Cheng Guo

CONTACT INFORMATION

Website: https://chengg04.github.io *E-mail:* cguo2@clemson.edu

RESEARCH INTERESTS

- Application areas: Energy markets, Power systems, Healthcare
- Methodologies: Copositive Programming, Stochastic programming, Integer programming, Mixed-integer nonlinear programming, Decomposition methods

EXPERIENCE

Clemson University, Clemson, SC 2021 - present
School of Mathematical and Statistical Sciences
Assistant Professor, area: Operations Research

Columbia University, New York, NY 2021 - 2022
Department of Industrial Engineering and Operations Research
Visiting Researcher
- DOE ARPA-E PERFORM (Performance-based Energy Resource Feedback, Optimization, and Risk Management) project

EDUCATION

University of Toronto, Toronto, ON 2017 - 2021
Department of Mechanical and Industrial Engineering
Ph.D. in Industrial Engineering, GPA: 3.96/4.00
- Advisor: Merve Bodur
- Selected courseworks: Stochastic Programming & Robust Optimization, Modeling Interactions on Networks, OM Matching Markets, Mathematical Methods in Power Systems

Columbia University, New York, NY 2015 - 2017
Department of Industrial Engineering and Operations Research
M.S. in Operations Research
- Selected courseworks: Transportation Analytics & Logistics, Optimization I, Programming for Financial Engineering, Seminar on Queueing Theory

Wuhan University, Wuhan, China 2011 - 2015
School of Economics and Management
B.A. in Economics
B.S. in Mathematics
- Hongyi Outstanding Graduates Award
- Selected courseworks: Advanced Microeconomics, Industrial Organization, Advanced Macroeconomics, Advanced Financial Theory, Advanced Econometrics, Dynamic Programming, Chaotic Dynamical Systems, Topology, Functional Analysis

PUBLICATIONS

C. Guo, M. Bodur, D. J. Papageorgiou, *Generation Expansion Planning with Revenue Adequacy Constraints*, **Computers & Operations Research** 142 (2022): 105736. [pdf]

C. Guo, M. Bodur, D. M. Aleman, and D. R. Urbach, *Logic-based Benders Decomposition and Binary Decision Diagram Based Approaches for Stochastic Distributed Operating Room Scheduling*, **INFORMS Journal on Computing** 33.4 (2021): 1551-1569. [pdf]

Submitted Papers

C. Guo, M. Bodur, J. A. Taylor, *Copositive Duality for Discrete Energy Markets*, major revision at **Management Science**, 2023. [pdf]

C. Guo, H. Nagarajan, M. Bodur, *Tightening Quadratic Convex Relaxations for the AC Optimal Transmission Switching Problem*, submitted, 2022. [pdf]

Papers in preparation

C. Guo, C. Kroer, D. Bienstock, Y. Dvorkin, *Modeling, equilibrium and market power for electricity capacity markets*, in preparation.

Risk-aware security-constrained unit commitment, in preparation.

A. Deza, **C. Guo**, M. Bodur, *A Multistage Stochastic Integer Programming Approach to Distributed Operating Room Scheduling*, in preparation.
• Selected as a finalist in 2020 INFORMS Undergraduate OR Prize Competition.

Honors and Awards

Finalist for student Anna Deza, INFORMS Undergraduate OR Prize Competition, 2020
MIP Workshop Student Travel Support, 2019
Bert Wasmund Graduate Fellowships in Sustainable Energy Research, 2018
Hongyi Outstanding Graduates Award, 2015
Economics and Management School Scholarship, 2013 - 2014

Teaching

Clemson University
Instructor

- MATH 8100 - Mathematical Programming (graduate): Fall 2022, Spring 2023
- STAT 3090 - Introductory Business Statistics (undergraduate): Spring 2022, Fall 2023

University of Toronto
Tutorial Teaching Assistant

- MIE 562 - Scheduling (undergraduate/graduate): Fall 2019, Fall 2020
- MIE 335 - Algorithms and Numerical Methods (undergraduate): Winter 2019

Wuhan University
Teaching Assistant

- Probability Theory (undergraduate): Fall 2014

Advising

Ph.D. Students
Benjamin Hamlin (co-advised with Margaret Wiecek)

M.S. Students
Lauren Henderson

Undergraduate Students

Renzo Muzzarelli, Jiayi Wang (co-advised, Columbia B.S. 2022 → Stanford Ph.D.), Anna Deza (co-advised, U. Toronto B.A.Sc. 2020 → UC Berkeley Ph.D.), Ryan Do (co-advised, U. Toronto B.A.Sc. 2019 → U. Toronto M.Eng.)

M.S. Thesis Committee Member
Yunheng Jiang(2022)

Invited Talks

- MIP Workshop, Los Angeles, CA — May, 2023
- Polytechnique Montreal, GERAD Seminar, Virtual — May, 2022
- Discrete Optimization Talks, Virtual — December, 2020

Conference Presentations

- INFORMS MSOM Conference, Montreal, QC — June, 2023
- INFORMS Annual Meeting, Indiannapolis, IN — October 2022
- International Conference on Continuous Optimization, Bethlehem, PA — July, 2022
- INFORMS Optimization Society Conference, Greenville, SC — March, 2022
- INFORMS Annual Meeting, Virtual — October 2021
- International Conference on Game Theory (poster), Virtual — July 2021
- IPCO Conference (poster), Virtual — June 2021
- CORS Annual Conference, Virtual — June 2021
- MIP Workshop (poster), Virtual — May 2021
- Grid Science Winter School (poster), Virtual — January 2021
- INFORMS Annual Meeting, Virtual — November 2020
- INFORMS Annual Meeting, Seattle, WA — October 2019
- DIMACS Workshop on MINLP (poster), Montreal, QC — October 2019
- MIP Workshop (poster), Boston, MA — July 2019
- Optimization Days, Montreal, QC — May 2019
- INFORMS Computing Society Conference, Knoxville, TN — January 2019

Academic Service

- Reviewer for *Production and Operations Management, Transportation Science, INFORMS Journal on Computing, SIAM Journal on Optimization*
- Session Chair for INFORMS Optimization Society Conference 2022; INFORMS Annual Meeting 2019, 2021, 2022; CORS Annual Meeting 2021
- Member of INFORMS

Skills

- Programming language: Python, Julia, C++
- Software: Gurobi, CPLEX, Knitro, Mosek

Other Activities

- INFORMS UofT Student Chapter (Honorable Mention, 2020), Vice President (2019-2021)
- Columbia IEOR Mentorship Program, Mentor (2018-2020)
- Wuhan U. Women Soccer Team, Captain (2013-2015)