

# Xiaoyi Gu

## Curriculum Vitae

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### Education

- 2017 – **Ph.D. Candidate**, *Operations Research*, Georgia Institute of Technology.  
Present GPA: 4.0/4.0; Advisors: Santanu S. Dey and (late) Shabbir Ahmed  
Research Interests: mixed-integer optimization, non-convex optimization, machine learning and statistical learning
- 2013 – 2017 **B.S.**, *Applied Mathematics*, Peking University, China.
- 2014 – 2017 **B.S. (double degree)**, *Physics*, Peking University, China.

### Ongoing Research

- Feb. 2020 Lifting Convex Inequalities for Bipartite Bilinear Programs.  
– Present Collaborators: Santanu S. Dey and Jean-Philippe P. Richard  
Prove the existence of lifting coefficients;  
Propose seeding inequalities and sequence-independent lifting;  
Journal Submission Expected Spring 2021.
- May. 2019 Learning to Branch in Security-Constrained Unit Commitment.  
– Present Collaborators: Álinson Santos Xavier, Qiu Feng and Santanu S. Dey  
Apply machine learning techniques with branch-and-bound results of previously-solved mixed integer problems;  
Guide branching using learned models and accelerate solving new problems;  
Journal Submission Expected Spring 2021.

### Publications

- Xiaoyi Gu, Shabbir Ahmed, Santanu S. Dey, *Exact Augmented Lagrangian Duality for Mixed Integer Quadratic Programming*, SIAM Journal on Optimization, 2020.
- Honglin Yuan, Xiaoyi Gu, Rongjie Lai, Zaiwen Wen, *Global Optimization with Orthogonality Constraints via Stochastic Diffusion on Manifold*, Journal of Scientific Computing, 2019.

### Reviewed Journals

- 2020 Mathematical Programming.

### Talks and Posters

- Nov. 2020 INFORMS Annual Meeting 2020, Session on Frontier of Power System Optimization/Computing, Virtual.
- Jul. 2019 MIP 2019, MIT, Boston MA.

### Awards and Honors

- 2017 – 2019 **Kerry Clayton Fellowship**, Georgia Tech.
- 2015 **Silver medal, 6th Chinese Mathematics Competition**.
- 2013 **Silver medal, 28th Chinese Mathematical Olympiad**.

### Work Experience

- Summer 2019 **Research Intern**, Power Systems Branch, Argonne National Lab.

### Teaching Experience

- 2020 **Teaching Assistant**, Machine Learning, CSE/ISYE 6740, Georgia Tech.
- 2019 **Teaching Assistant**, Financial Optimization, ISYE 6673, Georgia Tech.
- 2017 – 2018 **Teaching Assistant**, Stochastic Manufacturing & Service Systems, ISYE 3232, Georgia Tech.

### Skills and Languages

- Proficient in: Julia, Python, C, MATLAB, R, CPLEX, Gurobi, Scikit-learn, L<sup>A</sup>T<sub>E</sub>X.
- Fluent in: Mandarin, English.