ZHIHAO SHAN
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EDUCATION

COLUMBIA BUSINESS SCHOOL GPA: 3.93/4.0 New York, NY
MS, Financial Economics, May 2026 2024 - 2026
Coursework (All at PhD Level): Econometrics and Statistical Inference, Artificial Intelligence (DL&RL), Computational Statistics, Foundations of Optimization, Generative AI, Computing for Business Research, Advanced Derivatives, Time Series, Panel Data, Big Data in Finance, Systematic Investment Strategies.

NEW YORK UNIVERSITY SHANGHAI GPA: 3.87/4.0 Shanghai, China
BS, Data Science, May 2024 2020 - 2024
Secondary Major: Business & Finance *Honors:* Business and Economics Honors Program
Relevant Coursework: Stochastic Processes, Volatility Modeling, Optimization, ODE, Game Theory, Machine Learning, Reinforcement Learning, Data Structures, Databases, Futures and Options.
Study Abroad: New York University Courant Institute of Mathematical Sciences & Stern School of Business (2022-2023)

PROFESSIONAL EXPERIENCE

CAPSTONE INVESTMENT ADVISORS Boston, MA
Quantitative Analyst Summer Intern, Global Relative Value Jun. - Aug.2025

- Optimize Gamma and Vega ratio rebalancing strategy of long-short straddle portfolios in global rates under PM's constraints. Structure the decision-making process to a Mixed-Integer Nonlinear Programming problem and use Gekko engine to solve.
- Develop Python-based tool to analyze the carry and roll-down characteristics of swap and swaption related strategies in the portfolio, supposing no change in spot price, volatility surface and yield curve, leveraging internally developed API for pricing.
- Design opportunity screening tools for global treasury basis related strategies using QuantLib (C++ library) for bond pricing, making accommodations for different conventions of global treasury markets and deliver the tool as IPyWidgets App.
- Conduct research on how rebalancing of TLT Treasury Bond ETF affect long-end swap spread through component bonds.
- Analyze historical PnL and correlation among portfolio sub-groups and visualize by developing Dash App.

SOOCHOW SECURITIES Shanghai, China
Top 10 Securities Company Research Institute in China Jul. - Oct.2022
Financial Engineering Analyst Intern, Research Institute

- Conducted research on stock-selection model based on intraday and overnight momentum and reach 20% long-short annual return before neutralization and 10% long-short annual return after neutralization on out-sample performance tests
- Implemented CNN model to predict stock price change using graph-based technical indicators and improved test performance
- Optimized the intraday and overnight momentum portfolio for long-only constraint under mean-variance criterion via cvxpy
- Streamlined stock-selection back testing model by vectorizing loops in NumPy and boost running time by 30%

SENSETIME Shanghai, China
Hong Kong-listed Tech Company focusing on Artificial Intelligence Jun. - Aug.2021
Software Developer Intern, IT Department

- Collaborated with other departments to test new platforms with KALI (Linux virtual machine for web-security test)
- Ameliorated Siem Platform to visualize daily web attacks and vulnerabilities (Python, SQL, HTML)

OTHER EXPERIENCE

Quantitative Research Project Intern, Huatai Securities Jun. - Aug.2023

- Developed 1-min frequency trend-following factors for stock-index futures using price-volume data, 5 selected into factor pool
- Enhanced Lasso Regression model for index futures price change prediction through non-negative constraints on coefficients using linear factors, profitability performance beat baseline model in trading simulations and selected for real trading
- Utilized change point detection via Gaussian Process to identify intraday market regime change and adjust strats aggressiveness, add change point detection as additional feature to LSTM and collaborate with colleagues to prove effectiveness in backtesting

Business and Economics Honors Thesis: Deep Reinforcement Learning for Hedging Jan. - May.2024

- Researched on optimizing hedging strategies under trading costs using Deep Reinforcement Learning algorithms
- Trained Soft Actor-Critic agents to maximize mean-variance reward under stochastic volatility market model

ADDITIONAL INFORMATION

Technical Skills: Python (NumPy, Pandas, PyTorch, Optuna,Talib, gplearn, etc.), R (tidyverse, forecast, rugarch, rmgarch), SQL
Certifications: C++ Programming for Financial Engineering Certificate from Baruch College MFE
Interests: poker, weightlifting, bassoon (university orchestra), soccer (university team), bartending