

Haozhe (Howard) Zeng

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EDUCATION

Cornell University | College of Computing and Information Science
Master of Professional Studies (MPS) in Applied Statistics - Data Science

Ithaca, NY

August 2023 - Expected December 2024

University of Washington

BS in Economics – Econometrics | Minors: Applied Mathematics, Data Science

Seattle, WA

September 2019 - December 2022

Related Courses: Large-Scale Machine Learning | Deep Learning | NLP | Reinforcement Learning | Stochastic Processes

TECHNICAL SKILLS

Programming: Python (Scikit-learn, PyTorch), R (Tidyverse), SQL, MATLAB, Stata, JavaScript (React)

Modeling: Linear & Logistic Regression (Regularized, SGD), Random Forest, GBDT, XGBoost, LSTM, BERT, ARIMA

Tools: AWS, Azure, Spark, GitHub, Linux, Google Colab, Tableau, Excel, Power BI, iFind & Wind (Bloomberg Alternative)

Additional Experience: Two years of equities and options trading with a 232.42% gain using day and swing trading strategies

PROFESSIONAL EXPERIENCE

Navy Federal Credit Union, the largest credit union in the world

Vienna, VA

Data Scientist Intern / Lending Analytics, Pricing Team

May 2024 - August 2024

- Equity Monitoring:** Developed a fully automated monitoring dashboard for a \$6B equity loan portfolio, expanding coverage to FELs and HELOCs; delivered real-time insights that influenced strategic pricing decisions at the executive level
- Innovative Framework:** Pioneered a first-of-its-kind integration of **ASL cloud** data into the department's analytics framework, laying the groundwork for future cloud-based equity pricing models; deployed interactive dashboards using **Python (Plotly)**, **R Posit Cloud**, **Git**, and **GitHub Pages**, significantly enhancing data visualization and communication with business units
- Data Pipeline:** Architected and implemented data pipelines using **SQL** and **Python**, processing over 100M records from **Azure Data Studio** and **Teradata**; ensured data integrity through meticulous documentation and data validation processes
- Strategic Market Analysis:** Conducted market and competitive analysis using **Python**, **Curinos**, and **Excel**, evaluating key metrics like rate comparisons; provided actionable insights that informed strategic decisions and strengthened market positioning

Gravity Investments LLC (Capstone)

Ithaca, NY

Quantitative Research Engineer & Team Leader / Asset Pricing

January 2024 – May 2024

- Machine Learning Infrastructure:** Led a team of 6 to migrate **Temporal Fusion Transformers (Attention and LSTM)** to **AWS SageMaker**, utilizing parallel computing to optimize over 20 million records, achieving a 75% reduction in processing time
- Feature Engineering:** Enhanced model performance by creating interaction terms and temporal features to capture market dynamics, applying various feature selection techniques, and improving model interpretability
- Predictive Models & Strategies:** Built a predictive modeling framework using **Python (PyTorch)** with rolling and recursive schemes; implemented dynamic tuning frameworks and strategies leveraging **Linear Regression (SGD)**, **ElasticNet**, **Random Forest**, **XGBoost**, and **Neural Networks**, resulting in a strategy that outperformed the S&P 500 by up to 240% in backtests

WeiCepts LLC, a consulting firm specializing in credit modeling, pricing, and risk management

Conroe, TX

Financial Data and Model Analyst Intern / Mortgage Modeling

January 2023 - August 2023

- Data Processing & Management:** Processed and managed ~ 9 million mortgage records using **PostgreSQL**, reducing dataset size by 91.45% using data aggregation, ensuring code robustness for handling diverse datasets
- Data Analysis:** Performed data validation and exploratory data analysis with **Python**, addressing inconsistencies to ensure integrity
- Modeling:** Developed and validated mortgage default prediction models using **Logistic Regression**, **Random Forest**, and **XGBoost**, improving model performance by 19% with techniques like **SMOTE**, **Decision Tree Binning**, and **Optuna**

Huatai Securities Co., Ltd., ranked among the top four securities firms in China

Shanghai, China

Equity Research Intern / Research Institute of Computer Hardware and Software

September 2022 - December 2022

- Research:** Conducted market research on sectors such as database technology and virtual power plants; worked closely with team members to write comprehensive reports synthesizing information from sources, including white papers and government policies
- Data Management & Quantitative Analysis:** Utilized **R** and **Wind financial databases** to perform data extraction for over 19,424 actively managed funds and their associated stock holdings; delivered reports highlighting cash flow trends and movements

China Securities Co., Ltd., ranked among the top three securities firms in China

Beijing, China

Quantitative Research Intern / Derivatives Trading Department

February 2022 - April 2022

- Time Series & Correlation Study:** Conducted comprehensive correlation analysis of Chinese futures data from 2010 to 2021 using **Python** and employed **ARIMA** models for both time series and cross-sectional evaluations
- Algorithmic Analysis:** Developed a customized **Gradient Boosting Regression Tree** algorithm, integrating gblinear and stepwise interpretation to refine pattern detection within data, increasing the model's Sharpe ratio by 17%
- Optimization & Validation:** Optimized loss functions to balance cost-efficiency and performance; implemented validation methods, including rolling window and walk-forward validation, to ensure model robustness

ENTREPRENEURSHIP

iRent

Dublin, Ireland

Mobile Full Stack Developer / Founder & Team Leader

May 2019 - January 2021

- Leadership & Impact:** Founded and led a 7-member team to conceptualize, design, and launch iRent, a mobile application for students in Ireland seeking rentals; secured an investor's interest to purchase for €50,000 during early development
- Design:** Leveraged **Axure RP** for milestone documentation, flowcharts, database architecture, and strategic planning
- Software Development:** Developed the app's full-stack using **JavaScript (React)**, **Tencent Cloud**, and **WeChat API**, writing 19k+ lines of code and maintaining the app for over **1,600** users: [Project Link](#)