

Cheng Guo

CONTACT INFORMATION

Website: <https://chengg04.github.io>

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RESEARCH INTERESTS

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

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 coursework: 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 coursework: 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 Honor Program Outstanding Graduates Award
- Selected coursework: Advanced Microeconomics, Industrial Organization, Advanced Macroeconomics, Advanced Financial Theory, Advanced Econometrics, Dynamic Programming, Chaotic Dynamical Systems, Topology, Functional Analysis

PUBLICATIONS	<p>(*: corresponding author; Underline: student coauthor)</p> <p>C. Guo*, H. Nagarajan, M. Bodur, <i>Tightening Quadratic Convex Relaxations for the AC Optimal Transmission Switching Problem</i>, accepted at INFORMS Journal on Computing, 2025. [pdf]</p> <p>C. Guo*, M. Bodur, J. A. Taylor, <i>Copositive Duality for Discrete Energy Markets</i>, accepted at Management Science, 2025. [pdf]</p> <p>D. Bienstock, Y. Dvorkin, C. Guo*, R. Mieth, <u>J. Wang</u>, <i>Risk-Aware Security-Constrained Unit Commitment</i>, IEEE Transactions on Energy Markets, Policy and Regulation 2.4 (2024): 536-551. [pdf]</p> <p>C. Guo*, M. Bodur, D. J. Papageorgiou, <i>Generation Expansion Planning with Revenue Adequacy Constraints</i>, Computers & Operations Research 142 (2022): 105736. [pdf]</p> <p>C. Guo*, M. Bodur, D. M. Aleman, and D. R. Urbach, <i>Logic-based Benders Decomposition and Binary Decision Diagram Based Approaches for Stochastic Distributed Operating Room Scheduling</i>, INFORMS Journal on Computing 33.4 (2021): 1551-1569. [pdf]</p>
SUBMITTED PAPERS	<p>C. Guo*, C. Kroer, Y. Dvorkin, D. Bienstock, <i>Incentivizing Investment and Reliability: A Study on Electricity Capacity Markets</i>, submitted, 2023. [pdf]</p>
HONORS AND AWARDS	<ul style="list-style-type: none"> • Finalist for student Anna Deza, INFORMS Undergraduate OR Prize Competition, 2020 • MIP Workshop Student Travel Support, 2019 • Hongyi Outstanding Graduates Award, 2015 • Economics and Management School Scholarship, 2013 - 2014
FUNDING	<ul style="list-style-type: none"> • Clemson University - Clemson Faculty SUCCEEDS: Program 1 (Project Initiation/SEED Funding, awarded to 16 PIs university-wide) (PI), 2024 (\$9,915) • University of Toronto - Bert Wasmund Graduate Fellowships in Sustainable Energy Research, 2018 (CA\$6,221)
TEACHING	<p>Clemson University</p> <p><i>Instructor</i></p> <ul style="list-style-type: none"> • MATH 8100 - Mathematical Programming (graduate): Fall 2022, Spring 2023, Spring 2024, Fall 2024 • MATH 4400/6400 - Linear Programming (undergraduate/graduate): Fall 2024 • STAT 3090 - Introductory Business Statistics (undergraduate): Spring 2022 (virtual), Fall 2023, Fall 2024 <p>University of Toronto</p> <p><i>Tutorial Teaching Assistant</i></p> <ul style="list-style-type: none"> • 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

Lauren Henderson, Benjamin Hamlin (co-advised with Margaret Wiecek)

M.S. Students

Lauren Henderson (2024 → Clemson Ph.D.)

Undergraduate Students

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.)

Ph.D. Thesis Committee Member

Kristen Joyce, Sarah Kelly (2024)

M.S. Thesis Committee Member

Yunheng Jiang (2022)

INVITED TALKS

- Cornell University, FIND Seminar, Ithaca, NY April, 2024
- MIP Workshop, Los Angeles, CA May, 2023
- Polytechnique Montreal, GERAD Seminar, Virtual May, 2022
- Discrete Optimization Talks, Virtual December, 2020

CONFERENCE PRESENTATIONS

- (upcoming) IEEE Power and Energy Society (PES) General Meeting, Austin, TX July, 2025
- Production and Operations Management Society (POMS) Conference, Atlanta, GA May, 2025
- INFORMS Computing Society Conference, Toronto, ON March, 2025
- INFORMS Annual Meeting, Seattle, WA October, 2024
- International Symposium on Mathematical Programming, Montreal, QC July, 2024
- INFORMS Optimization Society Conference, Houston, TX March, 2024
- INFORMS Annual Meeting, Phoenix, AZ October, 2023
- INFORMS MSOM Conference, Montreal, QC June, 2023
- INFORMS Annual Meeting, Indianapolis, IN October 2022
- International Conference on Continuous Optimization (ICCOPT), 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

	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Journal reviewer for <i>Mathematical Programming, Management Science, Manufacturing & Service Operations Management, SIAM Journal on Optimization, INFORMS Journal on Computing, Transportation Science, Production and Operations Management, Computers and Operations Research, IEEE Transactions on Power Systems</i> • Conference reviewer for <i>IEEE Power & Energy Society General Meeting (2024, 2025)</i> • Program committee member for Mixed Integer Programming (MIP) Workshop 2026 • Session Chair for INFORMS Optimization Society Conference (2022, 2024); INFORMS Annual Meeting (2019, 2021, 2022, 2023, 2024); CORS Annual Meeting (2021)
UNIVERSITY SERVICE	<ul style="list-style-type: none"> • Clemson University SMSS Research Committee (2023-present) • Co-organizer of University of Toronto MIE UTOrg Seminar (2019-2020)
ADVANCED TRAINING	<ul style="list-style-type: none"> • “Cultivating an Inclusive Classroom Environment”, Academic Impressions 2024
SKILLS	<ul style="list-style-type: none"> • Programming language: Python, Julia, C++ • Software: Gurobi, CPLEX, Knitro, Mosek
OTHER ACTIVITIES	<ul style="list-style-type: none"> • 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)