

Keyuan Wu

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EDUCATION

University of Southern California – Department of Math

GPA: 3.81/4.0

Master of Science: Mathematical Finance

- Core Courses: Stochastic Calculus, Time Series, Econometrics, Machine Learning
- PhD level Courses: Mathematical Statistics, Applied Probability, Linear Programming, Stochastic Differential Equation

East China University of Political Science and Law

GPA: 87.5/100

Bachelor of Science in Quantitative Finance

- Core Courses: Statistical Computing and Data Analysis, Fixed Income Securities Analysis, MATLAB, Python Programming

PROFESSIONAL EXPERIENCE

Noah Private Wealth and Asset Management Co., LTD (NYSE: NOAH)

July 2020 to August 2020

Intern of Product Manager

- Used Python-based web crawling techniques to extract and analyze fund manager performance data, resulting in analysis reports that informed strategic decision-making
- Conducted financial analysis for a life insurance advisory project, interpreting insurance returns and contract structures, and directly communicated findings to actual clients
- Prepared research reports and presented findings in roadshows, which led to an invitation to support further research on fund IPO strategies.

RESEARCH PROJECTS

Hybrid Approaches to Crypto Volatility Prediction Using GARCH and GRU (Working Paper)

September 2024 to March 2025

- Developed novel hybrid models—including GRU-GARCH, GRU-GARCH-Error, and a new GRU-AVGARCH model—that significantly improve long-term volatility prediction compared to conventional GARCH-type and neural network models.
- Conducted independent research on rolling-window crypto volatility prediction by processing over 830,000 market data points using Python.
- Performed statistical tests to confirm volatility clustering and validate the feasibility of GARCH-type models.

Convergence Properties in GARCH-Type Model Estimation Problems

September 2024 to March 2025

- Prove convergence properties of GARCH, GJR-GARCH and EGARCH models by examining the local convexity conditions of their log-likelihood functions, which may cause inefficiency in Newton methods. (Verified by my GARCH- GRU project)

Calibrate paper "Power-type derivatives for rough volatility with jumps" for Professor Xia

January 2025 to March 2025

- Modify a deep neural network to calibrate an advanced volatility model based on the multi-integration of rough volatility and Lévy jumps, improving model accuracy in pricing VIX derivatives and capturing volatility dynamics with circumventing repetitive Fourier integral evaluations of the characteristic function.

PINN (Physics Informed Neural Network) with Heston Model

September 2024 to March 2025

- Solve forward and inverse PDE problems

Undergraduate Thesis: The Price Discovery of MSCI ChinaA50 Stock Index Futures compared with FTSE A50 Stock

Index Futures

September 2021 to May 2022

- Conducted empirical analyses with Johansen cointegration tests, VECM, Granger causality, impulse response, and variance decomposition to assess long-term equilibrium and dynamic interactions, based on all daily data at that time.
- Applied DCC-GARCH for volatility spillover analysis and the Information Share model to quantify each market's contribution to price discovery. Then demonstrated bi-directional price predictive relationships.

Mean Field Game course research project with Professor Jianfeng Zhang

January 2025 to March 2025

- Based on a two-state model, proved existence and uniqueness of mean field equilibrium, convergence and connections between MFG and MFC. (still in progress)

Kaggle: Jane Street Real-Time Market Data Forecasting

September 2024 to March 2025

- Ranked top 142/3713 by now (Silver Medal), with an ensemble of XGBoost, FNN, TabNet, and Ridge regression.

Sequential Recommendation via LLM-based Semantic Embedding Learning

January 2025 to March 2025

- Working paper for AAAI

SKILLS

- Programming Languages: Python, R, SQL, MATLAB, Julia; LaTeX, Stata, EViews, Bloomberg, PyTorch, TensorFlow
- Academic Expertise: Stochastic Analysis, Optimization, Option Pricing, Math Finance, Data Analysis, Machine Learning
- Member of Chess School Team, Go School Team, Quant SC
- Prizes: Third Place in University Chess Championship in Shanghai, Second Prize in China High School Biology Olympic