Haohan Zhao

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Education

Nanjing University (*Finance, **GPA:** 91.8 / 100*) 2021.09 - 2025.06, Nanjing, China

- **Honors:** National Encouragement Scholarship; Minister of NJU Financial Engineering Association
- **Courses:** Python (95) | Data Structure and Algorithms (94) | Probability Theory (96) | Random Processes (94) | Ordinary Differential Equation (94) | Financial Microstructure (98) | Financial Engineering (92) | Machine Learning (Coursera, A)

Internships

Wanyan Capital (*Quantitative Research Intern*) 2024.08 - present, Shanghai, China

- **Index Future Basis**. Researched the convergence patterns of IM's basis and spreads using regression, corr, etc.
- **Index Future Alpha**. Mined interpretable, financially meaningful temporal factors from 1-minute IM spot and future data, targeting the 10-minute change rate in future contract spreads, and evaluating alphas using IC, ICIR and Sharpe.

WorldQuant (*Alpha Research Consultant*) 2023.10 - present, Remote

- **Automatic Alphas**. Implemented a personalized automatic alpha mining pipeline based on fundamentals, orderbook, price/volume data and alternative data in US equity market, submitting over 20 high-performance alphas to production.

Mingxi Capital (*Quantitative Research Intern*) 2024.06 - 2024.08, Shanghai, China

- **Crypto Alpha**. Constructed a Genetic Algorithm factor mining pipeline with customized fitness functions and operators to generate over 200 factors based on BTC K-line data. Pushed 107 low correlated alphas to portfolio construction.
- **Bollinger Cointegration Strategy**. Selected crypto pairs to develop an arbitrage strategy with Bollinger. Used rolling training to optimize trading parameters, achieving a post-fee Sharpe of 2.73 and an Annualized Return of 21.32%.
- **RL Pairs Trading**. Implemented a Reinforcement Learning pair trading strategy for BTC-ETH using TD3 algorithm. The model generated continuous position signals, achieving a post-fee Sharpe of 3.47 and an Annualized Return of 27.46%.

Xingye Securities (*Quantitative Research Intern*) 2024.04 - 2024.06, Remote

- **Price Jump Prediction**. Predicted intraday stock price jump using Random Forest, Neural Networks, etc. with liquidity and technical indicators. Constructed a standard framework from jump detection to model performance evaluation.
- **Projects Research**. Stock ex-rights and ex-dividends event alpha; Weekly timing using MACD and technical indicators.

Liangyan Investment (*Quantitative Research Intern*) 2023.06 - 2023.08, Shanghai, China

- **Strategies Backtest**. Attribution of the performance of various commodity futures and strategies.
- **Market Timing**. Constructed a market band division system based on MACD, ATR, etc. to recognize high-low points. Increased the Sharpe by 0.69 (2.46), the Calmar by 0.92 (3.14), and decreased Max Drawdown by 9% (12%).

Projects

VGC-GAN: A Multi-Graph Convolution Adversarial Network (*Course Project*) 2023.12 - 2024.01

- Used VMD-GA to decompose stock price series. Used CNN and GRU as Generator to simultaneously depict the temporal and spatial dependence of stocks. Used CNN as Discriminator to judge the similarity of actual and generated series.
- Constructed a WGAN network using W-distance, combined MSE loss, and implemented adversarial training.

UBIQUANT Quant Trading Contest (*Rank 21/500+*) 2023.12

- Trained LightGBM with real-time Limit Order Book data to identify trading signals during simulated trading session.
- Processed orders and managed positions using an order and position list to control loss and optimize trading performance.
- Dynamically adjusted the model's parameters, achieving an intraday Sharpe ≈ 4 and an interday Sharpe over 2.

CUMCM Mathematical Contest in Modeling (*First Prize, top 10%*) 2023.09

- Constructed an Integer-Nonlinear Programming Equation to select commodities for max profit, solved by Monte Carlo.
- Quantified profit and cost using Polynomial Regression, predicted future costs with ARIMA, established a profit maximization Non-linear Programming Equation and solved it using Genetic Programming.

Skills

- **Languages:** English (CET-6 612; IELTS 7; GRE 325), Mandarin (Native)
- **Technical:** Proficient in Python. Familiar with Pytorch, C, Git, MATLAB, LaTeX and Binance's data and trading API
- **Interest:** Medium/High-Freq Equity Alpha Research; Statistical Arbitrage Strategy in Futures and Crypto