Zihao (Lawrence) Wei

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EDUCATION

Duke University, Pratt School of Engineering, GPA: 3.9/4.0 **Class of 2025**
MEng in Financial Technology Durham, NC
Courses: Intro to Algorithmic Trading, Financial Derivatives; Teaching Assistant (MENG570 Business Fundamentals for Engineers)

Duke University/Duke Kunshan University (DKU) Dual Degree **Class of 2023**
BS in Interdisciplinary Studies: Data Science (Duke)/BS in Data Science (DKU), GPA: 3.8/4.0 Kunshan, China/Durham, NC
Dean's List Fall 2019 & 2021; Peer Tutor (MATH304 Numerical Analysis and Optimization)

PROFESSIONAL EXPERIENCE

XY Investments Shanghai, China
Quantitative Trading Intern May 2024 – Aug 2024
- Refined a hedging cost formula by incorporating Beta exposure, and constructed a multi-level model that determines the optimal stock index futures for monthly rollover hedging
- Designed a layered futures hedging strategy that considers holding periods and portfolio optimization, yielding a 1.9% increase in out of sample annual returns while maintaining consistent volatility
- Engineered a client report generator by FastAPI, serving as the centralized infrastructure for formatting all products' Excel reports

Tongyi Investment Co., Ltd Shanghai, China
Quantitative Research Intern Jul 2023 – Aug 2023
- Replicated and enhanced a high-frequency arbitrage strategy for ETF redemption using Python, improving impact cost calculations, and achieving a simulated annualized return of 18%
- Crafted a 3-dimensional genetic programming module that integrated temporal dynamics, implementing classification techniques to regulate operator combinations
- Refactored a 3-dimensional XGBoost model by incorporating a time-sensitive cost function, improving the model's learning curve

Huatai Securities Co., Ltd Nanjing, China
Project Intern: Quantitative Research – Equities Investment Department Jul 2022 – Sep 2022
- Generated over 40 statistically significant alphas from daily-frequency price and volume data by genetic programming based on the stock pool of the Chinese CSI 1000 index
- Produced a signal by XGBoost, achieving an average annual Sharpe Ratio of around 3 for the entire Chinese stock market; optimized an enhanced index portfolio based on the XGBoost signal for the Chinese CSI 1000 index, earning an average annual alpha of 14%
- Performed stress test analysis on strategies based on Chinese CSI 300 index to quantify vulnerabilities in adverse market scenarios

Suzhou Enterprise Credit Service CO., LTD Suzhou, China
Data Analyst Intern Jun 2021 – Aug 2021
- Modified a credit scoring model (based on XGBoost) with feature engineering, increasing KS score by 5%
- Analyzed data of millions of scales using SQL in Oracle and authored a quarterly industry report focusing on credits, taxes, etc.

RESEARCH EXPERIENCE

Duke University Durham, NC
Dynamic Long-Short Equity with Active Volatility Hedging Apr 2024
- Employed Maximum Likelihood Estimator (MLE) within Constant Elasticity of Variance (CEV) model to estimate stock volatility
- Refined hedge ratio calculations via Total Least Squares, achieving an annualized Sharpe Ratio of 1.45 from 2017 to 2021

National University of Singapore (Suzhou) Research Institute Suzhou, China
Research Assistant Aug 2022 – Nov 2022
- Utilized MLE on stock data to estimate the parameters of the CEV model for Chinese convertible bonds pricing

Signature Work at DKU Kunshan, China
Enhancing audio anti-spoofing through Innovative one-class learning and Generative Adversarial Networks Jan 2022 – Mar 2023
- Proposed a one-class GAN approach with perturbation on generator's latent space which enhanced model robustness and efficiency.

Data Science Research Center at DKU Kunshan, China
Research Assistant (Chip Health Index Rating System) Sep 2021 – Nov 2022
- Developed a chip signal simulator by Monte Carlo Markov Chain; Constructed a chip health rating model by XGBoost and SMOTE

PUBLICATIONS

"TRBoost: A Generic Gradient Boosting Machine based on Trust-region Method", 2023, *Applied Intelligence*, with Jiaqi Luo, Junkai Man, and Shixin Xu.

FURTHER INFORMATION

Awards: 2021 iFLYTEK AI Competition -- Environmental Air Quality Assessment Top 10%
WorldQuant International Quant Championship 2023 silver level
Skills: Python (Pytorch, Paddle, scikit-learn, SciPy), C++, Java, MATLAB, SQL, Linux, Mathematica, Tableau, roboBASIC