Renyuan Xu

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EDUCATION

University of California, Berkeley Overall GPA: 3.98/4.0
Ph.D. Candidate in Industrial Engineering and Operations Research Department *August 2014 - August 2019 (expected)*
Advisor: Xin Guo

University of Science and Technology of China *August 2010 - June 2014*
B.S. in Mathematics Overall GPA: 4.01/4.3

University of Sydney *August 2012 - December 2012*
Exchange student in Mathematics Department Overall GPA: 4.00/4.00

RESEARCH INTERESTS

Stochastic Control and Stochastic Games, Mean Field Game with Applications, Machine Learning and Data Analysis.

TECHNOLOGY SKILLS

- Programming:
  - Expert level at development in R, Python, Pandas, PostgreSQL.
  - Proficient at MATLAB, C, C++, Scala, Q/KDB+.
  - Experience with Spark.
- Optimization: CPLEX, AMPL.
- Algorithms: Machine Learning, Online Learning and Reinforcement Learning algorithms.

RELEVANT COURSEWORK

Math and Probability: Partial Differential Equations I & II, Applied Stochastic Process I & II, Probability Theory I & II.
Optimization: Mathematical Programming I & II, Convex Optimization and Approximation, Supply Chain and Logistics Management.
Statistics: Advanced Topics in Learning and Decision Making, Theoretical Statistics, Nonparametric and Robust Methods, Mathematical Statistics.
Finance: Financial Engineering I & II.

EXPERIENCE

Quantitative Researcher Intern June 2017 - August 2017
Quantitative Brokers, New York, NY

- Used different statistical learning models to build an ensemble model to predict the probability of order fulfillments. Models include Random Forest, Gradient Boosting and Recurrent Neural Network.
- Helped to improve algorithmic trading strategies.

RESEARCH

X. Guo, A. Hu, and R. Xu. "Contextual hawkes bandit," In progress, 2018.
X. Guo, R. Xu. "Mean field game and Pareto optimality of singular stochastic games," In preprint, 2018.
X. Guo, CA Lehalle, and R. Xu. "Stylized facts on price Formation of corporate bonds and analytic approach of optimal liquidation ," In preprint, 2018.

X. Guo, R. Xu. "Stochastic games for fuel followers problem: N vs MFG," Submitted, 2017.
R. Almgren, R. Xu. "Smart order routing via statistical learning method," Working paper, 2017.

COURSE PROJECTS

Structured Hedging based on Online Convex Optimization

- Proposed an online regularized convex optimization algorithm for online portfolio management.
- The algorithm outperformed traditional structured hedging algorithm in extensive experiments on stock data (S&P500).

Nearest Neighbor based Greedy Coordinate Descent and Application to Sparse SVM

- Improved a nearest neighbor search based greedy coordinate descent algorithm.
- The algorithm outperformed existing first-order algorithms in numerical experiments of sparse SVM problem.

Analyzing Systemic Risk: Multivariate Gaussian Graphical Model Approach

- Built a two-layer hierarchical graphical model to analyze the graphical relationship among firms and among financial sectors.
- Used Bayesian based Monte Carlo method to sample the structural relationship from real data.
- Compared the result with Lasso method and Hidden Markov Model.

ATTENDED CONFERENCES

- Summer School in Computer Vision, IPAM, UCLA, CA. (July 2013)
- National Meeting of Women in Financial Mathematics, UCLA, CA. (May 2015 & July 2017)
- Informs Annual Meeting, San Francisco, CA. (October 2015)
- PIMS Summer School in Mathematical Finance, University of Alberta, Canada. (June 2016 - July 2017)
- 7th Annual Conference on Modeling High-Frequency Data in Finance, Stevens Institute, NJ. (November 2016)
- Western Conference in Mathematical Finance, UW, Seattle. (March, 2017)

INVITED TALKS

- Berkeley-Columbia Meeting in Engineering and Statistics, University of Columbia, New York, NY. (April 2018)
- Probability Seminar, University of Science and Technology of China, Hefei, China. (December 2017)
- Informs Annual Meeting, Huston, TA. (October 2017)
- Fourth Annual Young Researchers Workshop on Data-driven and Decision Making, Cornell University, Ithaca, NY. (October 2017)

POSTER PRESENTATIONS

- Market Microstructure The CFM-Imperial Workshop, London, UK. (December 2017)

HONORS

- Berkeley IEOR First Year Fellowship 2014-2015
- National Scholarship in China 2013-2014
- UCLA Summer School Fellowship 2013
- National Scholarship in China 2012-2013

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