

Zimo Zhao

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EDUCATION

NEW YORK UNIVERSITY

New York, NY

The Courant Institute of Mathematical Sciences

MS in Mathematics in Finance (expected – December 2019)

- *Coursework:* Black-Scholes option pricing, interest rate models, VaR & stress testing, Monte Carlo simulation, data structure and object-oriented programming

IMPERIAL COLLEGE LONDON

London, United Kingdom

BS & MSc in Mathematics and Statistics (Oct 2014 – Sep 2018)

- *Coursework:* statistics, probability, stochastics, OLS, and neural networks

EXPERIENCE

Axioma Inc.

New York, NY

Quantitative Pricing and Risk Management Analytics Intern (Jun 2019 – Aug 2019)

- Built modularized neural-networks based backward stochastic differential equation (BSDE) solver in TensorFlow, Python, for general European & American option pricing and benchmarked against Monte Carlo in accuracy, variance and speed
- Priced customized index options with differential interest rates using the BSDE solver and reduced estimation variance 10 times by asymptotic-expansion based precondition method
- Priced Bermudan swaptions under LIBOR market model with optional volatility parameterization (LFM, CEV, LCEV) using the BSDE solver and derived swaption deltas over time
- Estimated speed up after parallelization and implemented neural networks (FC & ResNet) for different BSDE computational structures

EATech

Xi'An, China

Data Analyst (Jul 2017 – Aug 2017)

- Designed scoring model (elastic net) on ingredient, ratings and other features selected by performing principle component analysis (pca) on Gaussian mixture model separated clusters
- Optimized regression outputs under constraints to meet custom nutrition requests and discussed practical executability on model suggested recipes
- Cleaned data and designed semantic structure for data storage in MongoDB database (NoSQL)

PROJECTS

NEW YORK UNIVERSITY

New York, NY

Advanced Risk Management

- Simulated historical and Monte Carlo 1-day-VaR on multi-asset trading books over 5 years and back tested VaR at 95% / 99% levels
- Applied bootstrap, Brownian bridge, and EM algorithm to fill missing swap data over weekends and to join discrete treasure bill records for PnL and VaR calculation
- Validated LIBOR market model, produced report following SR 11-7 and SR 15-18, implemented the model in Python and checked model implied European caplet prices with Bloomberg

Computational Finance

- Designed mini-exchange that focused on fast order book sweeping and client operations and implemented efficient binary data merger for tick-level stock records
- Built Monte Carlo engines following decorator and observer (ActiveMQ) patterns for estimating European and arithmetic Asian option prices

COMPUTER SKILLS/OTHER

Programming Languages: Python, Java, C and CUDA

Languages: English (Fluent), Chinese (Native)