Bob Zhiwei Zeng, Ph.D, P.Eng

Assistant Professor
Engineering Technology
Agricultural Engineering
Environmental Engineering
University of Wisconsin - River Falls

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PERSONAL INFORMATION

Education

Ph.D. in Biosystems Engineering Sep 2014 - Jan 2019*
University of Manitoba, Canada
*Enrolled as M.Sc. in 2014 and transferred to Ph.D. in 2015

Certificate in Higher Education Teaching** Sep 2015 - May 2018
University of Manitoba, Canada
**A three-year program consisting of coursework in pedagogy, 20 hours of workshop, a mentor supervised teaching practicum, and completion of a teaching dossier

B.Sc. in Mechanical Engineering Sep 2010 - July 2014
Northwest Agriculture and Forestry University, China

Employment

Assistant Professor (Tenure Track) Jan 2021 - Present
Agricultural Engineering Technology, University of Wisconsin-River Falls, USA

Career Faculty Fellow May 2023 - Present
University of Wisconsin-River Falls, USA

Sustainability Faculty Fellow May 2021 - Present
University of Wisconsin-River Falls, USA

Adjunct Professor Sep 2021 - Present
Department of Biosystems Engineering, University of Manitoba, Canada

Principal Mar 2023 - Present
AB Technology, LLC

AB Tech is an agricultural engineering consulting firm with a strong commitment to sustainable practices, cutting-edge technology, and a passion for enhancing global food production.

Postdoctoral Fellow Feb 2019 - Dec 2020

Department of Biosystems Engineering, University of Manitoba, Canada

- Managed a group of 12 researchers and students to execute PI's research program with a budget of $650,000
- Collaborated with industrial partners in supporting their R&D efforts
- Involved in multiple projects four of which I was in charge of are listed below
- Modelling chisel plowing in corn residue fields using the DEM
- Testing a tine weeder for early season mechanical weed control
- Understanding seed-soil dynamics in epigeal germination through numerical simulations
- Effectiveness of vertical tillage for corn residue management

Graduate Research Assistant Sep 2014 - Jan 2019

Department of Biosystems Engineering, University of Manitoba, Canada

- Produced 6 first-author peer-reviewed publications
- Developed numerical models for simulating the dynamic behavior of agricultural machinery systems and their interactions with soil and crop residue
- Pioneered DEM simulations of investigating the soil dynamics and residue movement involved in soil-tool-residue interaction systems
- Tested agricultural machines in laboratory soil bin and field conditions
- Conducted and tailored research projects to the needs of local agriculture production, which secured financial support in the form of scholarships and awards
- Collaborated with leading industrial partners on prototype testing and design improvement, and obtained numerous in-kind support
- Provided guidance on 5 junior graduate students' projects including research planning, testing supervision, and simulation troubleshooting
- Assisted in supervising 6 undergraduates on their senior design and summer research projects and reviewed their reports and papers
- Managed Soil Dynamics and Machinery Lab and oversaw major testing activities for more than 3 years

Undergraduate Technician Sep 2013 - July 2014

Department of Agricultural Engineering, Northwest A&F University, China

- Performed precision agriculture-related field experiments including variable-rate applications and yield monitoring
- Coordinated field tours for local producers' associations to promote research outcomes of precision agriculture equipment and techniques

- Followed the instructions of senior technicians and ensured timelines of various projects were met

Awards and Honors

University of Wisconsin-River Falls

- Paul B. and Robert Dykstra Faculty Excellence Award, 2024, USD $1,500

International

- Chinese Government Award for Outstanding Self-finance Students Abroad, 2019, finalist
- Graduate Student Teaching Award of Merit, North American Colleges and Teachers of Agriculture (NACTA), 2018, one of two recipients
- Mitacs Globalink Graduate Fellowship, 2014-2017, CAD $30,000
- Mitacs Globalink Internship Award for Summer Research, 2013, CAD $8,500

University of Manitoba, Canada

- University of Manitoba Distinguished Dissertation Award, 2020, CAD $3,600
- Governor General's Gold Medal for Doctoral Students, 2019, one of two nominees
- University of Manitoba Graduate Fellowship, 2014-2018 (2 times), CAD $64,000
- Duff Roblin Fellowship from Government of Manitoba, 2014-2016, CAD $28,000
- MZTRA Soil Conservation Fellowship, 2018, CAD $25,000
- International Graduate Student Scholarship, 2015, 2016 (2 times), CAD $10,961
- Edward R. Toporeck Graduate Fellowship, 2015-2017 (3 times), CAD $15,000
- W.E. Muir Scholarship for Graduate Students, 2016, 2017 (2 times), CAD $5,525
- Douglas L. Campbell Graduate Fellowship, 2015-2017 (3 times), CAD $13,425
- Stewart Pugh External Study Scholarship, 2015-2019 (3 times), CAD $6,000
- The Lord Selkirk Association of Rupert's Land Scholarship, 2016, CAD $1,450
- Graduate Students Travel Award, 2015, 2018 (2 times), CAD $1,500
- UMGSA Travel Award, 2015, 2018 (2 times), CAD $1,000
- International Graduate Student Bursary, 2015, CAD $900
- International Graduate Student Entrance Scholarship, 2014, CAD $4,000

Northwest A&F University, China

- Distinguished Graduates, 2014, Top 1%
- Undergraduate Thesis Award, 2014, Top 1%
- China National Scholarship, 2011-2014 (3 times), CNY 24,000

Professional Memberships

- American Society for Agricultural & Biological Engineers (ASABE), 2014-present
- The Canadian Society for Bioengineering (CSBE), 2014-present

- International Commission of Agricultural and Biosystems Engineering (CIGR), 2014-present
- Association of Overseas Chinese Agricultural Biological Food Engineers (AOC), 2016-present
- Engineers Geoscientists Manitoba (EGM), 2019-present
- International Soil Tillage Research Organization (ISTRO), 2020-present

TEACHING

Courses Taught at UWRF

- Instructor, GENG 165 Programming for Engineers, 2021, 2022, 2023, 2024
- Instructor, GENG 265 CAD for Mechanical Design, 2021, 2022, 2023, 2024
- Instructor, AGEN 461 Off-Road Vehicle Engineering, 2021, 2022, 2023, 2024
- Instructor, AET 361 Agricultural Machinery Management, 2021, 2022, 2023, 2024
- Instructor, GENG 121 Introduction to Computer Aided Drafting and Design, 2021, 2022, 2023, 2024
- Instructor, AGEN 451 Instrumentation Systems in Agricultural Engineering, 2021, 2022, 2023, 2024
- Instructor, AET 385 Agricultural Engineering Technology Seminar III, 2021, 2022, 2023, 2024
- Instructor, AET 285 Agricultural Engineering Technology Seminar II, 2024
- Co-Instructor, AET 150 Applications in Agricultural Engineering, 2022, 2023, 2024
- Co-Instructor, GENG 484 Senior Capstone: Project Definition and Design, 2023
- Guest Speaker, BIOE 7360 Biological Systems: Behaviour, Modelling and Simulation, University of Manitoba, Canada, 2021

Courses Taught prior to UWRF

- Sessional Instructor, BIOE 3400 Design of Structural Components in Machines, University of Manitoba, Canada, 2017
- Sessional Instructor, ENG 1440 Introduction to Statics, Fuzhou University, China, 2016
- Sessional Instructor, ENG 1460 Thermo Sciences and Thermodynamics, Fuzhou University, China, 2016
- Teaching Assistant, BIOE 0222 Precision Agriculture, University of Manitoba, Canada, 2019
- Teaching Assistant, BIOE 3400 Design of Structural Components in Machines, University of Manitoba, Canada, 2015, 2016, 2018, 2019
- Guest Speaker, BIOE 7360 Biological Systems: Behaviour, Modelling and Simulation, University of Manitoba, Canada, 2020

- Guest Speaker, Soil Dynamics and Machinery – Testing and Simulation, BIOE 3100 Agricultural Engineering Fundamentals for Agronomists, University of Manitoba, Canada, 2019, 2020
- Guest Speaker, BIOE 7290 Biosystems Engineering Graduate Seminar, University of Manitoba, Canada, 2018

Advising

Undergraduate Students (Total: 11)

1. Mikhael Dodd, Engineering Technology, UWRF, 2023-present
2. Otto Heuschele, Agricultural Engineering-Machinery Systems, UWRF, 2022-present
3. Nolan Israelson, Agricultural Engineering-Machinery Systems, UWRF, 2023-present
4. Devin Lay, Engineering Technology, UWRF, 2024-present
5. Ethan Meissner, Engineering Technology, UWRF, 2022-present
6. Stephano Pereyra, Environmental Engineering, UWRF, 2022-present
7. Nelson Polen, Agricultural Engineering-Machinery Systems, UWRF, 2024-present
8. Joe Stefanski, Engineering Technology, UWRF, 2024-present
9. Gwen Truesdale, Agricultural Engineering-Machinery Systems, UWRF, 2022-present
10. Hayden Walters, Agricultural Engineering-Machinery Systems, UWRF, 2024-present
11. Alex Lintelman, Agricultural Engineering-Machinery Systems, UWRF, 2021-2022

Extracurricular Activities

1. Faculty advisor, Ag Industry Club, UWRF, 2021-present
2. Faculty advisor, Falcon Robotics Team, UWRF, 2021-present
3. Faculty advisor, ASABE Student Chapter, UWRF, 2022-present

Mentoring

Undergraduate Students (Total: 9)

1. Wyatt Stehr, Agricultural Engineering-Machinery Systems, UWRF, 2024-present
2. Zac Muenzner, Agricultural Engineering-Machinery Systems, UWRF, 2024-present
3. Caleb Lokker, Agricultural Engineering-Machinery Systems, UWRF, 2024-present
4. Natalie Bostrom, Agricultural Business, UWRF, 2024-present
5. Aj Loefer, Agricultural Engineering-Machinery Systems, UWRF, 2022-2023
6. Marie Hamlin, Agricultural Engineering-Machinery Systems, UWRF, 2022-2023
7. Alex Pierson, Agricultural Engineering-Machinery Systems, UWRF, 2021-2022
8. Rames Frisch, Agricultural Engineering Technology, UWRF, 2021-2022
9. Kyle Leis, Agricultural Engineering Technology, UWRF, 2021-2022

Graduate Students (Total: 4)

1. Advisory Committee Member of M.Sc. student Leo Reznik, Biosystems Engineering, University of Manitoba, Canada, 2024-present

2. Advisory Committee Member of Ph.D student Hamideh Faridi, Biosystems Engineering, University of Manitoba, Canada, 2023-present
3. Advisory Committee Member of Ph.D student Ernest Owusu-Sekyere, Biosystems Engineering, University of Manitoba, Canada, 2023-present
4. Advisory Committee Member of Ph.D student Peng Wu, Biosystems Engineering, University of Manitoba, Canada, 2021-present

Visiting Scholars (Total: 2)

1. Yuyuan Tian, South China Agricultural University, China, 2022-2023
2. Avdhoot Walunj, Mahatma Phule Krishi Vidyapeeth, India, 2022-2023

Professional Development Activities

1. Certificate Course, Online Teaching Foundations, Center for Excellence in Teaching and Learning, UWRF, July 2021
2. Workshop, Early Career STEM Educator Workshop, Women and Science Program, UW Systems, May 25-27, 2021
3. Workshop, Infusing Sustainability Across the Curriculum Workshop, Center for Excellence in Teaching and Learning, UWRF, May 10-12, 2021

RESEARCH

Research Interests

My research interests include agricultural machinery systems and precision agriculture with a focus on advanced machine development through physical systems modeling for sustainable agricultural production. More specifically, I specialize in developing universal machine-soil-crop interaction models using discrete element method (DEM) to optimize machine performance. I am also interested in integrating numerical simulations into precision agriculture for improved decision support mechanisms.

Refereed Articles in Scientific Journals (Total: 27)

1. Tian, Y, **Zeng, Z.,** and Xing, Y., 2024. A review of discrete element method applications in soil-plant interactions: challenges and opportunities, *Agriculture*, 14: 1486.
2. Wu, P., Zhang, X., **Zeng, Z.,** and Chen, Y., 2024. Simulation of soil heterogeneity in subsoiling using discrete element method (DEM). *Smart Agricultural Technology*, 7: 100385.
3. Tian, Y., Mai, Z., **Zeng, Z.,** Cai Y., Yang, J., and Qi, L., 2023. Design and experiment of an integrated navigation system for a paddy field scouting robot, *Computers and Electronics in Agriculture*, 214: 108336.
4. Feng, X., Wang, Z., **Zeng, Z.**, Zhou, Y., Lan, Y., Zou, W., Gong, H., and Qi, L., 2023. Size measurement and filled/unfilled detection of rice grains using backlight image processing, *Frontiers in Plant Science*, 1213486.

5. Cui, J., Zheng, H., **Zeng, Z.**, Yang, Y., Ma, R., Tian, Y., Tan, J., Feng, X., and Qi, L., 2023. Real-time missing seedling counting in paddy fields based on lightweight network and tracking-by-detection algorithm, *Computers and Electronics in Agriculture,* 212: 108045.
6. Tian, Y., Gong, H., Feng, X., Gai, Y., **Zeng, Z.**, and Qi, L., 2023. Development of a model to predict the throwing trajectory of a rice seedling, *Computers and Electronics in Agriculture,* 211: 108025.
7. Walunj, A., Chen, Y., Tian, Y., and **Zeng, Z.**, 2023. Modeling soil-plant-machine dynamics using discrete element method: A review, *Agronomy,* 13(5): 1260.
8. Tian, Y., Leis, K., and **Zeng, Z.**, 2023. Retrofitting and testing of a pull-type small-grain combine harvester, *Agronomy,* 13(4): 1057.
9. Gong, H., Chen, Y., Zheng, W., **Zeng, Z.**, Li, S., and Qi, L., 2023. Measurements and DEM modelling of soybean seed expansion, *Computers and Electronics in Agriculture,* 208: 107786.
10. Gong, H., **Zeng, Z.**, Tessier, L., Guzman, L, Yuan, Z., Li, S., Zheng, W., Chen, Y., and Qi, L., 2023. Survival on land: A dark-grown seedling searching for path, *Frontiers in Plant Science,* 14: 1110521.
11. Tian, Y., **Zeng, Z.**, Gong, H., Zhou, Y, Qi, L., and Zhen, W., 2023. Simulation of tensile behavior of tobacco leaf using the Discrete Element Method, *Computers and Electronics in Agriculture,* 205: 107570.
12. Tang, Z., Gong, H., Wu, S., **Zeng, Z.**, Wang, Z., Zhou, Y., Fu, D., Liu, C., Cai, Y., and Qi, L., 2023. Modelling of paddy soil using the CFD-DEM coupling method, *Soil & Tillage Research,* 226: 105591.
13. **Zeng, Z.**, Thoms, D., Chen, Y., and Ma, X., 2021. Comparison of soil and corn residue cutting performance of different discs used for vertical tillage, *Scientific Reports,* https://doi.org/10.1038/s41598-021-82270-9
14. **Zeng, Z**., Ma, X., Cao, X., Li, Z., Wang, X., 2021. Critical review of applications of discrete element method in agricultural engineering, *Transactions of the Chinese Society for Agricultural Machinery,* 52(4): 1-20.
15. Adajar, J., Alfaro, M., Chen, Y., and **Zeng, Z.**, 2021. Calibration of discrete element parameters of crop residues and their interfaces with soil, *Computers and Electronics in Agriculture,* 188: 106349.
16. **Zeng, Z.**, Martin, A., Chen, Y., and Ma, X., 2021. Weeding performance of a spring-tine harrow as affected by timing and operational parameters, *Weed Science*, doi: 10.1017/wsc.2020.88
17. Sadek, M., Chen, Y., and **Zeng, Z.**, 2021. Draft prediction for a high-speed disc implement using discrete element modelling, *Biosystems Engineering,* 202: 133-141.
18. **Zeng, Z.**, Chen, Y., and Qi, L., 2020. Simulation of cotyledon-soil dynamics using the discrete element method (DEM), *Computers and Electronics in Agriculture,* 174: 105505.

19. **Zeng, Z.**, Ma, X., Chen, Y., and Qi, L., 2020. Modelling residue incorporation of selected chisel ploughing tools using the discrete element method (DEM), *Soil & Tillage Research*, 197: 104505.
20. **Zeng, Z.**, and Chen, Y., 2019. Simulation of straw movement by discrete element modeling of straw-sweep-soil interaction, *Biosystems Engineering*, 180: 25-35.
21. **Zeng, Z.**, Chen, Y., and Qi, L., 2019. Soil cutting by a compact disc harrow having various disc arrangements, *Transactions of the ASABE*, 62(2): 429-437.
22. Gong, H., **Zeng, Z.**, and Qi, L., 2019. A discrete element model of seed-soil dynamics in soybean emergence, *Plant and Soil*, 437: 439-454.
23. **Zeng, Z.**, and Chen, Y., 2018. Performance evaluation of fluted coulters and rippled discs for vertical tillage, *Soil & Tillage Research*, 183: 93-99.
24. **Zeng, Z.**, and Chen, Y., 2018. The performance of a fluted coulter for vertical tillage as affected by working speed, *Soil & Tillage Research*, 175: 112-118.
25. **Zeng, Z.**, Chen, Y., and Zhang, X., 2017. Modeling the interaction of a deep tillage tool with heterogeneous soil, *Computers and Electronics in Agriculture*, 143: 130-138.
26. **Zeng, Z.**, and Chen, Y., 2016. Simulation of soil-micropenetrometer interaction using the discrete element method (DEM), *Transactions of the ASABE*, 59(5): 1157-1163.
27. Zhang, X., Wang, C., Chen, Z., and **Zeng, Z.**, 2016. Design and experiment of a bionic vibratory subsoiler for banana fields in southern China, *International Journal of Agricultural and Biological Engineering*, 9(6): 75-83.

Conference Proceedings and Abstracts (Total: 17)

1. Xing, Y., **Zeng, Z.,** Liu, C., Verma, A., Lee, T., Hou, D., Pan, H., and Edwards, S., Optimizing sleep schedules for energy-efficient agricultural wireless sensor networks using deep reinforcement learning, IEEE 15th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), 2024.
2. Xing, Y., Verma, A., **Zeng, Z.,** Liu, C., Lee, T., Hou, D., Pan, H., and Edwards, S., Cluster-based genetic algorithm path planning for cooperative UGV and UAV operations in energy-efficient wireless sensor networks, IEEE 15th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), 2024.
3. Xing, Y., **Zeng, Z.,** Verma, A., Liu, C., Lee, T., Hou, D., Pan, H., Edwards, S., and Stehr, W., Optimizing grass selection for beef cattle using multi-armed bandit algorithms: A data-driven approach to enhance growth through rumination analysis, IEEE 15th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON), 2024.
4. Bostrom, N., Muenzner, Z., Howry, S., and **Zeng, Z.**, Development of an alfalfa haylage fractionation system, WiSys Spark Symposium, Superior, Wisconsin, USA, July 24-26, 2024.
5. **Zeng, Z.**, Chen, Y., and Loefer AJ., Leveraging numerical simulations to design a liquid manure applicator, CSBE/SCGAB 2024 Annual Conference, Winnipeg, Manitoba, Canada, July 7-10, 2024.

6. **Zeng, Z.,** and Loefer AJ., Efficient manure land application through innovative tillage systems, Dairy Summit, Platteville, Wisconsin, USA, November 15, 2023.
7. **Zeng, Z.**, Loefer, AJ., Chen, Y., and Tian, Y., Modeling manure land applications using the discrete element method, ASABE 2023 AIM, Omaha, Nebraska, USA, July 8-12, 2023.
8. Tian, Y., Gong, H., Feng, X., Cai, Y., **Zeng, Z.,** and Qi, L., Predicting the throwing trajectory of rice seedlings using the Runge-Kutta method, ASABE 2023 AIM, Omaha, Nebraska, USA, July 8-12, 2023.
9. **Zeng, Z.,** and Loefer. AJ., Efficient manure land application through vertical tillage systems, Dairy Summit, River Falls, Wisconsin, USA, November 16, 2022.
10. Pierson, A., Leis, K, Fisch, R., and **Zeng, Z.,** Retrofitting a small-scale grain harvester, UW-System Symposium for Undergraduate Research, Scholarly & Creative Activity, Whitewater, Wisconsin, USA, April 22, 2022.
11. Adajar, J., Ubay, I., **Zeng, Z.**, Alfaro, M., and Chen, Y., Particulate mechanics parameters for geotechnical and agricultural engineering applications, 9th International Conference on Geotechnique, Construction Materials and Environment, Tokyo, Japan, November 20-22, 2019.
12. **Zeng, Z.**, and Chen, Y., Modelling the residue incorporation capability of various tillage tools using discrete element method, ASABE 2019 AIM, Boston, Massachusetts, USA, July 7-10, 2019.
13. **Zeng, Z.**, and Chen, Y., A discrete element model of soil-tool-residue interaction for tillage operation, ASABE 2018 AIM, Detroit, Michigan, USA, July 29-August 1, 2018.
14. Sadek, M., **Zeng, Z.**, and Chen, Y., Discrete element modeling of soil cutting forces of vertical tillage disc (Soilrazor), ASABE 2018 AIM, Detroit, Michigan, USA, July 29-August 1, 2018.
15. Sadek, M., **Zeng, Z.**, and Chen, Y., Draft force prediction for a high speed disc tillage implement, CSBE/SCGAB 2017 Annual Conference, Winnipeg, Manitoba, Canada, August 6-10, 2017.
16. **Zeng, Z.**, and Chen, Y., The performance of fluted coulters for vertical tillage, CSBE/SCGAB 2017 Annual Conference, Winnipeg, Manitoba, Canada, August 6-10, 2017.
17. **Zeng, Z.**, and Chen, Y., Effect of different soil moisture contents on early soybean plant growth, CSBE/SCGAB 2015 Annual Conference, Edmonton, Alberta, Canada, July 5-8, 2015.

Other Publications (Total: 5)

1. **Zeng, Z**., 2021. Field trials of Harvest Tec hay preservative. Submitted to Harvest Tec Inc., WI, USA.
2. Chen, Y., **Zeng, Z.**, Venkatesh, S., 2019. Field tests of Atom-Jet hoe openers. Submitted to Atom-Jet Industries Ltd., Manitoba, Canada.

3. Chen, Y. and **Zeng, Z.**, 2017. Soil bin tests of Versatile high-speed-compact disc blades-I. Submitted to Buhler Versatile Inc., Manitoba, Canada.
4. Chen, Y. and **Zeng, Z.**, 2017. Soil bin tests of Versatile high-speed-compact disc blades-II. Submitted to Buhler Versatile Inc., Manitoba, Canada.
5. Chen, Y. and **Zeng, Z.**, 2016. Field tests of Versatile high speed disc. Submitted to Buhler Versatile Inc., Manitoba, Canada.

Dissertations (Total: 2)

1. **Zeng, Z.** 2019. Soil-tool-residue interactions: measurements and modelling. Ph.D. thesis, Department of Biosystems Engineering, University of Manitoba, Canada
2. **Zeng, Z.** 2014. Design and testing of a smart switching system based on infrared temperature monitoring. B.Sc. thesis, Department of Mechanical Engineering, Northwest A&F University, China

Invited Talks (Total: 7)

1. Efficient manure land application through vertical tillage systems, Dairy Summit of Dairy Innovation Hub, Wisconsin, November 16, 2022
2. Numerical modelling of soil-tool-residue interaction with discrete element method (DEM), Xinjiang Agricultural University, Virtual, June 20, 2022
3. Research methodology and technical writing, South China Agricultural University, Guangzhou, China, December 27, 2019
4. Agricultural machinery and the discrete element method (DEM). Qingdao University, Qingdao, China, December 21, 2019
5. Agricultural machinery and vertical tillage. Southwest University, Chongqing, China, March 25, 2019
6. Simulations of soil-tool interaction using the discrete element method (DEM). Xi'an University of Technology, Xi'an, China, September 26, 2018
7. Discrete element modeling for machine-biological material interaction. Huazhong Agricultural University, Wuhan, China, May 13, 2018

Grants

1. PI, Robert P. Knowles Endowment in International Education Grant, 2024. $1,000
2. PI, Optimizing Alfalfa Haylage Utilization and Reducing Costs through a Fractional Approach, WiSys Spark Grant, 2024. $9,997
3. PI, Development of a Novel Manure Application Tool for Cover Crops. WiSys Ignite Grant, 2024-2025. $50,000
4. Co-PI, Engineering an Innovative Ventilation Design to Improve Climate Control for Indoor Calf Housing. University of Wisconsin Consortium for Extension and Research in Agriculture and Natural Resources (CERANR), 2024-2026. $70,000
5. PI, Harmonizing Agriculture: Developing a Novel Liquid Manure Application Tool for Optimal Cover Crop Growth, UWRF Faculty Research Grant, 2024. $2,881

6. Co-PI, A Human-Centered Collaborative Approach to Designing Energy-Efficient Wireless Sensor Network for Precision Agriculture. UW System Innovation Grant, 2024-2026. $175,000
7. Co-PI, Building and Testing Portable Efficient Soil Samplers for Teaching and Research. Undergraduate Stipends and Expenses Grant, 2023. $1,997
8. PI, Efficient Manure Land Application Through Innovative Tillage Systems: Feasibility and Environmental Impacts. Dairy Innovation Hub, 2023-2025. $112,095
9. PI, Efficient Manure Land Application Through Vertical Tillage Systems: Preliminary Studies. Dairy Innovation Hub, 2022. $14,873
10. PI, Hay Preservative Trial for Product Registration with CFIA. Harvest Tec, Inc., 2021. $9,776
11. Co-PI, Building Undergraduate Research and Outreach Capacity in Urban and Small-scale Agricultural Production at University of Wisconsin-River Falls. USDA-NIFA, 2021-2023. $149,910

Professional Development Activities

1. Future.Industry 2024, Altair, March 6-7, 2024
2. Grant Writing Academy, WiSys, Fall 2023
3. Dairy Summit, Dairy Innovation Hub, WI, Nov 16, 2022.
4. Dairy Summit, Dairy Innovation Hub, WI, Nov 17-18, 2021.
5. Workshop, The power of grants for an academic career, WiSys Technology Foundation Inc., Nov 9, 2021.
6. Workshop, Off-road equipment simulation and modeling, Altair Engineering Inc., June 8-10, 2021.

SERVICES

University Services at UWRF

1. Engineering Steering Committee, 2024-present
2. University Curriculum Committee, 2021-present
3. Diversity and Inclusivity Committee, 2021-present

University Services prior to UWRF

1. Faculty Hiring Committee, Department of Biosystems Engineering, University of Manitoba, Canada, 2018-2019
2. Graduate Student Experience Committee, Graduate Students' Association, University of Manitoba, Canada, 2016-2017
3. Vice-President of Biosystems Engineering Graduate Students' Association, University of Manitoba, Canada, 2015-2016

Profession

Journal Reviewers

1. Computers and Electronics in Agriculture
2. Journal of the ASABE
3. Applied Engineering in Agriculture
4. Biosystems Engineering
5. International Journal of Agricultural and Biological Engineering
6. Canadian Biosystems Engineering
7. Agriculture (MDPI)
8. Infrared Physics and Technology

Committees

1. Editorial board member, Transactions of the Chinese Society for Agricultural Machinery, 2024-Present
2. Member at Large, ASABE Young Professionals Committee (YPC), 2023-Present
3. Nomination committee, American Society of Agricultural and Biological Engineers-Wisconsin, 2021-Present
4. Technical committee ISTC-217 Computational Methods, Simulations & Application, American Society of Agricultural and Biological Engineers, 2019-Present
5. Technical committee MS-45 Soil-Plant-Machine Dynamics, American Society of Agricultural and Biological Engineers, 2019-Present

Public

1. Math Teacher at Minnesota Minghua Chinese School, 2024-present
2. Event Coordinator for Science Olympaid, January 2024
3. Volunteer for River Falls Community Food Pantry, 2021-present
4. Judge for Manitoba Schools Science Symposium, April 2019

END Updated in September 2024