SHUYI YUAN

+(1) 424-977-8613 | yuansy@mit.edu | linkedin.com/in/shuyi-yuan

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY Cambridge, MA
Candidate for Master of Finance, Financial Engineering Concentration, February 2025 July 2023 – Present

- **Relevant Coursework**: Options & Futures Markets, Fixed Income Securities & Derivatives, Advanced Analytics of Finance, Applied Econometrics, Asset Management

UNIVERSITY OF CALIFORNIA, LOS ANGELES Los Angeles, CA
B.S. in Applied Mathematics, magna cum laude, GPA: 3.95/4.0 Dec 2022

- **Relevant Coursework:** Machine Learning, Optimization, Applied Numerical Methods, Intro to Monte Carlo Methods, Intro to Data Analysis and Regression, Advanced Topics in Financial Mathematics

EXPERIENCE

MORGAN STANLEY Hong Kong SAR
Summer Analyst, Institutional Equity Division June 2024 – Aug 2024

Rotation 1: Derivatives Trading (Single Name Option, Principal Trading)

- Conducted research to formulate event-driven (earnings) trading idea; developed equity screening model for high-cash low-debt stocks for dividend volatility trading; collected and analyzed overnight market news in daily morning notes
- Developed an automated model in Python to estimate the aggregate Greek exposure on structured products across the street; collaborated with trading, sales, structuring, and strats on data gathering and model implementation

Rotation 2: Central Risk Book Trading (Principal Trading)

- Developed a delta-neutral, systematic momentum trading strategy in Python to manage CRB's inventory in Taiwan market (in production); the strategy has Sharpe ratio of 2.6 and max drawdown of 7.8% in 4-year backtest period
- Analyzed internalization (trading costs vs. stamp saving PnL) impact on capturing alpha; generated PnL from inventory and stamp saving to maximize advantages of internal market making; validated parameter stability to prevent overfitting

RAYLIANT GLOBAL ADVISORS Hangzhou, China
Quantitative Research Intern, China Research July 2022 – Aug 2022

- Constructed fundamental and momentum commodity trading signals to capture commodity's inventory changing rate and relative market performance by engineering raw market data in Python; achieved 12.7% annualized excess return
- Collaborated with portfolio manager on adding effective commodity trading signals to existing multi-factor trading strategy to reduce risk and boost returns by decreasing correlations and diversifying commodity allocations
- Performed independent research on signal identification and validation process for trend-following momentum strategy
- Implemented time series analysis to validate signals by IC-IR analysis and calculate turnover by autocorrelation function
- Optimized strategy by stratifying commodities into quintile portfolios and grid-searching different rebalancing frequency of long-only and long-short strategies; 5-year backtest yielded Sharpe Ratio of 2.04 and MDD of 8% on optimal strategy

RESEARCH EXPERIENCE

STOCHASTIC VOLATILITY MODELS IN EQUITY OPTION PRICING Cambridge, MA
Student Researcher, MIT Sloan School of Management Nov 2023 - Dec 2023

- Trained GARCH (1, 1) model using minute-frequency trading data to capture volatility clustering in stocks and indices;
- Constructed volatility surface to reflect mean-reverting volatility and correlation between asset price and volatility by fitting options of various maturities and strikes to Heston model; priced deep ITM options with 90% accuracy
- Implemented Monte-Carlo simulation to forecast underlying's price paths; analyzed effect of maturities on accuracy; identified overfitting tendency in Heston model and decreasing accuracy for ATM and OTM options in both models

FACTOR EXPOSURE IN EQUITY ETF PERFORMANCE ANALYSIS Cambridge, MA
Leading Student Researcher, MIT Sloan School of Management Nov 2023 - Dec 2023

- Built multivariate linear regression models of equity ETFs in Python against market, value, and size factors in Fama-French 3-factor model; compared results of various ETFs by components' market-caps, regions, and price-to-book ratios
- Directed analysis of R-squared, values and significance of alpha and betas on diversification effects, proportion of return contributed by each factor, ETFs' tracking accuracy on market benchmarks, and excess return beyond model predictions

ADDITIONAL INFORMATION

- **Skills:** Python, R, SQL, SPSS, Excel
- **Interests:** Road-trip/Backpacker (organized 2000-mile road-trip in Southwest USA), Restaurant Critic, Snowboarding