

YIXIANG GAO

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EDUCATION

NEW YORK UNIVERSITY

New York, NY

Courant Institute of Mathematical Sciences

M.S. in Mathematics in Finance (expected Dec 2022)

- **Coursework:** derivative securities, ARIMA, Kalman filter, GARCH, object-oriented programming, data structure

B.A. in Economics and Mathematics with high honors (2018 – 2021)

- **Coursework:** SDEs simulations, measure theory based probability, Girsanov's theorem, Itô's lemma, advanced microeconomics, Black-Scholes, linear regression, PCA, linear algebra
- **Honors:** Magna Cum Laude (top 10%)

EXPERIENCE

Hermes Capital Advisors

New York, NY

Quantitative Researcher Intern (Mar. 2021 - Jun. 2021)

- Maintained and developed code library of intra-day directional trading strategy on bitcoin in Python, upgraded signal generating classes from Tensorflow version 1.15 to 2.4.1
- Appended Metropolis-Hasting algorithm in code library to filter trading signals generated by deep learning models

Nephele Capital

Remote

Quantitative Project Collaborator (Jun. 2020 – Sept. 2020)

- Assisted in building deep learning strategies on Chinese equity markets by compiling 10 years of A-share stock prices and calculated 138 factors
- Used Tensorflow in Python to construct neural network directional forecasting strategy on Chinese stocks, and achieved 49.8% accuracy for 3-class classifications of stocks' returns
- Calculated and integrated Hurst exponent factor in Chinese ETF strategy to forecast volatility, resulting in 0.5% increase trading return in backtest

PROJECTS

New York University

New York, NY

Returns of Patents in 9 Chinese Technologically Intensive Industries (Sept. 2020 - Present)

- Cleaned, compiled and constructed time series data of patent applications and authorizations of 2118 Chinese A-share companies
- Conducted panel data regressions on adjusted profits against patent authorizations with 4 different time lags for each industry, showed patents generate short-term net losses but long-term net benefits
- Presented to panel of around 100 economics professors at Global Finance Conference in May 2021 with co-author Professor Yochanan Shachmurove

Consumption Based Asset Pricing with Robust Decisions - Honors Thesis (Oct. 2020 - May 2021)

- Followed Hansen and Sargent's robust control pricing theory (2016) to model a marginal investor's robust investment decisions in the worst-case probability distribution of future consumption
- Solved Hamilton-Jacobi-Bellman (HJB) equation of a dividend claim's price-dividend ratio under stochastic differential equation of consumption process as in Bansal and Yaron (2018)
- Designed a finite difference method to solve the ODE with boundary conditions derived from HJB, demonstrated that a higher level of robustness (fear of uncertainty) decreases price-dividend ratio

Ensemble Method on Deep Learning Equity Trading Strategy (Sept. 2020 - Dec. 2020)

- Implemented ensemble method using Tensorflow-Keras on neural networks to reduce the training weights of noisy stock samples, and to forecast weekly stock's moving direction
- Developed a sample reweighting algorithm to reduce the weight of samples with fluctuating loss trajectory, and a shuffle-based feature selection algorithm to discard useless features
- Boosted 1% of forecasting accuracy with an ensemble of 5 neural networks using 57 factors

COMPUTATION SKILLS

Programming Languages: Python, Java, R, MATLAB