Xiangyu Zhang

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Education

Cornell University, Ithaca, NY Aug 2017 - Present
Ph.D. in Operations Research and Information Engineering. Minor: Computer Science, Statistics.

- Coursework: Supervised Learning, Unsupervised Learning, Machine Learning Theory, Linear Model, Statistical Inference, Algorithm, Stochastic Process, Stochastic Calculus, Operating System.

Tsinghua University, Beijing Aug 2013 - Jul 2017
B.S. in Mathematics, GPA: 91 / 100.

Awards

Silver Medal in CMO (Chinese Mathematical Olympiad) 2012
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Skills

- Programming Language: Python, Bash, C.
- Machine Learning: Clustering, SVM, HMM, Decision Tree, Neural Network.
- Familiar with numpy, pandas, sklearn, statsmodels and pytorch.

Work Experiences

Algo Developer, Hudson River Trading May 2021 - Aug 2021

- Designed trading signals for earning announcement events. One signal is lively traded and generates $\sim$250K profit.
- Estimated the distribution of hidden liquidity within spread for US equities.

Quant Researcher, Susquehanna International Group May 2020 - Aug 2020

- Evaluated various Barra factor models in term of portfolio volatility prediction.
- Optimized portfolio under Markowitz framework. Boosted the optimization process 100x by exploiting structures of factor models.

Research Scientist, IBM May 2018 - Aug 2018

- Developed machine learning algorithms for predicting the probability of winning IT service contracts, achieving accuracy higher than 90%.
- Priced highly valued IT service contracts using reinforcement learning.

Research Experiences

Resource allocation in Weakly Coupled Markov Decision Processes (WCMDP).

- Developed a near-optimal policy for WCMDP with strong theoretical guarantees.
- Showed the first known regret bound that does not grow with the number of arms.

Analysis of multi-class queueing network under static priority policies.

- Developed a framework to uniformly bound higher-priority classes' queue length regardless of traffic intensities.
- Showed this uniform bound for Last/First-Buffer-First-Serve policies.

Working Papers

Xiangyu Zhang & Peter Frazier: Restless Bandits with Many Arms: Beating the Central Limit Theorem. Submitted to Operation Research. *https://arxiv.org/pdf/2107.11911.pdf*

Xiangyu Zhang & Peter Frazier: Near-Optimality for Infinite-Horizon Restless Bandits with Many Arms. Ready to submit.

Xiangyu Zhang & Peter Frazier: Near-optimality for Finite-Horizon Weakly Coupled Markov Decision Processes with Many Arms. Ready to submit.

Yunxiang Zhang, Xiangyu Zhang & Peter Frazier: Two-Step Lookahead Bayesian Optimization with Inequality Constraints. Submitted to AISTATS.

Xiangyu Zhang, Aly Megahed & Peter Frazier: Dynamic Pricing with Long-Term Relationships. Submitted to Management Science.

Chang Cao, Jim Dai, Masakiyo Miyazawa & Xiangyu Zhang: State Space Collapse for Multi-class Queueing Networks under SBP Service Policies.

Selected Presentations

INFORMS Revenue Management and Pricing Section Conference	Toronto, June 2018
INFORMS Annual Meeting	Phoenix, Oct 2018
INFORMS Annual Meeting	Seattle, Oct 2019
University of Washington (invited by Professor Archis Ghate)	Seattle, Oct 2019
Georgia Institute of Technology (invited by Professor Enlu Zhou)	Atlanta, Dec 2019