Zhaonan Qu

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Academic Employment

Postdoctoral Research Scientist **2024–**
Data Science Institute, Columbia University
Mentors: Agostino Capponi, Simon Lee

Research Interests

My research interests are at the intersection of operations research, econometrics, and machine learning. I leverage novel connections between these topics to develop robust and scalable data-driven solutions in business and management applications, such as digital platforms, supply chains, consumer choice, transportation, electricity networks, and finance.

Education

Ph.D in Economics, Stanford University **2024**
Specialization: Econometrics, Operations Research
Dissertation: *Topics in Econometrics and Optimization*
Advisor: Guido Imbens
Committee: Alfred Galichon, Han Hong, Yinyu Ye, Johan Ugander

M.A. in Mathematics, Courant Institute, New York University **2017**
Advisor: Alfred Galichon

A.B. in Mathematics, Princeton University **2015**

Current Projects

Learning Consumer Preferences via Graph Connectivity Optimization
Wenzhi Gao, Zhaonan Qu

Graph Neural Networks for Supply Chain Operations
Agostino Capponi, Zhaonan Qu

Model Evaluation Using Data with Distributional Shifts
Simon Lee, Zhaonan Qu

Research Works

On Sinkhorn's Algorithm and Choice Modeling
Operations Research (2025)
Qu, Zhaonan, Alfred Galichon, Wenzhi Gao, and Johan Ugander
arXiv:2310.00260

Optimal Diagonal Preconditioning
Operations Research (2025)
Qu, Zhaonan, Wenzhi Gao, Oliver Hinder, Yinyu Ye, and Zhengyuan Zhou
arXiv:2209.00809

Structured Lasso for Convex Nonparametric Least Squares: An Application to Swedish Electricity Distribution Networks
Major Revision at *European Journal of Operational Research* (2025)
Liao, Zhiqiang and Zhaonan Qu

Handling Sparse Non-negative Data in Business and Economics
Under Review (2025)
Capponi, Agostino and Zhaonan Qu

Triply Robust Panel Estimators
Under Review (2025)
Athey, Susan, Guido Imbens, Zhaonan Qu, and Davide Viviano

Inferring Dynamic Networks from Marginals with Iterative Proportional Fitting
41st International Conference on Machine Learning (ICML) (2024)
Chang, Serina, Frederic Koehler, Zhaonan Qu, Jure Leskovec, and Johan Ugander
arXiv:2402.18697

Distributionally Robust Instrumental Variables Estimation
Under Review (2024)
Qu, Zhaonan and Yongchan Kwon
arXiv:2410.15634

Computationally Efficient Estimation of Large Probit Models
Major Revision at *Journal of Econometrics* (2024)
Ding, Patrick, Guido Imbens, Zhaonan Qu, and Yinyu Ye
arXiv:2407.09371

A Unified Linear Speedup Analysis of Federated Averaging and Nesterov FedAvg
Journal of Artificial Intelligence Research 78: 1143-1200 (2023)
Qu, Zhaonan, Kaixiang Lin, Zhaojian Li, Jiayu Zhou, and Zhengyuan Zhou
arXiv:2007.05690

Semiparametric Estimation of Treatment Effects in Observational Studies with Heterogeneous Partial Interference
Major Revision at *Journal of Business & Economic Statistics* (2023)
Qu, Zhaonan, Ruoxuan Xiong, Jizhou Liu, and Guido Imbens
arXiv:2107.12420

Scalable Approximate Optimal Diagonal Preconditioning
Major Revision at *Computational Optimization and Applications* (2023)
Gao, Wenzhi, Zhaonan Qu, Madeleine Udell, and Yinyu Ye
arXiv:2312.15594

Federated Learning's Blessing: Fedavg has Linear Speedup
ICLR 2021 Workshop on Distributed and Private Machine Learning (DPML) (2021)
Qu, Zhaonan, Kaixiang Lin, Zhaojian Li, and Jiayu Zhou

Ensemble Methods for Causal Effects in Panel Data Settings
American Economic Association Papers and Proceedings 109: 65-70 (2019)
Athey, Susan, Mohsen Bayati, Guido Imbens, and Zhaonan Qu
arXiv:1903.10079

Teaching Experience

MS&E 311 Optimization (TA), Stanford Winter 2021
ECON 292 Quantitative Methods for Empirical Research (TA), Stanford Autumn 2020

Invited Presentations

International Conference on Information Technology and Quantitative Management (ITQM)	August 2025
International Conference on Continuous Optimization (ICCOPT)	July 2025
INFORMS Service Science Conference, Said Business School, Oxford	July 2025
Annual Conference of the International Association for Applied Econometrics	June 2025
INFORMS Annual Meeting Session on Financial Analytics and Technology	October 2024
41st International Conference on Machine Learning (ICML)	July 2024
2024 American Causal Inference Conference Session on Instrumental Variables	May 2024
2024 Banff Research Center Workshop on Optimal Transport and Distributional Robustness	March 2024
INFORMS Annual Meeting Session on Econometric, Big Data Methods and Applications to Finance	October 2023
INFORMS Annual Meeting Poster Session on Operations Research and Optimization Methodologies	October 2023
2023 Stanford Data Science Conference Poster Session	May 2023
2022 North American Summer Meeting of the Econometric Society	June 2022
2022 American Causal Inference Conference Poster Session	May 2022
2022 California Econometrics Conference Poster Session	May 2022

INFORMS Annual Meeting Session on Stochastic Optimization (virtual) November 2020

Research Affiliations, Honors, and Awards

Arnold Ventures Research Fellowship in Jail Data Initiative Social Science Research Council 2024–2026
Postdoctoral Research Assistant Professor Johan Ugander's Lab 2023–2024
Stanford Interdisciplinary Graduate Fellowship Stanford University 2019–2022
Provost's Global Research Initiative Fellowship, New York University 2016
Magna Cum Laude in Mathematics and Phi Beta Kappa, Princeton University 2015
Smith-Newton Scholar, Princeton Environmental Institute 2013

Peer Review Services

SIAM Journal on Matrix Analysis and Applications, Decision Sciences Journal, Journal of Econometrics, Journal of Scientific Computing, Journal of Artificial Intelligence Research, Journal of Computational and Graphical Statistics, SIAM Journal on Financial Mathematics

Programming Languages

Python, MATLAB, SQL, R