Cheng Guo

CONTACT INFORMATION

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RESEARCH INTERESTS

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

EDUCATION

University of Toronto, Toronto, ON — 2017 - Present
Department of Mechanical and Industrial Engineering
Ph.D. candidate in Industrial Engineering (Operations Research), GPA: 3.96/4.00
- Advisor: Merve Bodur

Columbia University, New York, NY — 2015 - 2017
Department of Industrial Engineering and Operations Research
M.S. in Operations Research

Wuhan University, Wuhan, China — 2011 - 2015
School of Economics and Management
B.A. in Economics
B.S. in Mathematics
- Hongyi Outstanding Graduates Award

PUBLICATIONS

Journal Articles

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*, accepted for publication in **INFORMS Journal on Computing**, (2020). [pdf]
• Selected as a finalist in 2019 MIP Workshop Poster Competition.

Submitted

C. Guo, M. Bodur, D. J. Papageorgiou, *Generation Expansion Planning with Revenue Adequacy Constraints*, submitted to **Computers & Operations Research**, (2020). [pdf]

PAPERS IN PREPARATION

C. Guo, M. Bodur, J. A. Taylor, *Copositive Duality for Discrete Markets and Games*, in preparation for **Operations Research**.

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

C. Guo, M. Bodur, H. Nagarajan, *Cycle-based Polynomial Constraints for Tightening the Quadratic Convex Relaxations of the Alternating Current Optimal Power Flow Problem.* Working Paper.

C. Guo, M. Bodur, M. Cevik, *Learning for Cutting-plane Selection in Two-stage Stochastic Integer Programming.* Working Paper.

Honors and Awards

MIP Workshop Student Travel Support, 2019
Bert Wasmund Graduate Fellowships in Sustainable Energy Research, 2018
MIE Graduate Student Travel Grant, 2018
Economics and Management School Scholarship, 2013 - 2014

Teaching Experience

University of Toronto, Toronto, ON

- MIE 562 - Scheduling (undergraduate elective / graduate) — Fall 2019, Fall 2020
  Tutorial teaching assistant
- MIE 335 - Algorithms and Numerical Methods (undergraduate core course) — Winter 2019
  Tutorial teaching assistant

Wuhan University, Wuhan, China

- Probability Theory (undergraduate core course) — Fall 2014
  Teaching assistant

Student Supervision

Anna Deza (co-supervised, B.A.Sc. 2020 → University of California, Berkeley Ph.D.)

Ryan Do (co-supervised, B.A.Sc. 2019 → University of Toronto M.Eng.)

Conferences and Talks

Copositive Duality for Discrete Markets and Games

- Discrete Optimization Talks, Virtual (upcoming) — December 2020
- INFORMS Annual Meeting, Virtual — November 2020

Logic-based Benders Decomposition and Binary Decision Diagram Based Approaches for Stochastic Distributed Operating Room Scheduling

- INFORMS Annual Meeting, Seattle, WA — October 2019
- DIMACS Workshop on MINLP (poster), Montreal, QC — October 2019
- Optimization Days, Montreal, QC — May 2019

Generation Expansion Planning with Revenue Adequacy Constraints

- INFORMS Annual Meeting, Seattle, WA — October 2019
- MIP Workshop (poster), Boston, MA — July 2019
- INFORMS Computing Society Conference, Knoxville, TN — January 2019

Industrial Experience

Omnivest Consulting, Data Analyst Intern, New York, NY — January - April, 2017
Implemented machine learning models for sports analytics and stock market prediction.

Academic Service

- Reviewer for *INFORMS Journal on Computing*
- Session Chair for INFORMS Annual Meeting 2019

Leadership

- INFORMS UofT Chapter (INFORMS Honorable Mention, 2020), Vice President (2019-present)
- Columbia IEOR Mentorship Program, Mentor (2018-2020)
- Wuhan U. Women Soccer Team, Captain (2012-2015)

Skills

Programming Languages: Python, Julia, C++, Matlab
Software Tools: CPLEX, Gurobi, Mosek, Ipopt, CP Optimizer
Language: English, Chinese (fluent)

References

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