Guoqing Zhang

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SUMMARY

- Graduate student enrolled in 5 year Doctoral Program in Operation Research from 2022.
- Experienced in programming technologies that include Python, R, MATLAB, C++(basic)
- Managed several projects using real-world data to simulate data-drive decisions
- Strong background in Applied Mathematics, Financial Mathematics

EDUCATION

North Carlina State University - Operation Research Doctor of Philosophy Aug 2022 - May 2026

North Carolina State University - Master of Financial Mathematics Jan 2021 - May 2022

- Related Courses: Investment in Financial Market / Options&Derivatives Pricing / Monte Carlo Method / Stochastic Calculus / Finite Element (Difference) method in PDE / Corporate Finance / Credit FRM / Finanacial Statistics and Data science / Numerical Analysis

Central South University - Mathematics and Applied Mathematics Bachelor Sep 2017 - Jul 2021

- Related Courses: Probability Theory, Numerical Analysis, Numerical Optimization, Mathmatical Analysis, Mathematical Programming, Time Series, Graph Theory, Intro to Big Data Analysis

RESEARCH EXPERIENCE

Undergraduate Thesis: Finite Element Method in 1-D Gelfand Equation Jan 2021 - Jun 2021

- Analyzed convergence and error in different numerical methods.
- Used numerical analysis to approxmate the solution.

The Typhoon Frequency Prediction Based on Deep Leaning Sep 2018 - Aug 2019

- The project predicts the frequency of typhoons based on the theoretical system of deep learning. Aiming at the disadvantage of a single neural network structure, such as misclassification of adversarial samples and poor fitting results. It changes the single network system of traditional prediction

PROJECT

Credit Card Fraud Detection Jan 2022 - Apr 2022

- Compared the performance of six popular statistical and machine learning models in detecting financial statement fraud under different assumptions of misclassification costs and ratios of fraud firms to nonfraud firms.

VIX derivatives & Machine Learning Mar 2022 - Apr 2022

- Implemented the VIX multinomial trading signal with a dense neural network and different lookback window.
- Performed K-fold cross validation for the lookback window.

Statistical Arbitrage Feb 2022 - Mar 2022

- Used ito lemma to derive OU Process, computed ADF statistic for each residual, used back test for a trading signal with different transaction

IAQF competition Jan 2022 - Mar 2022

- Delevoping a technique to predict the state of the market and comparing a trading stategy based on the technique against a buy-and-hold strategy.

Portfolio Theory Jan 2022 - Feb 2022

- Markowitz Theory, Eigenporfolios Method, Survivorship bias in SP500, Cross-Sectional Regression

Stock Price Prediction & Algorithmic Trading Sep 2021 - Dec 2021

- Explored techniques used to predict stock prices that includes Time series methods range from basic learning concepts to more in-depth recurrent neural networks. Specific Models will be examined include moving averages, regression, ARIMA, long-term memory (LSTM).

Full Tilt Project - Collaborated with NC Department of State Treasure, Retirement System Divsion May 2021 - Aug 2021

- Read related papers and developed pre-existing well-diversified equity portfolio models (Stock Selection using Principal Component Analysis/Sector Rotation to generate significant risk-adjusted returns.

Monte Carlo Method Project Apr 2021 - May 2021

- Price an Autocallable Multi Barrier Reverse Converitble by Standard Monte Carlo method and variance reduction techniques (Contral Variate, Antithetic Variates Method)