Guanglin Xu

Systems Engineering and Engineering Management
The University of North Carolina at Charlotte
9201 University City Blvd., Cameron Hall 218
Charlotte, NC 28223-0001

Email: guanglinsmail@gmail.com
Phone: (704) 687-6060
Fax: (704) 687-0968
Webpage: guanglinxu.wixsite.com/logx

EMPLOYMENT

- **2019-08 – present**
  Assistant Professor, Department of Systems Engineering and Engineering Management, University of North Carolina at Charlotte
- **2017-07 – 2019-08**
  Postdoctoral Fellow, Institute for Mathematics and Its Applications, University of Minnesota
- **2015-05 – 2015-08**
  Research Fellow, The REEF, Industrial and Systems Engineering, University of Florida
- **2007-08 – 2009-10**
  Software Designer and Analyst, BT-Frontline at Dalian, Dalian, Liaoning

EDUCATION

University of Iowa

- **Ph.D.,** Management Sciences, August 2017, Dissertation Topic: *Optimization Under Uncertainty: Conic Programming Reformulations, Relaxations, and Approximations*, Advisor: Samuel Burer
- **M.S.,** Industrial Engineering, May 2012

Dalian University of Technology

- **M.S.,** Management Science, June 2007
- **B.S.,** Metal Material Engineering, June 2005

RESEARCH INTERESTS

- Operations research and decision analytics
- Data-driven decision making and adaptive decision making under uncertainty
- Decision making problems in healthcare, energy, and power systems

PUBLICATIONS

Journal Publications (listed in reverse chronological order)

[J01] G. Xu, A. Semenov, and M. Rysz, An Integer Programming Formulation of the Key Management Problem in Wireless Sensor Networks, published "Online First" in *Optimization Letters*. DOI 10.1007/s11590-019-01465-2

[J02] G. Xu and S. Burer, A Data-Driven Distributionally Robust Bound on the Optimal Value of Uncertain Mixed 0-1 Linear Programming, *Computational Management Science*, Vol. 15, No. 1, 2018, pp. 111-134

[J03] G. Xu and S. Burer, A Copositive Approach for Two-Stage Adjustable Robust Optimization with Uncertain Right-Hand Sides, *Computational Optimization and Applications*, Vol. 70, No. 1, 2018, pp. 33-59

[J04] G. Xu and S. Burer, A Branch-and-Bound Algorithm for Instrumental Variable Quantile Regression, *Mathematical Programming Computation*, Vol. 9, No. 4, 2017, pp. 471-497

[J05] G. Xu and S. Burer, Robust Sensitivity Analysis of the Optimal Value of Linear Programming, *Optimization Methods and Software*, Vol. 32, No. 6, 2017, pp. 1187–1205

[J06] X. Wei, G. Xu, and A. Kusiak, Modeling and Optimization of a Chiller Plant, *Energy*, Vol. 73, 2014, pp. 898–907

[J07] A. Kusiak, G. Xu, and Z. Zhang, Minimization of Energy Consumption in HVAC Systems with Data-Driven Models and an Interior-Point Method, *Energy Conversion and Management*, Vol. 85, No. 1, 2014, pp. 146–153

[J08] A. Kusiak, Z. Zhang, and G. Xu, Minimization of Wind Farm Operational Cost Based on Data-Driven Models, *IEEE Transactions on Sustainable Energy*, Vol. 4, No. 3, 2013, pp. 756–764

[J09] A. Kusiak, Y. Zeng, and G. Xu, Minimizing Energy Consumption of an Air Handling Unit with a Computational Intelligence Approach, *Energy and Buildings*, Vol. 60, No. 1, 2013, pp. 355–363

[J10] A. Kusiak and G. Xu, Modeling and Optimization of HVAC Systems Using a Dynamic Neural Network, *Energy*, Vol. 42, No. 1, 2012, pp. 241–250

[J11] A. Kusiak, G. Xu, and F. Tang, Optimization of an HVAC System with a Strength Multi-Objective Particle-Swarm Algorithm, *Energy*, Vol. 36, No. 10, 2011, pp. 5935–5943

[J12] A. Kusiak, F. Tang, and G. Xu, Multi-Objective Optimization of HVAC System with an Evolutionary Computation Algorithm, *Energy*, Vol. 36, No. 5, 2011, pp. 2440–2449

Manuscripts Under Review

[M01] R. Jiang, M. Ryu and G. Xu, Data-Driven Distributionally Robust Appointment Scheduling over Wasserstein Balls, under the second-round review in *Management Science*

[M02] G. Xu and G. Hanasusanto, Improved Decision Rule Approximations for Multi-Stage Robust Optimization via Copositive Programming, submitted to *Operations Research*

[M03] X. Chen, Q. Lin, and G. Xu, Distributionally Robust Optimization with Confidence Bands for Probability Density Functions, submitted to *INFORMS Journal on Optimization*

[M04] L. Bai and G. Xu, Data-Driven Distributionally Robust Chance Constrained Optimal Coordinated Control of Photovoltaics Inverters and Buildings in Distribution Systems, submitted to *IEEE Transactions on Power Systems*

[M05] M. Rysz, A. Semenov, and G. Xu, A Stochastic Programming Approach for Key Management in Wireless Sensor Networks, submitted to *Optimization Letters*

INVITED PRESENTATIONS

Seminar Talks

[S01] Data-Driven Decision Making and Its Applications in Wireless Sensor Networks, Department of Information Systems and Analytics, Miami University, OH, November 2019

[S02] Multi-Stage Robust Optimization via Copositive Programming, School of Mathematical and Statistical Sciences, Clemson University, SC, September 2019

[S03] Data-Driven Distributionally Robust Appointment Scheduling over Wasserstein Balls, Department of Industrial and Systems Engineering, North Carolina State University, NC, January 2019

[S04] Improved Decision Rule Approximations for Multi-Stage Robust Optimization, Department of Business Analytics, University of Iowa, Iowa City, IA, December 2018

Conference Talks

[C01] TBD, *INFORMS Optimization Society Meeting*, Greenville SC, March 2020

[C02] Zeroth- and First-Order Stochastic Methods for Large-Scale Distributionally Robust Optimization, *INFORMS Annual Meeting*, Seattle WA, October 2019

[C03] Distributionally Robust Optimization with Confidence Bands for Probability Density Functions, *INFORMS Annual Meeting*, Seattle WA, October 2019

[C04] A Data-Driven Distributionally Robust Optimization Approach for Appointment Scheduling with Random Service Durations and No-Shows, *INFORMS Annual Meeting*, Phoenix, AZ, November 2018

[C05] A Data-Driven Distributionally Robust Optimization Approach for Appointment Scheduling with Random Service Durations and No-Shows, *MOPTA 2018*, Bethlehem, PA, August 2018

[C06] Distributionally Robust Optimization with Confidence Bands for Probability Density Functions, *29th European Conference on Operational Research*, Valencia, Spain, July 2018

[C07] A Conic Programming Reformulation of Decision Rule Problems in Multi-Stage Adjustable Robust Linear Optimization, *Twenty-Third International Symposium on Mathematical Programming*, Bordeaux, France, July 2018

[C08] A Conic Approach for Two-Stage Adjustable Robust Linear Optimization, *INFORMS Optimization Society Meeting*, Denver, CO, March 2018

[C09] A Data-driven Distributionally Robust Bound on the Expected Optimal Value of Uncertain Mixed 0-1 Linear Programming, *INFORMS Optimization Society Meeting*, Denver, CO, March 2018

[C10] A Data-driven Distributionally Robust Bound on the Expected Optimal Value of Uncertain Mixed 0-1 Linear Programming, *INFORMS Annual Meeting*, Houston, October 2017

[C11] A Copositive Approach for Two-Stage Adjustable Robust Optimization with Uncertain Right-Hand Sides, *15th EUROPT Workshop on Advances in Continuous Optimization*, Montréal, July 2017

[C12] Shape-Constrained Distributionally Robust Optimization, *SIAM Conference on Optimization*, Vancouver, May 2017

[C13] Two-Stage Adjustable Robust Linear Optimization: A Copositive Programming Perspective, *Jakobsen Memorial Conference*, Iowa City, IA, March 2017

[C14] A Copositive Perspective on Two-Stage Adjustable Robust Linear Programming, *INFORMS Annual Meeting*, Nashville, TN, November 2016

[C15] Improving the Affine Policy in Two-Stage Adjustable Robust Linear Programming with Uncertain Right-Hand Side, *MOPTA 2016*, Bethlehem, PA, August 2016

[C16] Robust Sensitivity Analysis in the Optimal Value of Linear Programming, *Jakobsen Memorial Conference*, Iowa City, IA, March 2016

[C17] Robust Sensitivity Analysis of the Optimal Value of Linear Programming, *INFORMS Annual Meeting*, Philadelphia, PA, November 2015

[C18] Robust Sensitivity Analysis of the Optimal Value of Linear Programming, *The 3rd Annual Meeting of the Mathematical Modeling and Optimization Conference Institution*, Shalimar, FL, July 2015

[C19] Robust Sensitivity Analysis of the Optimal Value of Linear Programming, *Twenty-Second International Symposium on Mathematical Programming*, Pittsburgh, PA, July 2015

[C20] Robust Sensitivity Analysis for Linear Programming, *COR@L Seminar at the Industrial and Systems Engineering (ISE) Department*, Lehigh University, Bethlehem, PA, March, 2015

[C21] Tight Relaxations of Non-Convex Quadratic Programs in Robust Sensitivity Analysis, *INFORMS Annual Meeting*, San Francisco, CA, November 2014

[C22] A Branch-and-Bound Algorithm for Instrumental Variable Quantile Regression, *MOPTA 2014*, Bethlehem, PA, August 2014

[C23] Solving a Partial Inverse Optimization Problem via QP-Based Branch and Bound, *The 3rd SIAM Gators Student Conference*, Gainesville, FL, March 2014

[C24] Solving Two Inverse Optimization Problems via Quadratic Branch-and-Bound, *INFORMS Annual Meeting*, Minneapolis, MN, October 2013

HONORS AND AWARDS

- Travel Award Workshop on Modern Convex Optimization and Applications: AN70, The Fields Institute, Toronto, July 4-7, 2017
- Summer Research Fellowship, Management Sciences, University of Iowa, Summer 2017
- Ballard and Seashore Dissertation Fellowship, Graduate College, University of Iowa, Spring 2017
- Graduate College Summer Fellowship, Graduate College, University of Iowa, Summer 2016
- Post-Comprehensive Research Award, Graduate College, University of Iowa, Spring 2016
- Departmental Research Assistant Fellowship, Management Sciences, University of Iowa, Fall 2015
- Graduate Student Travel Award, Graduate Student Senate, University of Iowa, Fall 2014
- Graduate College Summer Fellowship, University of Iowa, Summer 2014

- Travel Award 2014 UF SIAM Conference, Mathematics Department, University of Florida, Spring 2014
- Summer Research Fellowship, Management Sciences, University of Iowa, Summer 2013
- First-Year Fellowship, Management Sciences, University of Iowa, August 2012 – May 2013
- Excellent Undergraduate Student, Dalian University of Technology, 2003

TEACHING

- *EMGT 5202: Fundamentals of Stochastic System Analysis*, Spring 2020 (UNC Charlotte)
- *EMGT 5203: Fundamentals of Engineering Management*, Fall 2019 (UNC Charlotte)
- *Math-to-Industry Boot Camp: Optimization and Modeling*, Summer 2019 (University of Minnesota)
- *MSCI 3000: Operations Management*, Fall 2014, 2016 (University of Iowa)

INDUSTRIAL PROJECTS

Sustainable Supply Chain Design at Cargill

- Redesign business models and develop compatible supply chains for services and products in animal nutrition, facilitating sales opportunities worth up to $270 million
- Implement, test, and deploy the proposed solution approach with Gurobi in Python framework

Production Scheduling at Cargill

- Develop an optimization engine to make flexible and efficient schedules for the production of multiple products in a multi-purpose chemical plant to fulfill market demands in a dynamic environment
- Implement the scheduling tool and interface in AIMMS and solve the underlying models with CPLEX

PROFESSIONAL SERVICE

Conference Organization

- Session Chair, *INFORMS Optimization Society Meeting*, Greenville SC, 2020
- Session Chair, *INFORMS Annual Conference*, Seattle WA, 2019
- Session Chair, *MOPTA*, Bethlehem PA, 2018
- Session Chair, *INFORMS Annual Conference*, Houston TX, 2017
- Session Co-Organizer, *SIAM Conference on Optimization*, Vancouver, 2017

Review Work

- Referee for *Management Science, Operations Research, Mathematical Programming, SIAM Journal on Optimization, Mathematics of Operations Research, European Journal of Operational Research, Computational Optimization and Applications, Optimization Methods and Software, Journal of Optimization Theory and Applications, Journal of Global Optimization, Operations Research Letters, Optimization Letters, Journal of Applied Econometrics, Energy, Energy and Buildings, Renewable Energy, Conference on Knowledge Discovery and Data Mining*

MEMBERSHIPS

- Institute for Operations Research and the Management Sciences (INFORMS)
- Mathematical Optimization Society (MOS)
- Society for Industrial and Applied Mathematics (SIAM)

COMPUTER SKILLS

- Programming languages: Python, Julia, JAVA, C/C++
- Scientific computing: MATLAB, Mathematica
- Mathematical modeling: AIMMS, AMPL, YALMIP, MOSEK, CPLEX, Gurobi, SeDuMi, JuMP

LANGUAGES

Mandarin Chinese (native), English (fluent)