Tenghan Zhong | tenghanz@usc.edu | +1 2135072381

Education Background

University of Southern California Sep.2024 - May.2026
Master of Science in Mathematical Finance, USC Dornsife College Los Angeles, CA
GPA: 4.0/4.0

Nanchang University (Project 211) Sep.2020 - Jul.2024
Bachelor of Economics in Mathematical Finance, School of Mathematics and Computer Science Nan Chang, CN
GPA: 3.62/4.0; 87.02/100

Working Experience

Vanho Securities Co. Ltd./*Asset Management Department* Sep. 2023-Nov. 2023/Shenzhen, CN
✓ Reproduced Everbright Securities' Market Time Based on Resistance Support Relative Strength and Huatai Securities' FFscore Model for Value Stock Selection, utilizing Tushare data and Python for analysis.
✓ Independently designed and developed the backtesting framework for timing and stock selection strategies, which included compiling various quantitative strategy metrics, enhancing data visualization and conducting statistical tests to assess the strategy's robustness.
✓ Optimized parameters through sensitivity testing and enhanced the original strategy by adding constrained variables, achieving a 200% excess return in backtesting and reducing the maximum drawdown rate by 20%.
✓ Assisted the supervisor in tracking and analyzing the performance of quantitative investment strategies, processing and evaluating the key factors, preparing comprehensive evaluation reports and providing decision support.

Ping An Securities Co., Ltd./*Brokerage Division* Jul. 2022-Aug. 2022/Shenzhen, CN
✓ Processed the income data of the private equity firms via Excel and Python, including data verification, calculation, addition, and modification.
✓ Managed Ping An's private equity system, carried out the daily data update, and maintenance.
✓ Completed weekly and monthly reports based on the data of private equity products, and analyze and summarized the operation and performance of each product.
✓ Analyzed the pros and cons of Ping An Securities' private equity system, compared it with other systems, and provided advice on the private equity system.

Passing Cloud Resort Co., Ltd./*Information Technology Department* Jul. 2021-Sep. 2021/Shenzhen, CN
✓ Participated in the company's internal system support and maintenance work, learned and practiced system monitoring and diagnostics and solved common malfunction problems.
✓ Assisted in collecting, organizing, and processing various tourists and B&B data, providing decision support for the team.
✓ Completed some basic data analysis and website maintenance work through Python.

Graduation Thesis

Dynamic Pricing of ETF Options Based on Recurrent Neural Networks
Supervisor: Lidan Liao, Professor of Mathematics(Nanchang University) Dec.2023-Feb.2024
✓ Utilized GRU & LSTM models to revise the pricing errors of Black-Scholes option pricing model and Heston model.
✓ Calibrated Heston model using high-frequency option data with the Trust Region Reflective Algorithm and enhanced its accuracy by predicting and integrating future price errors utilizing GRU/LSTM models.
✓ Compared the pricing accuracy of different models on China AMC 50ETF and Huatai Borui CSI 300ETF options. And concluded that the pricing accuracy (MSE & MAPE values) of the Heston-GRU and the Heston-LSTM model is improved by at least 70%, compared with the separate LSTM or GRU model and BS & Heston model.

Project Experience

Hybrid Approaches to Crypto Volatility Prediction Using GARCH and GRU Model
Supervisor: Ratika Narag, Professor of Economics(USC) Sep. 2024-Dec. 2024
✓ Developed two hybrid models combining GARCH-type Models and GRU to enhance the accuracy of cryptocurrency volatility prediction.
✓ Compared the volatility precdiction accuracy of different models based on high-frequency crypto data and demonstrated that the GRU-GARCH hybrid model with AVARCH specification outperforms traditional models and standalone GRU across short- and long-term horizons.
✓ Identified sensitivity and estimation challenges in GARCH models through convexity analysis of their negative log-likelihood functions using gradient and Hessian matrices.

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Credit Risk Management Individual Project-Credit Risk Measurement Based on Z-Score, Logistic, KMV and Credit Metrics Models Feb. 2023-Jun. 2023

✓ Researched the distinguishing feature between ST and non-ST entrepreneurship of the Z-Score, Logistic and KMV models, and applied the Credit Metrics model to measure VaR for individual bonds and bond portfolios.
✓ Developed the codes for each model independently using Python, and improved KMV model to better fit in the modeling situation.
✓ Analyzed and compared the empirical results of the three models, and concluded that the Z-Score model suited more for the Chinese market.

Econometrics Team Project-Recognition Analysis of Economic Cycle Based on MS-MIDAS Model

Mar. 2023-Jun. 2023

✓ Applied MS-MIDAS model to perform a regression analysis on low-frequency quarterly GDP data and high-frequency fright & volume data.
✓ Identified the Chinese economic cycles and conducted the prediction analysis and obtained three prediction regions: growth, stability and recession, and conducting regression of mixed frequency data separately.
✓ Achieved all the coding and analysis through Python.

Applied Stochastic Process Individual Project-Whether Forecast Analysis Based on Markov Chain Model

Mar. 2023-May. 2023

✓ Collected daily weather data of Nanchang in 2022, and filtered the daily data via Excel to obtain the weather conditions.
✓ Built a state space model by Python, and applied the model to research the transition probabilities, stationary distributions and other relevant state indicators of weather states.
✓ Improved the model and analyzed the weather data of different seasons to increase the timeliness of the weather forecasts.

Skills and Certifications

✓ Programming: Python, Matlab, R, Microsoft
✓ Coursera Certifications: Machine Learning Specialization by Andrew Ng (DeepLearning AI), covering supervised, advanced, and unsupervised learning methods.
✓ Languages: Chinese (native), English (proficient)
✓ Extracurricular: Basketball

Graduate-Level Courses

Completed:
- ✓ Stochastic Calculus and Mathematical Finance (Grade: A)
- ✓ Time Series Analysis (Grade: A)
- ✓ Investment Analysis and Portfolio Management (Grade: A)

Ongoing:
- ✓ Introduction to Mathematical Statistics (PhD Level)
- ✓ Stochastic Calculus and Mathematical Finance
- ✓ Machine Learning in Quantitative Finance