

# Cheng Guo

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

## 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**

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**

Sarah Kelly (2024)

### **M.S. Thesis Committee Member**

Yunheng Jiang (2022)

## INVITED TALKS

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|--|----------------|
| • 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

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|---|---------------|
| • 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     |
| • MIP Workshop (poster), Virtual  | May 2021      |
| • Grid Science Winter School (poster), Virtual                                | January 2021  |

	<ul style="list-style-type: none"> <li>• INFORMS Annual Meeting, Virtual November 2020</li> <li>• INFORMS Annual Meeting, Seattle, WA October 2019</li> <li>• DIMACS Workshop on MINLP (poster), Montreal, QC October 2019</li> <li>• MIP Workshop (poster), Boston, MA July 2019</li> <li>• Optimization Days, Montreal, QC May 2019</li> <li>• INFORMS Computing Society Conference, Knoxville, TN January 2019</li> </ul>
ACADEMIC SERVICE	<ul style="list-style-type: none"> <li>• Journal reviewer for <i>Mathematical Programming, Management Science, Manufacturing &amp; Service Operations Management, SIAM Journal on Optimization, INFORMS Journal on Computing, Transportation Science, Production and Operations Management</i></li> <li>• Conference reviewer for <i>IEEE Power &amp; Energy Society General Meeting</i></li> <li>• Session Chair for INFORMS Optimization Society Conference 2022, 2024; INFORMS Annual Meeting 2019, 2021, 2022, 2023; CORS Annual Meeting 2021</li> <li>• Member of INFORMS</li> </ul>
UNIVERSITY SERVICE	<ul style="list-style-type: none"> <li>• Clemson University SMSS Research Committee (2023-present)</li> <li>• Co-organizer of University of Toronto MIE UTOrg Seminar (2019-2020)</li> </ul>
ADVANCED TRAINING	<ul style="list-style-type: none"> <li>• “Cultivating an Inclusive Classroom Environment”, Academic Impressions 2024</li> </ul>
SKILLS	<ul style="list-style-type: none"> <li>• Programming language: Python, Julia, C++</li> <li>• Software: Gurobi, CPLEX, Knitro, Mosek</li> </ul>
OTHER ACTIVITIES	<ul style="list-style-type: none"> <li>• INFORMS UofT Student Chapter (Honorable Mention, 2020), Vice President (2019-2021)</li> <li>• Columbia IEOR Mentorship Program, Mentor (2018-2020)</li> <li>• Wuhan U. Women Soccer Team, Captain (2013-2015)</li> </ul>