GUAN (RICK) LI

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EDUCATION

Columbia University, Fu Foundation School of Engineering and Applied Science New York, NY
Master of Science in Operations Research ***GPA 3.83/4.00*** 01/2023 – 12/2024
- Relevant Coursework: Optimization, Stochastic Calculus, Time Series, Algorithmic Trading, Monte-Carlo, Volatility Smile

Columbia University, Fu Foundation School of Engineering and Applied Science New York, NY
Master of Science in Chemical Engineering (Data Science Track) ***GPA 4.00/4.00*** 09/2021 – 12/2022
- Relevant Coursework: Statistical Mechanics, Data Science, Machine Learning, Algorithms, Advanced Derivative Securities

Nanjing Tech University Nanjing, China
Bachelor of Science in Chemical Engineering ***GPA: 3.94/4.00 (Ranking 1/229)*** 09/2016 – 06/2020
- Honors: National Scholarship (0.2%); 2nd Prize in ICHE Simulation (top 7%); Mathematical Contest in Modeling (top 10%);

WORK EXPERIENCE

WisdomTree Asset Management New York, NY
Quantitative Intern, Fixed Income ETF 06/2024 – 08/2024
- **ETF Bond Mapping:** Built fundamental data mapping pipeline for QHY high-yield bonds backtest universe by training NER model on FactSet and BBG PIT data for event tracking, increasing precision by 34% across 34000 bonds since 2016
- **Portfolio Optimization:** Refined high-yield bond ranking methodology through data frequency uplift and piecewise linear regression to capture recovery potential of companies, resulting in 10% relative return increase in backtesting
- **Backtest System Enhancement:** Engineered multi-threaded data processing framework leveraging Dask for distributed data chunking and parallel computation to boost backtesting performance, improving computational speed and efficiency by 20%

Maybank Asset Management Singapore Pte. Ltd. Singapore
Quantitative Research Intern 07/2023 – 11/2023
- **Par Curve Model:** Constructed 9-parameter cubic spline discount curve with 6 knots using weighted least squares to match market prices of liquidity-filtered Treasury securities, leading to 30% increased accuracy compared to legacy model
- **Commodity Trading Strategy:** Devised long-only strategy on employing SMA and EMA indicators with envelope volatility filter to avoid whipsaws; backtested and tuned parameters by implementing Backtrader Lib, yielding 13% extra CAGR
- **Statistical Analysis:** Evaluated asset performance during rate-cutting cycles by conducting risk-return analysis and calculating Pearson and Spearman correlations on historical data from stocks, bonds, FX, commodity, and real estate indices
- **Report Generation:** Automated fund performance reports from attribution data using openpyxl and python-pptx

China Securities Co., Ltd Shanghai, China
Quantitative Investment Intern 04/2022 – 07/2022
- **Time Series Forecasting:** Predicted daily wind turbine generation for CAISO utilizing SARIMAX model on historical generation data with wind speed from CIMIS reports as exogenous variable, achieving relative error below 15%
- **Interest Rate Simulation:** Estimated short-term interest rate drift in Kalotay-Williams-Fabozzi model exploiting Monte Carlo simulation to project logarithmic change across multiple maturities; calibrated model with different rates dataset

RESEARCH/PROJECTS/ACTIVITIES

Quantitative Market Analysis 09/2024 – present
- **Market Impact Analysis:** Optimized stock trade schedule under exponential decay impact model with 3D dynamic programming; tested on TSLA minute intervals with volume threshold, achieving 80% effectiveness over 300 days
- **Principle Component Analysis:** Applied PCA on 10 different Treasury yield curves, interpreting first 3 principal components as parallel shifts, tilt, and twist; validated model by eigenvalue decomposition and scree plot analysis

Machine Learning Projects 02/2024 – 04/2024
- **Neural Network:** Reconstructed images by manually building 3-layer neural network with SGD and Adam optimization
- **Predictive Modeling:** Built molecule feature embeddings using t-SNE for dimensionality reduction and clustering to enhance data representation; applied Support Vector Regression to predict AIC and PC properties

Bitcoin Intraday Trading Strategy Project 03/2023 – 04/2023
- **Strategy research:** Developed Bitcoin momentum intraday trading strategy on hourly data through heuristic and Random Forest methods, attaining Sharpe Ratios of 1.45 and 1.37 with tuned statistical thresholds and classifiers respectively
- **Feature Engineering:** Designed 1300+ time-series features using 27 technical indicators with look-back period of 50; selected top 10 features through importance test and tuned hyperparameters via grid search, achieving F1 score of 0.81.

ADDITIONAL INFORMATION

- **Computer Skills:** Python (SciPy, Pandas, Scikit-learn, PyTorch), C++, VBA, MATLAB, R, SQL, Git, Bloomberg, LaTeX
- **Interests:** Stock Trading, Poker (Tight Aggressive), Basketball, Logical Board Game