Zhaonan Qu — Curriculum Vitae

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Education

Ph.D in Economics, Stanford University **January 2024**
Committee: Guido Imbens (Advisor), Yinyu Ye (Chair), Alfred Galichon, Han Hong, Johan Ugander

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

A.B. in Mathematics, Princeton University **June 2015**
Advisors: Elliott H. Lieb, Elias M. Stein

Working Papers and Publications

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 keywords: statistics; transportation
arXiv:2402.18697

A Distributionally Robust Instrumental Variable Estimation Framework
Under Revision (2023)
Kwon, Yongchan and Zhaonan Qu keywords: econometrics, causal inference; optimization

On Sinkhorn's Algorithm and Choice Modeling
Major Revision at *Operations Research* (2023)
Qu, Zhaonan, Alfred Galichon, and Johan Ugander
arXiv:2310.00260 keywords: optimization; choice modeling

Doubly Weighted Causal Panel Estimators
Under Preparation (2024)
Athey, Susan, Guido Imbens, Zhaonan Qu, and Davide Viviano keywords: causal inference, matrix completion

Computationally Efficient Estimation of Large Probit Models
Under Review at *Journal of Econometrics* (2023)
Ding, Patrick, Guido Imbens, Zhaonan Qu, and Yinyu Ye
arXiv:2407.09371 keywords: econometrics; optimization; choice modeling

Scalable Approximate Optimal Diagonal Preconditioning
Under Revision (2023)
Gao, Wenzhi, Zhaonan Qu, Madeleine Udell, and Yinyu Ye
arXiv:2312.15594 keywords: optimization, machine learning

Semiparametric Estimation of Treatment Effects in Observational Studies with Heterogeneous Partial Interference
Under Review at *Journal of Business & Economic Statistics* [code] [talk] [slides]
Qu, Zhaonan, Ruoxuan Xiong, Jizhou Liu, and Guido Imbens
arXiv:2107.12420 keywords: causal inference; econometrics; health

Optimal Diagonal Preconditioning
Operations Research (2023) [code] [talk]
Qu, Zhaonan, Wenzhi Gao, Oliver Hinder, Yinyu Ye, and Zhengyuan Zhou
arXiv:2209.00809 keywords: optimization; machine learning

A Unified Linear Speedup Analysis of Federated Averaging and Nesterov FedAvg
Journal of Artificial Intelligence Research 78: 1143-1200 (2023) [code]
Qu, Zhaonan, Kaixiang Lin, Zhaojian Li, Jiayu Zhou, and Zhengyuan Zhou
arXiv:2007.05690 keywords: optimization; machine learning; privacy

Inferring Networks from Marginals Using Iterative Proportional Fitting
The Second Learning on Graphs Conference (2023)

Chang, Serina, Zhaonan Qu, Jure Leskovec, and Johan Ugander keywords: statistics; networks; optimization

Growth Independent Morphometric Machine Learning Workflow for Single-Cell Antimicrobial Susceptibility Testing of Klebsiella pneumoniae to Meropenem
Frontiers in Imaging (2024)
Tjandra, Kristel C., Nikhil Ram-Mohan, Manuel Roshardt, Elizabeth Zudock, Zhaonan Qu, Kathleen E. Mach, Okyaz Eminaga, Joseph C. Liao, Samuel Yang, Pak Kin Wong
bioRxiv:2022.11.03.515093 keywords: machine learning; medicine

Federated learning's blessing: Fedavg has linear speedup
ICLR 2021 Workshop on Distributed and Private Machine Learning (DPML) (2021) [code]
Qu, Zhaonan, Kaixiang Lin, Zhaojian Li, and Jiayu Zhou keywords: optimization; machine learning; privacy

Interpretable Personalization via Policy Learning with Linear Decision Boundaries
Working Paper (2020) [code]
Qu, Zhaonan, Isabella Qian, and Zhengyuan Zhou
arXiv:2003.07545 keywords: causal inference; e-commerce

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

Other Academic Writings

Identifying Causal Components in Medical Imaging Data for Disease Outcomes (2021) [code] [report]

Demand Prediction of Bike Share Systems (2018) [code] [report]

Rating Inflation and Fairness on the Yelp Platform (2017) [report]

Appendices G and J to "The Dynamics of Inequality" by Gabaix, Xavier, Jean-Michel Lasry, Pierre-Louis Lions, and Benjamin Moll *Econometrica 84.6 (2016): 2071-2111.*

Quantum Entanglement of Fermions Undergraduate Thesis (2015) [paper]

Towards a Lithium Radiative/Vapor-Box Divertor by Goldston, Robert, Marius Constantin, and Zhaonan Qu *APS Division of Plasma Physics Meeting Abstracts. Vol. 2014.*

Teaching

MS&E 311 Optimization (Prof. Yinyu Ye), Stanford Winter 2021
ECON 292 Quantitative Methods for Empirical Research (Prof. Guido Imbens), Stanford Autumn 2020
Preparation Sessions for Written Qualifying Exams, NYU 2016

Invited Talks and Poster Presentations

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 2023 Annual Meeting Session on Econometric, Big Data Methods and Applications to Finance October 2023
INFORMS 2023 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 2020 Annual Meeting Session on Stochastic Optimization (virtual) November 2020

Peer Review Services

Journal of Econometrics, Journal of Scientific Computing, Journal of Artificial Intelligence Research

Industry Experiences

Microsoft Research New England, Research Data Science Intern

Robustness and Causal Inference *June 2021-Sept 2021*

Internship project at Microsoft Research New England. Implemented causal inference methods for testing the impact of email campaigns on the subscription of Microsoft 365 membership, and researched theoretical frameworks for robust causal inference using distributionally robust optimization.

Uber, Data Science Intern

Personalized Tipping Suggestions based on Trip Quality *June 2020-Sept 2020*

Internship project at Uber's Driver Incentives Team. Analyzed potential impacts of quality-based tipping suggestions on improving ride quality and driver income. Designed and implemented a contextual bandit algorithm on Uber's Michelangelo machine learning platform that serves personalized tipping suggestions after a trip completes in real time based on trip quality features. Product was tested in cities across the U.S.

Cruise, Data Scientist Intern

Learning Causal Bayesian Networks through Knockoffs *June 2019-Sept 2019*

Internship project at Cruise (now GM's autonomous vehicles arm). Designed and implemented a statistical decision making system in Python that applied the knockoff method to select causal stack-level variables relevant to specific types of near-accidents experienced by an autonomous vehicle. Also curated the near-accident type classification dataset combining multiple sources of data on Google BigQuery and PostgreSQL.

Honors, Scholarships, and Awards

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
7th Place, Rotman International Trading Competition, University of Toronto 2014
Smith-Newton Scholar, Princeton Environmental Institute 2013

Programming Languages

Python, MATLAB, SQL, R