

# 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 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 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

Underline: student coauthor; \*: alphabetical author ordering.

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

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|-----------------------|---|
|                       | <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>D. Bienstock, Y. Dvorkin, <b>C. Guo</b>, R. Mieth, <u>J. Wang</u>, <i>Risk-Aware Security-Constrained Unit Commitment</i>, submitted, 2023.* <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> <p><b>C. Guo</b>, H. Nagarajan, M. Bodur, <i>Tightening Quadratic Convex Relaxations for the AC Optimal Transmission Switching Problem</i>, submitted, 2022. <a href="#">[pdf]</a></p>                               |
| PAPERS IN PREPARATION | <p><i>Risk-aware security-constrained unit commitment</i>, in preparation.</p> <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     | <p>Finalist for student Anna Deza, INFORMS Undergraduate OR Prize Competition, 2020</p> <p>MIP Workshop Student Travel Support, 2019</p> <p>Bert Wasmund Graduate Fellowships in Sustainable Energy Research (CA\$6,221.17), 2018</p> <p>Hongyi Outstanding Graduates Award, 2015</p> <p>Economics and Management School Scholarship, 2013 - 2014</p>   |
| 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</li> <li>• STAT 3090 - Introductory Business Statistics (undergraduate): Spring 2022 (virtual), Fall 2023</li> </ul> <p><b>University of Toronto</b></p> <p><i>Tutorial Teaching Assistant</i></p> <ul style="list-style-type: none"> <li>• MIE 562 - Scheduling (undergraduate/graduate): Fall 2019, Fall 2020</li> <li>• MIE 335 - Algorithms and Numerical Methods (undergraduate): Winter 2019</li> </ul> <p><b>Wuhan University</b></p> <p><i>Teaching Assistant</i></p> <ul style="list-style-type: none"> <li>• Probability Theory (undergraduate): Fall 2014</li> </ul> |
| ADVISING              | <p><b>Ph.D. Students</b></p> <p>Benjamin Hamlin (co-advised with Margaret Wiecek)</p> <p><b>M.S. Students</b></p>   |

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)

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|-----------------------------|--|----------------|
| INVITED TALKS               | • MIP Workshop, Los Angeles, CA  | May, 2023      |
|                             | • Polytechnique Montreal, GERAD Seminar, Virtual   | May, 2022      |
|                             | • Discrete Optimization Talks, Virtual   | December, 2020 |
| CONFERENCE<br>PRESENTATIONS | • 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   |
|                             | • 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<br>SERVICE         | • Reviewer for <i>Management Science</i> , <i>Production and Operations Management</i> , <i>Transportation Science</i> , <i>INFORMS Journal on Computing</i> , <i>SIAM Journal on Optimization</i> |                |
|                             | • Session Chair for INFORMS Optimization Society Conference 2022; INFORMS Annual Meeting 2019, 2021, 2022, 2023; 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)