Yuantong Zhang

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EDUCATION

University of California, San Diego   **09/2018-06/2021**
- **Economics, Bachelor of Arts, Minor in Math; Major GPA:** 3.858/4.0
- **Honors:** 2018 Fall Provost Honor, 2019 Fall Provost Honor, 2021 Spring Provost Honor
- **Main Courses:** Microeconomics, Macroeconomics, Econometrics, Game Theory, Mathematical Economics, Probability Theory, Statistics, Linear Algebra, Real Analysis, Computational Statistics, Computational Stochastics

Duke University   **08/2021-09/2023**
- **Economics, Master of Arts; Major GPA:** 3.66/4.0
- **Honors:** 2021 Fall Merit Award Scholarship
- **Main courses:** Microeconomics, Econometrics, Stochastic Calculus, Financial market and Investment, Financial Derivatives

WORK EXPERIENCE

Quantitative Research Intern, New Momentum Asset Management   **07/2023 – 11/2023**
- Utilized the price-volume relationship to construct alpha factors based on historical returns and buying/selling pressure. Conducted grouped backtesting and calculated metrics such as RankIC and ICIR to assess factor quality, mined dozens of momentum factors that are both financially logical and effective.
- Leveraged market factors such as CAPM and Barra in conjunction with statistical tools like cross-sectional regression and time-series regression to build alpha factors based on historical volatility.
- Assisted in building a framework for machine learning factor mining using the GPlearn genetic programming algorithm. Tasks included population initialization, implementation of crossover and mutation operations, and hyperparameter tuning, including population size, crossover probability, and mutation probability.
- Tested code speed using libraries such as lineprofiler and cProfiler in Python. Enhanced factor generation and backtesting efficiency with Python libraries like numba and multiprocessing, resulting in a 150% improvement in factor generation speed for datasets containing millions of rows.
- Constructed a mutually orthogonal factor library using methods such as correlation tests, VIF tests, PCA, Schmidt orthogonalization, and style-industry orthogonal standardization.

Financial Engineering Intern Mutual Fund Track, Founder Securities Co.   **07/2022-09/2022**
- Constructed replicating portfolios of market indices by employing quadratic programming and Minimized Average Deviation with regularization of L1 norm and L2 norm loss functions. Used tracking error and correlation to determine the quality and the results were used to help building ESG index
- Established testing framework of indicators including Sharpe Ratio, Calmar Ratio, F-F 3-Factor, F-F 5-Factor, Treynor-Mazuy model, Henriksson-Merton model, Hurst Index, Win-Loss Ratio and etc., where Pandas, Numpy, and Sklearn were used, and the framework were used to assess the performance of asset managers
- Investigated several investment models, including Equal Weighted Portfolio, Inverse Vol Weighted Portfolio where assets with lower volatility are assigned a higher weight, MVO which aims to maximize the expected returns while minimizing the portfolio risk, where Pandas, Numpy, and Scipy were used to solve for the optimal portfolio weights under each model

Research Assistant for Professor Alon Brav, Fuqua School of Business at Duke   **02/2022-06/2022**
- In charge of the study on Proxy Fighting where how outside mutual funds voting in proxy contests affects the earnings of original company was the point of interest
- Did literature review and collected 5280 entries of data from Security and Exchange Commission
- Did preliminary data analysis with difference-in-difference model where the entry of mutual fund is

treated as treatment and similar companies as control group.

Research Assistant for Professor Titan Alon, Econ Department at UCSD   09/2020-01/2021
- In charge of the study on Relationship Between Education and Labor Market Performance
- Did literature review and collected more than 130,000 entries of longitudinal data from Germany, UK, and Indonesia and several international organizations.
- Did data cleaning using normal imputation, winsorization, and capping, feature engineering including feature interaction and frequency encoding and descriptive statistics with Stata
- Implemented time series analysis to figure the difference in long-run labor market outcome for general and vocational education graduates.

RESEARCH EXPERIENCE

Relationship Between Covid-19 and Crime Rates   09/2020-04/2021
Advisor: Professor Julie Cullen, UCSD Econ Department
- Studied the relationship between Covid-19 cumulative number of confirmed cases and crime rates
- Collected data from county-level health departments and city-level police departments and various official sites
- Used Stata to clean and do feature engineering, including mean imputation to deal with missing value, generating dummy variables, and scaling variables
- Employed non-linear regression with GMM model and time fixed effects to control seasonal crime rate effect and city fixed effect to control geographical crime rate effect with heteroskedasticity robust standard deviation to determine the relationship
- Found statistically significant quadratic relationship between crime rate and the number of confirmed COVID-19 cases

Jane Street Market Prediction   01/2021-03/2021
Advisor: Professor Jelena Bradic, UCSD Math Department
- Group project, 6 people in this team, in charge of data collection and cleaning, build analysis model
- Analyzed stock market returns and made predictions based on various anonymous attributions provided by Jane Street
- Employed augmented Dickey-Fuller (ADF) test to determine the order of differencing and Use the autocorrelation function (ACF) and partial autocorrelation function (PACF) to identify the order of the ARIMA model and fitted ARIMA
- Applied exponential smoothing to analyze the residuals of the ARIMA model and identify any additional trends and patterns in the data.
- Applied Granger causality tests to determine which independent variables are likely to have a causal relationship with the residuals of the ARIMA model.
- Applied ridge linear regression to quantify the relationships between the independent variables and the residuals of the ARIMA model, while controlling for multicollinearity.

ADDITIONAL INFORMATION

Quantitative Skills: Python, STATA, R, some experience with Matlab
Laguage: Mandarin Chinese (Native), English (Proficient)