Yanlin Qu

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Employment

Columbia Business School — NY, USA
Postdoctoral Researcher in the Decision, Risk, and Operations Division — 2024 - 2026
Advisors: Assaf Zeevi and Hongseok Namkoong

Education

Stanford University — CA, USA
PhD in Management Science and Engineering — 2018 - 2024
Advisors: Peter Glynn and Jose Blanchet
Markov Chain Convergence Analysis: From Pen and Paper to Deep Learning

University of Science and Technology of China — Anhui, China
BSc in Mathematics and Applied Mathematics — 2014 - 2018

Research Interests

Multi-armed bandit regret minimization

Markov chain convergence analysis

Deep learning for applied probability

Distributionally robust decision making

Ongoing Research

What does Thompson Sampling Optimize? (with Hongseok Namkoong and Assaf Zeevi)
We rediscover Thompson Sampling as an online optimization algorithm that minimizes immediate squared regret adaptively regularized by an uncertainty measure.

Non-compact Deep Contractive Drift Calculator (with Jose Blanchet and Peter Glynn)
We automate the convergence analysis of Markov chains on non-compact state spaces by reducing the task to function approximation (via neural networks) on compact sets.

Publications

Y. Qu, J. Blanchet, and P. Glynn. Deep Learning for Computing Convergence Rates of Markov Chains. *Neural Information Processing Systems* (spotlight), 2024.

P. Glynn. and **Y. Qu**. On a New Characterization of Harris Recurrence for Markov Chains and Processes. *Mathematics*, 2023.

Preprints

Y. Qu, J. Blanchet, and P. Glynn. Computable Bounds on Convergence of Markov Chains in Wasserstein Distance. *arXiv*, 2023.

- Minor revision at *Annals of Applied Probability*
- Applied Probability Society Best Student Paper Prize, 2023
- Applied Probability Society Conference Best Poster Award, 2023

Y. Qu, T. Rokicki, and H. Yang. Rubik's Cube Scrambling Requires at Least 26 Random Moves. *arXiv*, 2024.

Y. Qu, R. Kant, Y. Chen, B. Kitts, S. Gultekin, A. Flores, and J. Blanchet. Double Distributionally Robust Bid Shading for First Price Auctions. *arXiv*, 2024.

Y. Qu, J. Blanchet, and P. Glynn. Strong Limit Interchange Property of a Sequence of Markov Processes.

Y. Qu, J. Blanchet, and P. Glynn. Estimating the Convergence Rate to Equilibrium of a Markov Chain via Simulation.

Y. Qu and P. Glynn. Bias of Markov Chain Sample Quantile.

Y. Qu and P. Glynn. Uniform Edgeworth Expansions for Markov Chains.

Teaching

I served as a teaching assistant for the following MS&E courses:

324: Stochastic Methods in Engineering	2021, 2022, 2023, 2024
323: Stochastic Simulation	2020, 2024
321: Stochastic Systems	2023
221: Stochastic Modeling	2020
220: Probabilistic Analysis	2019, 2022
211: Introduction to Optimization	2021
125: Introduction to Applied Statistics	2020
260: Introduction to Operations Management	2020

Awards

Centennial Teaching Assistant Award	2024
Applied Probability Society Best Student Paper Prize	2023
Applied Probability Society Conference Best Poster Award	2023
Dantzig-Lieberman Operations Research Fellowship	2021
Guo Moruo Scholarship	2017

Academic Service

I reviewed papers submitted to the following journals:

European Journal of Operational Research

Mathematics of Operations Research

Annals of Applied Probability

References

Peter Glynn
Thomas Ford Professor
Stanford University
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Jose Blanchet
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Assaf Zeevi
Kravis Professor of Business
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Hongseok Namkoong
Assistant Professor
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