

Lizhi Wang

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USA <http://lzwang.public.iastate.edu>
- ACADEMIC APPOINTMENT Associate Professor, Industrial and Manufacturing Systems Engineering, Iowa State University, 2013–present
- Associate Professor (by courtesy joint appointment), Electrical and Computer Engineering, Iowa State University, 2013–present
- Assistant Professor, Industrial and Manufacturing Systems Engineering, Iowa State University, 2007–2013
- Assistant Professor (by courtesy joint appointment), Electrical and Computer Engineering, Iowa State University, 2007–2013
- EDUCATION Ph.D., Industrial Engineering, University of Pittsburgh, 2007
- B.E., Automation, University of Science and Technology of China, 2003
- B.S., Management Science, University of Science and Technology of China, 2003
- GRANTS
23. PI: Patrick Schnable. Co-PI: **Lizhi Wang** and Guiping Hu. “Development and Evaluation of Improved Strategies for Genomic Selection via Simulations and Empirical Testing,” USDA, 12/2016 – 12/2019. Total \$733,795.
 22. PI: **Lizhi Wang**. Co-PI: James McCalley and Christopher DeMarco. “Development of expansion planning methods and tools for handling uncertainty,” PSERC, 6/2017 – 8/2019. Total \$220,000.
 21. PI: **Lizhi Wang**. Co-PI: Guiping Hu. “Real-time inventory control under autonomous and coordinated mechanisms,” NSF Center for e-Design, 12/2016 – 12/2018. Total \$100,000.
 20. PI: Guiping Hu. Co-PI: Caroline Krejci, Sarah Ryan, **Lizhi Wang**, Dave Sly (Proplanner), Charles Hu (Boeing), Andrew Dugenske (Factory Right), Craig Sutton (Deere). “FactBoard: Real-time data driven visual decision support system for the factory floor,” Digital Manufacturing and Design Innovation Institute, 12/2015 – 12/2017. Total \$2,537,893.
 19. PI: Guiping Hu. Co-PI: Dave Sly (Proplanner) and **Lizhi Wang**. “Real-time shop floor production planning and optimization under uncertainty,” NSF Center for e-Design, 12/2015 – 12/2017. Total \$80,000.
 18. PI: Guiping Hu. Co-PI: Jing Dong, **Lizhi Wang**, and Xuesong Zhou. “Data driven highway infrastructure resilience assessment– Phase II,” Midwest Transportation Consortium, 8/2015 – 8/2017. Total \$200,000.

17. PI: William Beavis. Co-PI: **Lizhi Wang**. “Trait breeding optimizer,” Syngenta, 1/2015 – 4/2016. Total \$130,000.
16. PI: **Lizhi Wang**. “Designed adaptation from natural genetic variants,” Plant Science Institute, 1/2015 – 1/2018. Total \$250,000.
15. PI: Guiping Hu. Co-PI: Jing Dong, **Lizhi Wang**, and Xuesong Zhou. “Data driven highway infrastructure resilience assessment – Phase I,” Midwest Transportation Consortium, 8/2014 – 8/2015. Total \$50,000.
14. PI: Walter P Suza. Co-PI: Jessica Barb, William Beavis, Ana Correia, Shuizhang Fei, Thomas Lubberstedt, Michael Retallick, Asheesh Singh, **Lizhi Wang**, Jianming Yu. “Plant breeding master of science programs for Africa,” Bill and Melinda Gates Foundation. 01/2014 – 12/2016. Total \$1,643,817.
13. PI: Emily Heaton. Co-PI: Matthew Darr, Guiping Hu, Lisa Schulte-Moore, and **Lizhi Wang**. “Integrated sustainable bioenergy pathways,” Baker Council. 01/2014 – 01/2018. Total \$1,480,000.
12. PI: Guiping Hu. Co-PI: **Lizhi Wang**. “Supply chain lot sizing decision models and analysis,” NSF Center for e-design. 08/2013 – 08/2015. Total \$100,000.
11. PI: **Lizhi Wang**. Co-PI: George Gross and Sakis Meliopoulos. “A framework for transmission planning under uncertainty,” Power Systems Engineering Research Center (PSERC), 06/2013 – 08/2015. Total \$200,000.
10. PI: Emily Heaton. Co-PI: Matt Darr, Guiping Hu, Lisa Schulte, and **Lizhi Wang**. “Iowa’s sustainable energy pathway (ISEP): Building a team to address the complete biofuels supply chain,” Plant Science Institute, 10/2012 – 9/2013. Total \$49,990.
9. PI: **Lizhi Wang**. “Risk assessment of unit commitment cost under uncertainty,” Electric Power Research Center (EPRC), 8/2012 – 8/2014. Total \$71,135.
8. PI: William Beavis. Co-PI: **Lizhi Wang**. “Backcross breeding optimizer,” Syngenta, 8/2012 – 12/2013. Total \$160,060.
7. PI: Guiping Hu. Co-PI: **Lizhi Wang**. “International collaboration on bioenergy system analysis,” ISU IMSE Innovation Initiative. 04/2012 – 07/2012. Total \$10,000.
6. PI: **Lizhi Wang**. Co-PI: George Gross. “Analytical methods for the study of investment strategies in compliance with environmental policy requirements,” Power Systems Engineering Research Center (PSERC), 06/2011 – 08/2013. Total \$150,000.
5. PI: **Lizhi Wang**. “Forecasting sales of PHEVs and PHEV users’ recharging behavior,” EPRC, 8/2010 – 8/2012. Total \$58,514.
4. PI: **Lizhi Wang**. Iowa State University, 2050 Challenge Graduate Fellowship, 07/2010-06/2011. Total \$7,500.
3. PI: Guiping Hu. Co-PI: Randy Boeckenstedt, **Lizhi Wang**, and Susan Wohlsdorf-Arendt. “Mapping potential food sheds in Iowa: a system optimization modeling approach,” Leopold Center for Sustainable Agriculture, 02/2010 – 01/2012. Total \$74,826.

2. PI: **Lizhi Wang**. Iowa State University, Waters 2050 Challenge Graduate Fellowship, 07/2008-06/2009. Total \$9,000.
1. PI: James McCalley. Co-PI: Dionysios Aliprantis, Nadia Gkritza, Arun K. Somani, and **Lizhi Wang**. “21st century national energy and transportation infrastructures: balancing sustainability, costs, and resiliency (NETSCORE-21),” NSF, 08/2008 – 08/2012. Total \$1,983,266.

TEACHING
EXPERIENCE

Course Developer and Instructor **Spring, 2010, 2012, 2014, 2015, 2017**
IE 634 Computational Optimization, Iowa State University

Course co-Developer and co-Instructor **Summer, 2015, 2016**
Transforming Plant Breeding into an Engineering Discipline, Iowa State University

Course Developer and Instructor **Spring, 2012**
IE 502X/602X Responsible Conduct of Research, Iowa State University

Course Developer and Instructor **Fall, 2007 – 2016**
IE 534 Linear Programming, Iowa State University

Course Instructor **Spring, 2008 – 2011, 2013, 2014**
IE 305 Engineering Economic Analysis, Iowa State University

Course Instructor **Fall, 2012, 2014, 2016**
IE 312 Optimization, Iowa State University

Course co-Instructor **Summer, 2007**
Study abroad program “Plus 3 China”, University of Pittsburgh and Tsinghua University

Course Instructor **Fall, 2006**
ENGR 0020 Probability and Statistics for Engineers I, University of Pittsburgh

JOURNAL
PUBLICATIONS

35. **Lizhi Wang** and Pan Xu, “The watermelon algorithm for the bilevel integer linear programming problem,” to appear in *SIAM Journal on Optimization*, 2017.
34. Ye Han, John Cameron, **Lizhi Wang**, and William Beavis, “The Predicted cross value for genetic introgression of multiple alleles,” to appear in *Genetics*, 2017.
33. Shiyang Huang, Guiping Hu, Carrie Chennault, Liu Su, Elke Brandes, Emily Heaton, Lisa Schulte-Moore, **Lizhi Wang**, and John Tyndall, “An agent-based simulation model of farmer decision making on bioenergy crop adoption,” *Energy*, vol. 115(1), p. 1188-1201, 2016.
32. Bokan Chen and **Lizhi Wang**, “Robust transmission planning under uncertain generation investment and retirement,” *IEEE Transactions on Power Systems*, vol. 31(6), p. 5144-5152, 2016.

31. Ye Shi, Yugang Yu, and **Lizhi Wang**, “Operational impact on the environment: managing service systems with environmental deterioration,” *International Journal of Production Economics*, vol. 170(A), p. 310-320, 2015.
30. Bokan Chen, Jianhui Wang, **Lizhi Wang**, Yanyi He, and Zhaoyu Wang, “Robust optimization for transmission expansion planning: Minimax cost vs. minimax regret,” *IEEE Transactions on Power Systems*, vol. 29(6), p. 3069-3077, 2014.
29. Guiping Hu, **Lizhi Wang**, Yihsu Chen, and Bopaya Bidanda, “An oligopoly model to analyze the market and social welfare for green manufacturing industry,” *Journal of Cleaner Production*, vol. 85, p. 94-103, 2014.
28. Mohammad Rahdar, **Lizhi Wang**, and Guiping Hu, “Potential competition for biomass between biopower and biofuel under RPS and RFS2,” *Applied Energy*, vol. 119, p. 10-20, 2014.
27. Zhaoyang Duan, Brittni Gutierrez, and **Lizhi Wang**, “Forecasting plug-in electric vehicles sales and the diurnal recharging load curve,” *IEEE Transactions on Smart Grid*, vol. 5(1), p. 527-535, 2014.
26. Pan Xu and **Lizhi Wang**, “An exact algorithm for the bilevel mixed integer linear programming problem under three simplifying assumptions,” *Computers & Operations Research*, vol. 41, p. 309-318, 2014.
25. Leilei Zhang, Guiping Hu, **Lizhi Wang**, and Yihsu Chen, “A bottom-up biofuel market equilibrium model for policy analysis,” *Annals of Operations Research*, p. 1-27, 2013.
24. Yihsu Chen and **Lizhi Wang**, “Renewable portfolio standards in the presence of green consumers and emissions trading,” *Networks and Spatial Economics*, vol. 13(2), p. 149-181, 2013.
23. **Lizhi Wang**, “Branch-and-bound algorithms for the partial inverse mixed integer linear programming problem,” *Journal of Global Optimization*, vol. 55(3), p. 491-506, 2013.
22. **Lizhi Wang** and Chung-Li Tseng, “Towards a sustainable future of energy infrastructure,” *Journal of Energy Engineering*, vol. 138(2), p. 31-32, 2012.
21. Diego Mejia-Giraldo, Jose Villarreal-Marimon, Yang Gu, Yanyi He, Zhaoyang Duan, and **Lizhi Wang**, “Sustainability and resiliency measures for long-term investment planning in integrated energy and transportation infrastructures,” *Journal of Energy Engineering*, vol. 138(2), p. 87-94, 2012.
20. Yanyi He, **Lizhi Wang**, and Jianhui Wang, “Cap-and-trade vs. carbon taxes: A quantitative comparison from a generation expansion planning perspective,” *Computers & Industrial Engineering*, vol. 63(3), p. 708-716, 2012.
19. Zhaoyang Duan and **Lizhi Wang**, “Heuristic algorithms for the inverse mixed integer linear programming problem,” *Journal of Global Optimization*, vol. 51(3), p. 463-471, 2011.
18. Pan Xu, **Lizhi Wang**, and William Beavis, “An optimization approach to gene stacking,” *European Journal of Operational Research*, vol. 214(1), p. 168-178, 2011.

17. Guiping Hu, **Lizhi Wang**, Susan Arendt, and Randy Boeckenstedt, "Analyzing sustainable, localized food production systems with a systematic optimization model," *Journal of Hunger & Environmental Nutrition*, vol. 6(2), p. 220-232, 2011.
16. Ying Zhou, **Lizhi Wang**, and James McCalley, "Designing effective incentives for renewable energy generation expansion," *Applied Energy*, vol. 88(6), p. 2201-2209, 2011.
15. Guiping Hu, **Lizhi Wang**, Susan Arendt, and Randy Boeckenstedt, "Towards a more sustainable local food production system – from a system modeling perspective," *Journal of Hunger and Environmental Nutrition*, vol. 6, p. 125-127, 2011.
14. Guiping Hu, **Lizhi Wang**, and Bopaya Bidanda, "A game theory model for analysing market competition in sustainable manufacturing industry," *International Journal of Sustainable Manufacturing*, vol. 2(2), p. 161-179, 2011.
13. Guiping Hu, **Lizhi Wang**, Susan Arendt, and Randy Boeckenstedt, "An optimization approach to assessing self-sustainability potential of food demand in the Midwestern United States," *Journal of Agriculture, Food Systems, and Community Development*, vol. 2(1), p. 1-13, 2011.
12. **Lizhi Wang**, Anhua Lin, and Yihsu Chen, "Potential impacts of recharging plug-in hybrid electric vehicles on locational marginal prices," *Naval Research Logistics*, vol. 57(8), p. 686-700, 2010.
11. Arka Ghosh, Sarah M. Ryan, **Lizhi Wang**, and Ananda Weerasinghe, "Optimal prices and production rate in a closed loop supply chain under heavy traffic," *Stochastic Models*, vol. 26(4), p. 549-593, 2010.
10. Maitri Thakur, **Lizhi Wang**, and Charles R. Hurburgh, "A multi-objective optimization approach to balancing cost and traceability in bulk grain handling," *Journal of Food Engineering*, vol. 101(2), p. 193-200, 2010.
9. Ying Zhou and **Lizhi Wang**, "A new hybrid inexact logarithmic-quadratic proximal method for nonlinear complementarity problems," *International Journal of Operations Research and Information Systems*, vol. 1(3), p. 1-13, 2010.
8. **Lizhi Wang** and Nan Kong, "Security constrained economic dispatch: A Markov decision process approach with embedded stochastic programming," *International Journal of Operations Research and Information Systems*, vol. 1(2), p. 1-16, 2010.
7. Cara Dienes and **Lizhi Wang**, "Using a capacity control model to define optimal green hotel renovation schedule requirements," *International Journal of Operations and Quantitative Management*, vol. 16(1), p. 255-283, 2010.
6. Guiping Hu, **Lizhi Wang**, and Bopaya Bidanda, "A market analysis on green production lines penetrating into original equipment manufacturers (OEMs)," *Rio's International Journal on Sciences of Industrial and Systems Engineering and Management*, vol. 3(3), p. 28-48, 2009.
5. **Lizhi Wang**, "Cutting plane algorithms for the inverse mixed integer linear programming problem," *Operations Research Letters*, vol. 37(2), p. 114-117, 2009.

4. Matthew M. Bunce, **Lizhi Wang**, and Bopaya Bidanda, “Leveraging six sigma with industrial engineering tools in crateless retort production,” *International Journal of Production Research*, vol. 46(23), p. 6701-6719, 2008.
3. Guiping Hu, **Lizhi Wang**, Steven Fetch, and Bopaya Bidanda, “A multi-objective model for project portfolio selection to implement lean and six sigma concepts,” *International Journal of Production Research*, vol. 46(23), p. 6611-6625, 2008.
2. **Lizhi Wang** and Mainak Mazumdar, “Using a system model to decompose the effects of influential factors on locational marginal prices,” *IEEE Transactions on Power Systems*, vol. 22(4), p. 1456-1465, 2007.
1. **Lizhi Wang**, Mainak Mazumdar, Matthew Bailey and Jorge Valenzuela, “Oligopoly models for market price of electricity under demand uncertainty and unit reliability,” *European Journal of Operational Research*, vol. 181(3), p. 1309-1321, 2007.

PROFESSIONAL
SERVICES

Associate editor, *Journal of Energy Engineering*, since 2012.

Associate editor, *Energy Systems*, since 2011.

Co-organizer, Workshop on “Designing Optimal Genetic Improvement and Agromonic Systems”, Iowa State University, 2016

Panelist, ISERC New Faculty Colloquium, Anaheim, 2016.

Member, INFORMS, best ENRE publication in the Environment and Sustainability area, 2012.

Cluster Chair, Energy ENRE Section at International INFORMS, 2012.

NSF proposal review panelist, 2011.

Guest editor, *Journal of Energy Engineering*, special issue on “challenges and opportunities in the 21st century energy infrastructure”, 2010-2012.

Member, INFORMS, ENRE student paper competition committee, 2011.

Member, IEEE, PES student poster competition committee, 2011.

Chair, INFORMS, ENRE best paper award committee, 2010.

Cluster Chair, Energy ENRE Section at INFORMS, 2009.

DOE proposal reviewer, 2009.

NSF proposal review panelist, 2008.

Referee for

- *Operations Research*
- *Management Science*
- *Naval Research Logistics*
- *European Journal of Operational Research*
- *SIAM Journal on Optimization*
- *IEEE Transactions on Power Systems*
- *IEEE Transactions on Smart Grid*
- *IEEE Transactions on Automation Science and Engineering*
- *Energy Policy*
- *Transportation Research Part B*
- *Applied Energy*
- *Electrical Power and Energy Systems*
- *IIE Transactions*
- *Tourism Management*
- *Computers & Operations Research*
- *Computers & Industrial Engineering*