YU (Barry) LIU
(501)467-5708 ■ barry.liu@nyu.edu ■ linkedin.com/in/barryliunyu

EDUCATION

New York University, Courant Institute of Mathematical Sciences **New York, NY**
M.S. in Mathematics in Finance *Sept. 2021 - Dec. 2022 (expected)*

- Expected Coursework: asset pricing, stochastic calculus, Black-Scholes, Monte Carlo simulation

University of California, Berkeley, School of Mathematical Sciences **Berkeley, CA**
Exchange student *Jan. 2019 - May 2019*

- Coursework: Stochastic Process (A+), Time Series Analysis (A), Mathematical Optimization (A), Machine Learning (A)

Xiamen University **Xiamen, China**
B.S. in Mathematics, Minor in Finance *Sept. 2016 - June 2020*

- Coursework: mathematical analysis, linear algebra, probability, statistics, numerical analysis
- Awards: National Top-notch Mathematical Training Scholarship (Top 5%), National Mathematical Contest First Prize (Top 0.1%)

EXPERIENCE

XY-Investments (Quantitative Hedge Fund with AUM: 6 bn CNY) **Shanghai, China**
Full-time, Quantitative Researcher *June 2020 - June 2021*

- Independently developed and maintained a portfolio construction system based on Markov Mean-Variance Model with constraints, accelerated the model with conic optimization; established a robust optimization method that solves the model's bias maximization drawback, increasing portfolio's Information Ratio (IR) by 10 percent, while reducing turnover rate and maximum drawdown by 15 percent
- Developed a factor analysis platform with factor preprocessing, long-short Information Coefficient (IC), IR, and factor's characteristic portfolio return calculation
- Researched and constructed a trading signal based on institutional investors onsite visits with an IR over 2.4 and good monotonicity; constructed a structural cross-sectional regression method for filling missing values (increasing the coverage of trading signal)
- Researched on combining multiple alpha factors into stocks' selection signal by performing optimization with various utility functions (e.g.IR maximization, risk parity, equal weights)

Huatai Securities Co., Ltd **Shanghai, China**
Intern, Financial Engineering Research Group *Sept. 2019 - Feb. 2020*

- Implemented Barra risk model, calculated covariance matrix and specific risk matrix, adjusted matrices with eigen-factor adjustment, Newey-West adjustment and volatility regime adjustment
- Researched on using Generative Adversarial Network (GAN) to model the distribution of stock index returns, evaluated GAN generated return series with various metrics (self-correlation, fat tail distribution, volatility clustering); explored the possibility of using GAN generated series in testing strategy overfitting

PROJECTS

Option Pricing – Black-Scholes, Monte Carlo and Numerical PDEs in C++

- Constructed simulated paths of underlying stock with Monte Carlo Simulation, calculate option price by discounting the expected value in the future, estimated the standard deviation and standard error
- Estimate option prices with Finite Difference Method for Black-Scholes formula
- Compared FDM and Monte Carlo results with analytical solution of Black-Scholes formula

Image Classification – Convolutional Neural Network in Python

- Implemented CNN layers manually (forward and backward propagation, gradient descent), trained and tested the model with 10,00 animal images; evaluated model with cross-validation, ROC curve, and confusion matrices

COMPUTATIONAL SKILL/OTHER

- Programming Languages: Python, Java, C++, R, SQLite, SAS, MATLAB, Latex
- Interests: Basketball (college team starter), Animal Lover (raising a Shiba Inu)