-Review (not included in total)

1. Egert-McLean, A.M., **Sama, M.P.**, Klotz, J.L., McLeod, K.R., Kristensen, N.B., Harmon, D.L. * 2019. A Moderate Transition of Beef Heifers to a 90% Concentrate Diet as a Model for Subacute Ruminant Acidosis-Induced Alterations in Feeding Behavior, Rumen Environment, Reticulorumen Motility, and Blood Acid-Base Status. *Journal of Animal Science*. Submitted 7/9/2019.
2. Yang, Y., Ren, W. *, Tao, B., Ji, L., Liang, L., Ruane, A., Fisher, J.B., Liu, J., **Sama, M.P.**, Li, Z., Tian, Q. 2019. Characterizing Spatiotemporal Patterns in Crop Phenology Across North America During 2000-2016 Using Satellite Imagery and Agricultural Survey Data. *Remote Sensing of Environment*. Submitted 7/9/2019.
3. de Boer, G. *, Diehl, C., Jacob, J., Houston, A., Smith, S.W., Chilson, P., Schmale, D.G., Intrieri, J., Elston, J., Brus, D., Kempainen, O., Clark, A., Lawrence, D., Bailey, S.C.C., **Sama, M.P.**, Frazier, A., Natalie, V., Pillar-Little, E., Klein, P., Waugh, S., Lundquist, J.K., Barbieri, L., Kral, S.T., Jensen, A., Dixon, C., Borenstein, S., Hesselius, D., Human, K., Hall, P., Argrow, B., Thornberry, T., Gao, R., Wright, R., Kelly, J.T. 2019. Development of Community, Capabilities and Understanding Through Unmanned Aircraft-Based Atmospheric Research: The LAPSE-RATE Campaign. *Bulletin of the AMS*. Submitted 6/7/2019.
4. Turner, A.P. †, **Sama, M.P.**, McNeill, S.G., Dvorak, J.S., Mark, T.B., Montross, M.D. * 2019. A Discrete Event Simulation Model for Analysis of Farm Scale Grain Transportation Systems. *Computer and Electronics in Agriculture*. Submitted 1/10/2019.

* Corresponding Author, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

5. Egert-McLean, A.M., **Sama, M.P.**, Klotz, J.L., McLeod, K.R., Kristensen, N.B, Harmon, D.L.* 2018. Automated System for Characterizing Short-Term Feeding Behavior and Real-Time Forestomach Motility in Cattle. *Computers and Electronics in Agriculture*. Submitted 10/25/2018. Revised 6/13/2019.

Conference Papers

1. Bailey, S.C.*, Canter, C., **Sama, M.P.**, Smith, S.W. 2018. Atmospheric Surface Layer Processes Measured via Unmanned Aerial Vehicles During the Total Solar Eclipse of August 21 2017. ISARRA 2018. Boulder, CO.
2. Hamidisepehr, A.†, **Sama, M.P.*** 2018. A Low-Cost Method for Collecting Hyperspectral Measurements from a Small Unmanned Aircraft System. Proc. SPIE 10664, Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping III, 16640H. Orlando, FL.
3. **Sama, M.P.***, Stombaugh, T.S. 2013. A Rotary Test Fixture for Stead-State Position Error Modeling. Paper Number 13-1620626, ASABE Annual Meeting. Kansas City, MO.
4. Sympton, W.S., **Sama, M.P.*** 2013. Cost Reduction of the Fan Assessment Numeration System through Data Analysis. Paper Number 13-1618881, ASABE Annual International Meeting. Kansas City, MO.
5. **Sama, M.P.***, Pepple, L.M., Day, G.B., Overhults, D.G., Morello, G.M., Lopes, I.M., Earnest, J., Casey, K.D., Gates, R.S. 2012. Calibration Drift Assessment and Upgrades to the Fan Assessment Numeration System (FANS). Paper Number 12-1337770, ASABE Annual International Meeting. Dallas, TX.
6. **Sama, M.P.***, Morello, G.M., Lopes, I.M., Day, G.B., Overhults, D.G. 2012. Visualizing Airflow Using the Fan Assessment Numeration System (FANS). Paper Number 12-1337883, ASABE Annual International Meeting. Dallas, TX.
7. Luck, J.D.*, **Sama, M.P.**, Pitla, S.K., Shearer, S.A. 2012. Droplet Spectra Characteristics from a Variable-Orifice Nozzle at Constant Pressures. Paper Number 12-1337472, ASABE Annual International Meeting. Dallas, TX.
8. **Sama, M.P.***, Stombaugh, T.S., Zandonadi, R.S., Shearer, S.A. 2009. Dynamic GNSS Testing and Applications. Paper Number 09-6714, ASABE Annual International Meeting. Reno, NV.
9. **Sama, M.P.***, Gates, R.S., Adams, W.C., Day, G.B., King, C.L. 2008. Fan Assessment Numeration System (FANS) Scaling and Upgrades. Paper Number 08-4723, ASABE Annual International Meeting. Providence, RI.
10. Stombaugh, T.S.* , **Sama, M.P.**, Zandonadi, R.S., Shearer, S.A. 2008. Standardized Evaluation of Dynamic GPS Performance. Paper Number 08-4728, ASABE Annual International Meeting. Providence, RI.

* Corresponding Author, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

11. Zandonadi, R.S. *, Stombaugh, T.S., Shearer, S.A., **Sama, M.P.** 2008. Laboratory Performance of a Low Cost Mass Flow Sensor for Combines. Paper Number 08-4167, ASABE Annual International Meeting. Providence, RI.
12. **Sama, M.P.** *, Stombaugh, T.S., Koostra, B.K. 2006. Calibration and Verification of Low-Cost Image Tools for Remote Sensing. Paper Number 06-1166, ASABE Annual International Meeting. Portland, OR.
13. **Sama, M.P.** *, Stombaugh, T.S. 2005. Adaptation and Modification of Digital Imaging Systems for Remote Sensing. Paper Number 05-1016, ASAE Annual International Meeting. Tampa, FL.

Magazine Articles

1. **Sama, M.P.**, Evans, J.T.† 2016. Seniors Design Solutions for Real Problems. *Resource Magazine*. 23(3): 8-8.
2. **Sama, M.P.**, 2013. Bridging the Gap – From Agricultural Engineering to Electrical Engineering. *Resource Magazine*. 20(3): 8-9.

Patents

1. Posselius, J.H., Foster, C.A., Pitla, S.K., Shearer, S.A., Luck, J.D., **Sama, M.P.**, Zandonadi, R.S., inventors; CNH Industrial America LLC, assignee. Control Architecture for Multi-Robot System. US patent 9,527,211. December 27, 2016.

PRESENTATIONS

Invited Speaker Presentations

1. **Sama, M.P.*** 2018. Guide to Professional Licensure. Panel Discussion at the 2018 ASABE Annual International Meeting. Detroit, MI.
2. **Sama, M.P.*** 2017. Data-Driven Autonomous Systems. Emerging Technologies and Sustainability: Interactions Between Science and Society. Lexington, KY.
3. **Sama, M.P.***, Jacob, J.* 2014. UAS for Agricultural Research. InfoAg Conference. St. Louis, MO.
4. Smith, S.W.* , **Sama, M.P.*** 2014. Farm Industry News Seminar: Eyes in the Sky – Putting Unmanned Aerial Vehicles to Work for Your Farm. National Farm Machinery Show. Louisville, KY.

Conferences Presentations

1. Turner, A.P.* ,†, **Sama, M.P.**, Montross, M.D., Dvorak, J.S, McNeill, S., Martin, B., Mark, T. 2018. Discrete Event Simulation of Farm Scale Grain Transportation Systems. ASABE Annual International Meeting. Detroit, MI.

* Presenter, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

2. Dasika, S.S.^{*†}, **Sama, M.P.**, Pampolini, L.F.[†], Good, C.B.[†], Dvorak, J.S. 2018. Assessing the Spatial Accuracy and Precision of LiDAR and Photogrammetry for Remote Sensing in Agriculture. ASABE Annual International Meeting. Detroit, MI.
3. Payne, F.A.^{*}, **Sama, M.P.** 2018. Smart Sensor for Determining Endpoint of Milk Coagulation. ASABE Annual International Meeting. Detroit, MI.
4. Hamidisepehr, A.^{*†}, **Sama, M.P.** 2018. Classifying Reflectance Targets from Hyperspectral Data Collected Under Ambient Light Conditions using a Passive Low-Cost Remote Sensing System. ASABE Annual International Meeting. Detroit, MI.
5. Egert-McLean, A.M., Harmon, D.L., **Sama, M.P.**, Klotz, J.L., Kristensen, N.B. 2018. Characterization of Feeding Behavior, Ruminant Motility, and Rumen Environment of Beef Heifers During a Moderate Transition to a 90% Concentrate Diet. ASAS Annual Meeting. Vancouver, Canada.
6. Turner, A.P.^{*†}, Martin, B., Dvorak, J.S., Montross, M.D. **Sama, M.P.** 2018. Variability in Yield and Corn Harvest Losses Versus Moisture Content in Kentucky. ASABE Agricultural Equipment Technology Conference. Louisville, KY.
7. Hamidisepehr, A.^{*†}, **Sama, M.P.** 2018. A Low-Cost Method for Collecting Hyperspectral Measurements. ASABE Agricultural Equipment Technology Conference. Louisville, KY.
8. Dasika, S.S.^{*†}, **Sama, M.P.**, Pampolini, L.F.[†], Good, C.B.[†], Dvorak, J.S. 2018. Performance Validation of a LiDAR Test Fixture for Remote Sensing in Agriculture. ASABE Agricultural Equipment Technology Conference. Louisville, KY.
9. Seyyedhasani, H.^{*}, Dvorak, J.S., **Sama, M.P.** 2017. Aerial Validation of a Logistics Model for Area Coverage in Agriculture. ASABE Annual International Meeting. Spokane, WA.
10. Turner, A.P.[†], Montross, M.D.^{*}, **Sama, M.P.**, Dvorak, J.S., Mark, T.B., Martin, B. 2017. Grain Harvest Cycle Analysis Based on Precision Agriculture Data. ASABE Annual International Meeting. Spokane, WA.
11. Hamidisepehr, A.^{*†}, **Sama, M.P.**, Turner, A.P.[†], Wendroth, O.O. 2017. A Comparison Between Reflectance Index and Machine Learning Algorithms for Moisture Estimation from Spectral Data. ASABE Annual International Meeting. Spokane, WA.
12. Payne, F.A.^{*}, **Sama, M.P.** 2017. Development of a Tryptophan Fluorescence Sensor for Process Control in the Dairy Industry. ASABE Annual International Meeting. Spokane, WA.
13. Good, C.B.^{*†}, **Sama, M.P.**, Dasika S.S.[†], Hamidisepehr, A.[†], Mason, R.L. 2017. A Low-Cost Method for Instrumenting LiDAR on an Unmanned Aircraft System. ASABE Annual International Meeting. Spokane, WA.

* Presenter, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

14. Dasika, S.S.^{*†}, **Sama, M.P.**, Pampolini, L.F.[†], Good, C.B.[†], Dvorak, J.S. 2017. Design and Performance Evaluation of a Linear Motion System for Remote Sensing Instrument Testing. ASABE Annual International Meeting. Spokane, WA.
15. Wolf, K.M.^{*†}, **Sama, M.P.**, Taraba, J.L., Coyne, M.S., Bewley, J.M. 2017. A Portable Sensor for Measuring Gas Emissions from Dairy Compost Bedded Pack Barns. ASABE Annual International Meeting. Spokane, WA.
16. **Sama, M.P.**^{*} 2017. Overview of UAS Activities at the University of Kentucky. S1069 Multistate Project Annual Meeting. Raleigh, NC.
17. Turner, A.P.^{*†}, **Sama, M.P.**, Montross, M.D. 2017. Analysis of Grain Transportation Records to Determine Equipment Performance. ASABE Agricultural Equipment Technology Conference. Louisville, KY.
18. Hamidisepehr, A.^{*†}, **Sama, M.P.**, Turner, A.P.[†], Wendroth, O.O. 2017. Preliminary Results of a Reflectance Index for Measuring Soil and Crop Residue Moisture Content. ASABE Agricultural Equipment Technology Conference. Louisville, KY.
19. Benedict, E.K.^{*‡}, **Sama, M.P.**, Turner, A.P.[†] 2016. As-Applied Estimation of Volumetric Flow Rate from a Spray Nozzle using Liquid Mass on a Target. ASABE Annual International Meeting. Orlando, FL.
20. Luck, J.D.^{*}, **Sama, M.P.**, Shearer, S.A. 2016. Development and Testing of an Individual Nozzle Direct Injection Pesticide Delivery System. ASABE Annual International Meeting, Orlando, FL.
21. **Sama, M.P.**^{*} 2016. Teaching Instrumentation for Engineering Research and Control of Off-Road Vehicles at the University of Kentucky. ASABE Annual International Meeting, Orlando, FL.
22. Turner, A.P.^{*†}, Montross, M.D., Dvorak, J.S., **Sama, M.P.** 2016. Tracking Grain Trucks using a Fleet Management System. ASABE Annual International Meeting, Orlando, FL.
23. Payne, F.A.^{*}, **Sama, M.P.** 2016. Temperature Correction Methodology for Fluorescence Measurement of Proteins. ASABE Annual International Meeting. Orlando, FL.
24. **Sama, M.P.**^{*} 2016. Policy and Regulations. S1069 Multistate Project Planning Meeting. Atlanta, GA.
25. **Sama, M.P.**^{*}, Evans, J.T.[†], Turner, A.P.[†], Dasika, S.S.[‡] 2015. As-Applied Estimation of Volumetric Flow Rate from a Single Sprayer Nozzle Series using Water Sensitive Spray Cards. ASABE Annual International Meeting. New Orleans, LA.

* Presenter, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

26. Evans, J.T.^{*†}, **Sama, M.P.**, Taraba, J.L., Day, G.B. 2015. Effect of Tillage Methods on Oxygen Concentrations in Compost Bedded Pack Barns. ASABE Annual International Meeting. New Orleans, LA.
27. Payne, F.A.^{*}, **Sama, M.P.** 2015. Fluorescence Sensor for Online Measurement of Protein in Whey Permeate. 12th International Congress on Engineering and Food (ICEF12), Quebec City, Canada, June 14-18, 2015.
28. **Sama, M.P.**^{*}, Luck, J.D., Stombaugh, T.S. 2014. Scalable Control Architecture for Variable-Rate Turn Compensation. ASABE Annual International Meeting. Montreal, Quebec, Canada.
29. **Sama, M.P.**^{*}, 2014. Using Instrumentation Amplifiers as a Recurring Theme for Teaching Instrumentation. ASABE Annual International Meeting. Montreal, Quebec, Canada.
30. Evans, J.T.^{*†}, **Sama, M.P.** 2014. Calibration of Oxygen Sensors for use in Compost Bedded Pack Barns. ASABE Annual International Meeting. Montreal, Quebec, Canada.
31. Luck, J.D.^{*†}, **Sama, M.P.** 2014. Evaluation of a Wireless Resistance Based Sensor for Monitoring Spray Deposition. ASABE Annual International Meeting. Montreal, Quebec, Canada.
32. Evans, J.T.^{*†}, **Sama, M.P.** 2014. Calibration of Oxygen Sensors for use in Compost Bedded Pack Barns. ASABE Agricultural Equipment Technology Conference. Louisville, KY.
33. **Sama, M.P.**^{*}, Stombaugh, T.S. 2013. A Rotary Test Fixture for Stead-State Position Error Modeling. ASABE Annual International Meeting. Kansas City, MO.
34. Sympson, W.S.^{*†}, **Sama, M.P.** 2013. Cost Reduction of the Fan Assessment Numeration System through Data Analysis. ASABE Annual International Meeting. Kansas City, MO.
35. Agouridis, C.T.^{*}, Maupin, T., Barton, C., Edwards, D.R., Warner, R.C., **Sama, M.P.** 2012. Assessing Conductivity Sensor Performance: A Laboratory and Field Study. Southeast Regional Stream Restoration Conference. Wilmington, NC.
36. **Sama, M.P.**^{*}, Pepple, L.M., Day, G.B., Overhults, D.G., Morello, G.M., Lopes, I.M., Earnest, J., Casey, K.D., Gates, R.S. 2012. Calibration Drift Assessment and Upgrades to the Fan Assessment Numeration System (FANS). ASABE Annual International Meeting. Dallas, TX.
37. **Sama, M.P.**¹, Morello, G.M., Lopes, I.M., Day, G.B., Overhults, D.G. 2012. Visualizing Airflow Using the Fan Assessment Numeration System (FANS). ASABE Annual International Meeting. Dallas, TX.
38. Luck, J.D.^{*}, **Sama, M.P.**, Pitla, S.K., Shearer, S.A. 2012. Droplet Spectra Characteristics from a Variable-Orifice Nozzle at Constant Pressures. ASABE Annual International Meeting. Dallas, TX.

* Presenter, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

39. Lopes, I.M. *, Damasceno, F.A., Day, G.B., **Sama, M.P.**, Overhults, D.G. 2012. WINTAC: A Wind Tunnel Transition Assessment Chamber at the Biosystems and Agricultural Engineering Department at University of Kentucky. ASABE Annual International Meeting. Dallas, TX.
40. Luck, J.D. *, **Sama, M.P.**, Shearer, S.A. 2012. Spray Pattern and Droplet Spectra Characteristics from an Actively Controlled Variable-Orifice Nozzle. International Conference on Precision Agriculture. Indianapolis, IN.
41. Black, R.A. *, Stombaugh, T.S., Luciani, S.R., **Sama, M.P.**, Klingefus, R.L., Klingefus, A.B., Bewley, J.M. 2012. Potential for a Real-Time Location System for Dynamic Tracking of Dairy Cow Location within Dairy Facilities. American Dairy Science Annual Meeting. Phoenix, AZ.
42. **Sama, M.P.** *, Zandonadi, R.S., Luck, J.D., Stombaugh, T.S., Shearer, S.A. 2011. A Static Evaluation of Continuously Operating Reference Stations. ASABE Annual International Meeting. Louisville, KY.
43. Montross, M.D. *, Adams, W.C., Mathis, L., McNeill, S.G., **Sama, M.P.**, Thompson, S., Boac, J., Casada, M. 2011. Laboratory Data with Hard Red Winter Wheat to Support New Grain Packing Factors. ASABE Annual International Meeting. Louisville, KY.
44. Zandonadi, R.S. *, Stombaugh, T.S., **Sama, M.P.**, Pitla, S.K., Baldo, R. 2011. Evaluation of a Reduced Equipment Set for Multiple Vehicle Guidance Using Distance Sensors to Determine Relative Position between Vehicles. ASABE Annual International Meeting. Louisville, KY.
45. **Sama, M.P.** *, Zandonadi, R.S., Luck, J.D., Stombaugh, T.S., Shearer, S.A. 2010. Development of a Scalable Control System for Variable-Rate Applications. ASABE Annual International Meeting. Pittsburgh, PA.
46. Luck, J.D. *, **Sama, M.P.**, Pitla, S.K., Shearer, S.A. 2010. Pneumatic Control of a Variable Orifice Nozzle. ASABE Annual International Meeting. Pittsburgh, PA.
47. **Sama, M.P.** *, Stombaugh, T.S., Zandonadi, R.S., Shearer, S.A. 2009. Dynamic GNSS Testing and Applications. Annual International Meeting. Reno, NV.
48. **Sama, M.P.** *, Stombaugh, T.S., Zandonadi, R.S., Shearer, S.A., Adams, W.C. 2009. A Mechanism for Evaluating Dynamic GNSS Accuracy on a Test Fixture. ASABE Agricultural Equipment Technology Conference. Louisville, KY.
49. **Sama, M.P.** *, Gates, R.S., Adams, W.C., Day, G.B., King, C.L. 2008. Fan Assessment Numeration System (FANS) Scaling and Upgrades. ASABE Annual International Meeting. Providence, RI.
50. Stombaugh, T.S. *, **Sama, M.P.**, Zandonadi, R.S., Shearer, S.A. 2008. Standardized Evaluation of Dynamic GPS Performance. ASABE Annual International Meeting. Providence, RI.

* Presenter, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

51. Zandonadi, R.S.* , Stombaugh, T.S., Shearer, S.A., **Sama, M.P.**, 2008. Laboratory Performance of a Low-Cost Mass Flow Sensor for Combines. ASABE Annual International Meeting. Providence, RI.
52. **Sama, M.P.*** , Stombaugh, T.S. 2007. Using Low-Cost Imaging Tools to Measure Spatial Variations in Pastures. ASABE Annual International Meeting. Minneapolis, MN.
53. **Sama, M.P.*** , Stombaugh, T.S., Koostra, B.K. 2006. Calibration and Verification of Low-Cost Image Tools for Remote Sensing. ASABE Annual International Meeting. Portland, OR.
54. Brown, D.* , Arrowsmith, T.* , Mylin, A.* , Koontz, R.* , Fox, A.* , Phelps, N.* , Thomas, D.* , Rowe, J.* , Jones, R.* , Jackson, D.* , Groves, A.* , **Sama, M.P.*** 2005. AIRCAT: Airborne Intelligent Research Craft for Autonomous Technology. AUVSI Unmanned Systems Meeting. Baltimore, MD.
55. **Sama, M.P.*** , Hershman, D.E., Stombaugh, T.S., McNeill, S.G., Needham, P. 2005. An Analysis of Sprayer Droplets Using MATLAB. National Soybean Rust Symposium. Nashville, TN.
56. **Sama, M.P.*** , T.S. Stombaugh. 2005. Adaptation and Modification of Digital Imaging Systems for Remote Sensing. ASAE Annual International Meeting. Tampa, FL

Seminars

1. **Sama, M.P.** 2015. Unmanned Aerial Systems (UAS) and Remote Sensing in Agriculture. Presented at the UK Unmanned Systems Research Consortium Shotgun Seminar on 2/18/15.
2. **Sama, M.P.** 2015. Machine Systems Automation Engineering. Presented at the BAE Graduate Student Recruitment Seminar on 2/6/15.
3. **Sama, M.P.** 2014. USDA AFRI Proposal Review. Presented at the BAE Departmental Seminar on 10/31/14.
4. **Sama, M.P.** 2014. Precision Ag Research. Presented at the UK Aerospace Engineering Advisory Board Meeting on 10/24/14.
5. **Sama, M.P.** 2014. Machine Systems Automation Engineering. Presented at the BAE Graduate Student Recruitment Seminar on 1/14/14.

Extension Presentations

1. **Sama, M.P.** 2016. UAV Applications in Agriculture. Presented at the Precision Ag Data Management Workshop in Owensboro, KY on 12/15/16.
2. **Sama, M.P.** 2015. Unmanned Aerial Systems (UAS) and Remote Sensing. Presented at the KY Precision Agriculture Workshop in Princeton, KY on 8/25/14.

* Presenter, † Graduate student under direct supervision, ‡ Undergraduate student under direct supervision

3. **Sama, M.P.** 2015. GPS Research and Applications. Presented at the KY Precision Agriculture Workshop in Princeton, KY on 8/24/14.
4. **Sama, M.P.** 2015. Unmanned Aerial Systems and Remote Sensing in Agriculture. Presented four times at the UK Corn, Soybean & Tobacco Field Day. Princeton, KY.
5. **Sama, M.P.** 2015. Unmanned Aerial Systems and Remote Sensing in Agriculture. Presented three times at the UK Wheat Field Day. Princeton, KY.
6. **Sama, M.P.** 2014. GPS Research at the University of Kentucky. Presented at the Kentucky Corn Growers CORE Farmer Program (Class III) in Louisville, KY.

TEACHING AND ADVISING***Courses Taught*****BAE 400: Senior Seminar¹**

Semester	Number of Students	Course Quality (College Mean)	Teaching Quality (College Mean)
Fall 2016	25	3.93 (3.79) ²	4.73 (4.07) ²
Fall 2015	33	3.48 (3.29) ³	3.76 (3.40) ³
Fall 2014	23	3.40 (3.37) ³	3.60 (3.42) ³

¹ Existing course, partially developed new course content in 2014.² Scale: 1 to 5.³ Scale: 1 to 4.**BAE 450: Special Problems¹**

Semester	Number of Students	Course Quality (College Mean)	Teaching Quality (College Mean)
Spring 2017	1	N/A ⁴	N/A ⁴
Spring 2016	3	N/A ⁴	N/A ⁴
Fall 2015	2	N/A ⁴	N/A ⁴

¹ Independent study, emphasis on undergraduate research in precision agriculture² Not Evaluated.**BAE 502: Modeling of Biological Systems¹**

Semester	Number of Students	Course Quality (College Mean)	Teaching Quality (College Mean)
Spring 2013	15	3.70 (3.50) ²	3.90 (3.50) ²

¹ Existing course. Partially developed new course content in 2013.² Scale: 1 to 4.**BAE 514: Component Design¹**

Semester	Number of Students	Course Quality (College Mean)	Teaching Quality (College Mean)
Spring 2018	11	5.00 (4.00) ²	5.00 (4.20) ²
Spring 2016	9	4.00 (3.35) ³	4.00 (3.48) ³
Spring 2014	7	3.70 (3.31) ³	4.00 (3.39) ³

¹ Developed course. Taught as BAE 599-002 in 2014 and 2016.² Currently being taught.³ Scale: 1 to 4.**BAE 516: Control of Off-Road Vehicles¹**

Semester	Number of Students	Course Quality (College Mean)	Teaching Quality (College Mean)
Spring 2017	7	4.71 (3.99) ²	5.00 (4.21) ²
Spring 2015	15	3.60 (3.35) ³	3.73 (3.45) ³

¹ Developed Course. Taught as BAE 599-002 in 2015 and 2017.² Scale: 1 to 5.³ Scale: 1 to 4.

BAE 658: Instrumentation for Engineering Research¹

Semester	Number of Students	Course Quality (College Mean)	Teaching Quality (College Mean)
Fall 2018	12	4.90 (3.90) ²	5.00 (4.20) ²
Fall 2017	9	4.90 (3.90) ²	4.70 (4.20) ²
Fall 2016	8	4.86 (3.79) ²	4.86 (4.07) ²
Fall 2015	7	3.71 (3.29) ³	4.00 (3.40) ³
Fall 2013	3	N/A ⁵	N/A ⁵
Fall 2012	10	3.80 (3.40) ³	3.80 (3.40) ³
Fall 2011	7	N/A ⁶	N/A ⁶
Fall 2010	7	3.70 (3.40) ³	3.70 (3.50) ³
Fall 2009	9	3.50 (3.30) ³	3.60 (3.40) ³

¹ Existing course, developed all new course content in 2009.

² Scale: 1 to 5.

³ Scale: 1 to 4.

⁴ Currently being taught.

⁵ Not evaluated this year (< 6 students).

⁶ Not evaluated this year (instructor of record was evaluated).

Guest Lectures

1. GEN 300-002: Climate Change and Agriculture. Drone Applications in Agrometeorology and Remote Sensing Instructors: Wei Ren, George Wagner. Presented on 4/2/19.
2. IPS 625: Emerging Technologies in Agriculture. Unmanned Aerial Systems (UAS) and Remote Sensing in Agriculture. Instructors: David Van Sanford, Mark Coyne, Jason Unrine. 8 Students. Presented on 9/24/14

Graduate Student Major Advising

Full Member of the Graduate Faculty since 9/23/15.

Associate Member of the Graduate Faculty from 8/26/13 to 9/22/15.

Completed

1. Austin M. Weiss, M.S., BAE. 2019. Nozzle Droplet Control for Drift Mitigation using Real-Time Weather Data. August 2017 to Present. Advisor.
2. Aaron P. Turner, Ph.D., BAE. 2018. Development of a Support System for Capacity Planning from Grain Harvest to Storage. January 2014 to September 2018. Co-Advisor (Advisor: Michael Montross). Current Position: Assistant Professor in the Agricultural Sciences Department at Clemson University
3. Ali Hamidisepehr, Ph.D., BAE. 2018. Classifying Soil Moisture Content using Reflectance-Based Remote Sensing. August 2015 to August 2018. Advisor. Current Position: Post-Doctoral Scholar in the Department of Biological and Agricultural Engineering at North Carolina State University.
4. S. Saket Dasika, M.S., BAE. 2018. Assessing the Spatial Accuracy and Precision of LiDAR for Remote Sensing in Agriculture. August 2016 to July 2018. Advisor. Current Position: Mechatronic Systems Engineer at Case New Holland.

5. Katharine M. Wolf, M.S., BAE. 2017. A Portable Sensor for Measuring Gas Emission from Dairy Compost Bedded Pack Barns. August 2015 to July 2017. Advisor (Co-Advisor: Joseph Taraba). Current Position: Doctoral of Veterinary Medicine Student at Lincoln Memorial College.
6. John T. Evans, M.S., BAE. 2015. Effect of Tillage Methods on Oxygen Concentrations in Compost Bedded Pack Barns. August 2013 to May 2015. Advisor. Current Position: Assistant Professor in the Department of Agricultural and Biological Systems at Purdue University.

In-Progress

1. Karla S. Ladino, (Ph.D.) BAE. 2022. Precision Meteorology. August 2019 to Present. Advisor.
2. Shawn T. O’Neal, (M.S.), BAE. 2020. High-Throughput Soil Sampling and Spectroscopy. August 2018 to Present. Advisor.
3. Gabriel A. Abdulai, (Ph.D.), BAE. 2021. Precision Livestock Management. July 2018 to Present. Co-Advisor (Advisor: Joshua Jackson).
4. L. Felipe Pampolini, (M.S.), BAE. 2019. UAS Remote Sensing Spatial Accuracy. August 2017 to Present. Advisor.
5. Christopher B. Good, (M.S.), BAE. 2018. UAS LiDAR Integration. August 2016 to Present. Advisor. Current Position: Engineer at Altec Industries.

Graduate Student Advisory Committee Member

Completed

1. Amanda M. Egert, Ph.D., Animal and Food Sciences. 2019. Preliminary Characterization of Feeding Behavior, Ruminant pH, and Motility for Cattle During Transition to High-Grain Diets Based on Dry-Rolled High-Moisture Corn. 4/25/19. Advisor: David L. Harmon.
2. Bradford Greenwell, M.S., BAE. 2016. Continuous Flow-Proportional Flocculation Dosage System. 7/21/16. Advisor: Richard S. Warner.
3. Drew Schiavone, Ph.D., BAE. 2016. Temperature and Moisture Simulation in Bales during Storage and Bioconversion. 4/18/16. Advisor: Michael D. Montross.
4. Joseph Jackson, M.S., BAE. 2015. Testing the Efficiency of a Series Hybrid Drivetrain for Agricultural Applications. 7/1/15. Advisor: Joseph S. Dvorak.
5. Aaron P. Turner, M.S., BAE. 2014. Laboratory Scale Concept Validation and Evaluation of Compromising Plant Nodal Integrity as a Means to Increase Bale Density. 3/14/14. Advisor: Michael D. Montross.
6. Timothy P. Mains, M.S., BAE. 2014. Using a Fluorescence Sensor Technology to Monitor Yogurt Culture Fermentation and Predict Endpoint. 7/25/14. Advisor: Frederick A. Payne.

In-Progress

1. Zachary S. Lippay, (Ph.D.), M.E. 2020. Autonomous Unmanned Aerial Vehicles for Cooperative Imaging of Moving Targets. Advisor: Jesse B. Hoagg.
2. Christopher Heintz, (Ph.D.), M.E. 2020. Formation Control in a Leader-Fixed Frame: Theory and Applications to Fixed-Wing UAVs. Advisor: Jesse B. Hoagg.
3. Braydi McPherson, (M.S.), BAE. 2018. Advisor: Donald G. Colliver.
4. Michael Omodara, (Ph.D.), BAE. 2020. Advisor: Michael D. Montross.

Outside Examiner

1. Tawfiq M.A. Salem, Ph.D., Computer Science. 2019. Learning to Map the Visual and Auditory World. 7/15/19 Advisor: Nathan Jacobs.
2. Zhen Fang, Ph.D., Chemistry. 2018. Oxidative Degradation of Lignin and Utilization of Lignin-Derived Monomers as Building Blocks for Epoxy Resins. 1/15/19. Advisor: Mark Meier.
3. Hamid S. Hamraz, Ph.D., Computer Science. 2018. Automated, Remote Tree-Level Forest Quantification using Airborne LiDAR. 4/9/18. Advisor: Nathan Jacobs.
4. Brandon J. Wellman, Ph.D., Mechanical Engineering. 2017. Advances in Multi-Agent Flocking: Continuous-Time and Discrete-Time Algorithms. 7/11/17. Advisor: Jesse B. Hoagg.

Undergraduate Student Advising

Undergraduate Research Assistants

1. Kiley S. Power. Biosystems and Agricultural Engineering. Unmanned Aircraft Systems, Advanced Spray Control Systems. Summer 2019 – present.
2. Collin J. O'Donnell. Biosystems and Agricultural Engineering. Unmanned Aircraft Systems. Summer 2019 – present.
3. Taylour Butler. Veterinary Science. Unmanned Aircraft Systems. Summer 2019.
4. Tyler Browning. Biosystems and Agricultural Engineering. Dynamic Spray Pattern Text Fixture. Fall 2018 – Spring 2019.
5. Matthew Miller. Electrical and Computer Engineering. Embedded Systems Design. Fall 2017 to Spring 2018. Advisor.
6. Shawn T. O'Neal. Biosystems and Agricultural Engineering. Grain Harvest Logistics. Fall 2017 and Spring 2018. Co-Advisor (Advisor: Aaron P. Turner).
7. Austin M. Weiss. Biosystems and Agricultural Engineering. Mass-Based Estimate of Volumetric Flow Rate from Spray Nozzles. Spring 2017. Advisor.

8. Emma K. Benedict. Biosystems and Agricultural Engineering. Non-Contact Spray Assessment. Fall 2015 and Spring 2016. Advisor.
9. C. Aaron Shearer. Biosystems and Agricultural Engineering. UAS Platform Development. Summer 2015. Advisor.
10. A. Jacob Crouch. Biosystems and Agricultural Engineering. UAS Field Data Collection. Summer 2014. Advisor.
11. Christopher M. Wade. Biosystems and Agricultural Engineering. Variable-Rate Pump for Sprayer System Testing. Summer 2014. Advisor.
12. Katherine M. Wolf. Biosystems and Agricultural Engineering. Laboratory Measurement of Compost Moisture Content and Drying Rates using Digital Scales. Co-Advisor (Advisor: Joseph L. Taraba).

International Interns

1. Rafael Mariano dos Santos. University of São Paulo, Brazil. Image Processing using Photogrammetry. Spring 2015.
2. S. Saket Dasika. Indian Institute of Technology, Kharagpur. Non-Contact Spray Assessment and Soil Moisture Determination through Spectroscopy. Summer 2015.

Senior Design

1. BAE 402/403: Machine Systems Senior Design Team. Trans-axle Sequential Shifter. Fall 2017 and Spring 2018. 3 Students. Advisor (Co-Advisor: Tim Smith).
2. BAE 402/403: Machine Systems Senior Design Team. Tractor Throttle. Fall 2017 and Spring 2018. 3 Students. Advisor (Co-Advisor: Tim Smith).
3. BAE 402/403 Machine Systems Senior Design Team. Front Loader Weighing System. Spring 2015. 4 Students. Advisor and Sponsor.
4. BAE 402/403: Machine Systems Senior Design Team. Dynamic Tractor Cab Simulator. Fall 2014 and Spring 2015. 4 Students. Advisor and Sponsor.
5. EE 490/491: Electrical Engineering Capstone Design. Computer Aided Tractor Simulator. Fall 2013 and Spring 2014. 6 Students. Co-Advisor (Advisor: James E. Lump).

Student Design Competitions

1. University of Kentucky Wildcat Pulling Team, 2011-present. ASABE International 1/4-Scale Tractor Student Design Competition. 2012, 2014 & 2015 Competition Champions. 18 students in 2018, 15 in 2017, 12 in 2016, 24 in 2015, 10 in 2014, 12 in 2013, 14 in 2012, 9 in 2011. Faculty Advisor (Co-Advisor: Tim Smith).

2. University of Kentucky Blufasa Team, 2013-2015. Wildlife Challenge Unmanned Aerial Vehicle Competition. 9 Students. Co-Advisor (Advisor: Sean C. Bailey).

Academic Curriculum

1. BAE Machine Systems Automation Engineering Concentration. Fall 2013 to Spring 2018. 20 Students. Technical Elective Advisor.

AWARDS AND HONORS

1. Ken Freedman Outstanding Faculty Advisor Nominee. 2018.
2. Superior Paper Award. American Society of Agricultural and Biological Engineers. 2017.
3. Wethington Award (2016-2017). University of Kentucky. 2017.
4. Superior Paper Award. American Society of Agricultural and Biological Engineers. 2016.
5. Wethington Award (2015-2016). University of Kentucky. 2016.
6. Superior Paper Award. American Society of Agricultural and Biological Engineers. 2015.
7. Outstanding Doctoral Student. Gamma Sigma Delta Kentucky Chapter. 2012.
8. New Faces of Engineering. National Engineers Week. 2012.
9. New Faces of ASABE. American Society of Agricultural and Biological Engineers. 2012.
10. Sunkist Young Designer Award. American Society of Agricultural and Biological Engineers. 2011.
11. Outstanding Masters Student. Gamma Sigma Delta Kentucky Chapter. 2006.
12. Gamma Sigma Delta Kentucky Chapter. 2006.
13. Alpha Epsilon Kentucky Chapter. 2005.

PROFESSIONAL ORGANIZATION MEMBERSHIP

1. Academy of Model Aeronautics. 2013-2016.
2. Association for Unmanned Vehicle Systems International. 2005-2006.
3. American Society of Agricultural and Biological Engineers. 2004-current.

PROFESSIONAL DEVELOPMENT

Coursework

1. AUTONAVx: Autonomous Navigation for Flying Robots. Technische Universität München. 2015.

Continuing Professional Development

Participant

1. Faculty Fellows. 2017. Multimodal Communication.

Organizer/Presenter

1. **Sama, M.P.** 2016. PC-Based Data Acquisition. Presented as a CPD at the 2016 ASABE Agricultural Equipment Technology Conference. Louisville, KY.
2. Smith, S.W., Bailey, S.C., **Sama, M.P.**, Rister, B., Jacob, J.D., Graves, C., Ditto, D.S. Fortune, W. 2015. Drones: What do you know? What do you need to know? Presented as a Kentucky Transportation Cabinet CPD. Lexington, KY.

3. Cambron, T., **Sama, M.P.**, Wedig, H. 2015. Additive Manufacturing 101. Presented as a CPD at the 2015 ASABE Agricultural Equipment Technology Conference. Louisville, KY.

Professional Meetings Attended

1. ASABE Agricultural Equipment Technology Conference. Louisville, KY. 2018.
2. ASABE Annual International Meeting. Spokane, WA. 2017.
3. Southern Soybean Research Program. Tifton, GA. 2017.
4. S1069 Unmanned Aircraft Systems in Agriculture Multistate Meeting. Raleigh, NC. 2017.
5. ASABE Agricultural Equipment Technology Conference. Louisville, KY. 2017.
6. ASABE Annual International Meeting. Orlando, FL. 2016.
7. S1069 Unmanned Aircraft Systems in Agriculture Multistate Meeting. Atlanta, GA. 2016.
8. ASABE Agricultural Equipment Technology Conference. Louisville, KY. 2016.
9. Kentucky Transportation Cabinet Drone Workshop. Lexington, KY. 2015.
10. VDI Wissenforum 73. International Landtechnik. Hannover, Germany. 2015.
11. KY Precision Agriculture Workshop. Princeton, KY. 2015
12. ASABE Annual International Meeting. New Orleans, LA. 2015
13. ASABE Agricultural Equipment Technology Conference. Louisville, KY. 2015.
14. The InfoAg Conference. St. Louis, MO. 2014.
15. ASABE Annual International Meeting. Montreal. Quebec, Canada. 2014.
16. Kentucky Corn Growers Association CORE Farmer Program. Louisville, KY. 2014.
17. ASABE Agricultural Equipment Technology Conference. Louisville, KY. 2014.
18. Kentucky Summit – Unmanned Aerial Systems. Lexington, KY. 2013.
19. VDI Wissenforum 71. International Landtechnik. Hannover, Germany. 2013.
20. ASABE Annual International Meeting. Kansas City, MO. 2013.
21. Precision Agriculture Workshop at the Hardin County Extension Office. 2013.
22. ASABE Annual International Meeting. Dallas, TX. 2012.
23. ASABE Annual International Meeting. Louisville, KY. 2011.
24. ASABE Annual International Meeting. Pittsburgh, PA. 2010.
25. NCERA-180 Site Specific Management Multistate Meeting. Lexington, KY. 2010.
26. ASABE Annual International Meeting. Reno, NV. 2009.
27. ASABE Agricultural Equipment Technology Conference. Louisville, KY. 2009.
28. ASABE Annual International Meeting. Providence, RI. 2008.
29. ASABE Annual International Meeting. Minneapolis, MN. 2007.
30. ASABE Annual International Meeting. Portland, OR. 2006.
31. National Soybean Rust Symposium. Nashville, TN. 2005.
32. ASAE Annual International Meeting. Tampa, FL. 2005.

In-Service Training

1. CAFE Promotion and Tenure Workshop. 2018.
2. UK Unconscious Bias (Search Committee Emphasis). 2018.
3. UK Unconscious Bias (Faculty Emphasis). 2017.
4. UK Responsible Conduct in Research Training. 2016.
5. CAFE Promotion and Tenure Workshop. 2015.
6. COE New Faculty Orientation. 2014.
7. CAFE New Faculty Orientation. 2014.
8. UK Promotions and Tenure Beginnings Workshop. 2014.

9. CAFE Promotion and Tenure Workshop. 2014.
10. Rotorcraft Safety Training. 2014.
11. 3D Printer Training. 2013.
12. CAFE New Faculty Orientation. 2013.
13. UK New Faculty Orientation. 2013.

SERVICE

Manuscript Editorship

1. Transactions of the ASABE. Machine Systems Division. Associate Editor. 2017-present.
2. Applied Engineering in Agriculture. Machine Systems Division. Associate Editor. 2017-present.

Manuscript Review

1. Geoderma, 2017.
2. Computers and Electronics in Agriculture. 2016, 2017.
3. Transactions of the ASABE. 2015, 2016, 2017, 2018.
4. Soil & Tillage Research. 2014.
5. Spanish Journal of Agricultural Research. 2010.
6. Applied Engineering in Agriculture. 2007, 2010, 2015.

Proposal Review

1. USDA SBIR Phase I. 2016.
2. USDA AFRI Exploratory Research. 2015.
3. NASA KY Space Grant Consortium RIDG. 2014.

Departmental

1. Research and Graduate Studies Committee, Chair. 2019.
2. Shop Supervisor Search Committee, Chair. 2018.
3. Awards Committee. 2017-present.
4. Livestock Systems Faculty Position Search Committee. 2015-2016.
5. Alumni and Development Committee, Chair. 2015-present.
6. Faculty Secretary. 2013-2015.
7. Student Recruitment and Outreach Committee, Chair. 2014-2015.
8. Social Committee. 2014-2015.
9. Building, Maintenance and Safety Committee, Chair. 2013-2014.
10. Undergraduate Curriculum Committee. 2013-present.
11. Electronics Engineer Staff Position Search Committee. 2013.
12. Faculty Advisor, Wildcat Pulling Team. 2011-present.
13. Computer Committee. 2005-2011.

College

1. BAE Department Periodic Review Committee. 2017-2018.
2. BAE Chair Search Committee. 2017.
3. CAFE Strategic Planning Listening Session Participant. 2015.
4. Ag Systems Modeling Faculty Position Search Committee, Plant and Soil Sciences. 2014.

5. CAFE New Faculty Workshop Panel Speaker. 2014.
6. CAFE Alumni Plaza Dedication Exhibitor. 2014.
7. National Farm Machinery Show CAFE Exhibitor. 2014.
8. Ag Roundup Alumni Breakfast and Staff Appreciation Lunch Volunteer. 2013.

University

1. COE Dean Search Committee. 2017-2018.

Regional and National

1. USDA NIFA AFRI Agricultural Engineering Program Area Priority. Panelist. 2018.
2. ASABE KY Section. 2014-present. Co-Chair, 2015-2017. Vice-Chair, 2017-present.
3. KyCGA CORE Farmer Program Session Organizer. 2014.
4. ASABE Agricultural Equipment Technology Conference Planning Committee. 2014-present.
5. ASABE Executive-05 External Marketing Committee. 2016-2018.
6. ASABE Executive-05/2 FFA Coordinating Committee. 2013-present. Vice-Chair, 2015-2016. Chair, 2016-2018. Past-Chair, 2018-present.
7. ASABE Executive-05/3 Digital Communications Committee. 2018-present.
8. ASABE MS-54 Precision Agriculture. 2013-present. Secretary, 2018-present.
9. ASABE MS-58 Agricultural Equipment Automation. 2013-present.
10. ASABE MS-60 Unmanned Aircraft Systems. 2015-present. Secretary, 2018-present.

Technical Session Moderator

1. ASABE Agricultural Equipment Technology Conference. Research and Education in Precision Agriculture and Data Management. 2018.
2. ASABE Agricultural Equipment Technology Conference. Electronic Poster Session. 2017-2018.
3. ASABE Annual International Meeting. Instrumentation and Controls for Precision Agriculture. 2014.

Other Service

1. Exhibitor/Recruiter. Student Technology Leadership Program (STLP) Showcase. Lexington, KY. 2016-2017.
2. Exhibitor/Recruiter. National FFA Convention. Louisville, KY. 2013-2015.
3. Exhibitor/Recruiter. University of Kentucky Engineering Day. Lexington, KY. 2012-2016
4. Exhibitor/Recruiter. National FFA Convention. Indianapolis, IN. 2012.

MEDIA COVERAGE

1. CNET.com. Drones on the farm: Using facial recognition to keep cows healthy. Published 8/22/19.
2. PrecisionAg.com. 25 Best Colleges for Precision Agriculture. 2018.
3. sUAS News. Universities off to a Flying Start with Large Drone Research. 2016.
4. WKYT 5:30 PM News. 1 interview in 2018. 1 interview in 2016. 1 interview in 2015
5. Featured in Kentucky Engineering Journal Research Edition. 2015.
6. Across Kentucky. Kentucky Farm Bureau Newsroom. 3 interviews in 2016. 2 interviews in 2015. 3 interviews in 2014.
7. BAE Down-Low Podcast. BAE Department. 1 interview in 2014.
8. Featured in the May/June 2013 issue of ASABE's Resource Magazine titled, "People Who Make a Difference." 2013.
9. Featured in the November/December 2012 special issue of ASABE's Resource Magazine titled, "Careers in Agricultural and Biological Engineering." 2012.
10. Featured in USA Today on 2/21/12 and 2/24/12 as an Engineers Week New Face of Engineering. 2012.