ZHEN GUO

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EDUCATION

NEW YORK UNIVERSITY New York, NY
The Courant Institute of Mathematical Sciences
MS in Mathematics in Finance (Sep 2019 – Dec 2020)

- ***Coursework*:** Stochastic Calculus, Portfolio and Risk Management with Econometrics, Computing in Finance, Scientific Computing, Time Series Analysis & Statistical Arbitrage

WAKE FOREST UNIVERSITY Winston-Salem, NC
BS in Mathematics, BS in Finance (Aug 2015 – May 2019)

- ***Coursework*:** Multivariable Calculus, Linear Algebra, Abstract Algebra, Real Analysis, Differential Equation, Probability and Statistics, Financial Derivatives, Fixed Income
- ***Awards:*** Dean's List, all semesters; Mathematical Honor Society

EXPERIENCE

GOLDMAN SACHS Shanghai, China
Intern, Securities Department (Feb 2019 - Apr 2019)

- Wrote a program that performed a scalping trading strategy and output transactions and payoffs
- Developed a cross-market arbitrage model, calculated the optimal margin of safety, and tested the model using historical data from Shanghai Futures Exchange

MORGAN STANLEY CAPITAL INTERNATIONAL Beijing, China
Intern, Risk Management Analyst (Jun 2018 - Aug 2018)

- Wrote a program for valuation of American styled call option based on European call option, simulated delta hedging of American options with underlying equities using historical prices
- Analyzed risks of equities traded on NYSE and NASDAQ, performed a comparison of historical, parametric and Monte-Carlo methods of calculating VaR and Expected Shortfall
- Performed Markowitz Mean Variance Analysis on a portfolio of bonds and equities in the American, European, and Japanese markets, optimized the portfolio by investing in risk-free asset
- Built an option-based convertible bond pricing model, analyzed VaR and payoff profile to evaluate investment opportunities on convertible bonds, wrote a report and presented to manager

CHINA MERCHANT SECURITIES Beijing, China
Intern, Industry Analyst (Dec 2017 - Jan 2018)

- Analyzed domestic green industry's prospectuses and historical data, wrote a research report
- Evaluate investment opportunities of a target firm by analyzing year-on-year financial ratios, innovations and marketing strategies, accelerated data processing using Excel and Python

PROJECTS

Local Depth Based Clustering (C++) Winston-Salem, NC

- Formed a parameter-free solution to clustering, which is robust to outliers, entirely deterministic and run three time faster than K-Means, applied the algorithm on classifying S&P 500 components for diversifying portfolio, resulting in portfolios with Sharpe ratios of nearly 1.9

Signal Construction and Portfolio Optimization (Python) New York, NY

- Found signals based on CAPM Betas, used the signals to construct Markowitz portfolio and track its performance, modeled transaction costs to optimize the algorithm

Nonparametric Cross-section Returns Prediction (Python) New York, NY

- Developed a nonparametric method for characteristics selection and stock returns prediction by estimating conditional mean function of returns based on group LASSO and quadratic splines
- Studied time variation of predictive power of the model, compared its OOS performance with a linear model, resulting in a much better R^2s and Sharpe Ratios for our model

COMPUTER SKILLS/OTHER

Programming Languages/Other Software: Java, C++, Python, MATLAB, R, SQL and LaTeX
Languages: English (fluent), Mandarin (native)