SAYUJ CHOUDHARI

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https://github.com/sayuj-choudhari

EDUCATION

California Institute of Technology *September 2022 – March 2026*
Bachelor of Science, Applied Mathematics and Computer Science *GPA: 4.2*

Relevant Courses: Applied and Analytical Linear Algebra, Probability and Statistics, Machine Learning, Learning Systems, Statistical Inference, Data Structures, Software Design, Mathematical Modeling with MATLAB, Multivariable Calculus, Discrete Mathematics

PROFESSIONAL EXPERIENCE

ROW Asset Management – *Newport Beach, CA* *June 2024 - Present*
Quantitative Research Intern
- Explored and evaluated avenues of possible systematic strategies, risk models and theories to innovate and refine existing investment products. Expanded backtesting capabilities through approaches such as delta replication, volatility targeting, and dimensional augmentation of data through PCA synthetic space
- Investigated the application of mathematical and ML models for estimating trend parameters. Utilized custom designed statistical measures to predict trend decay to optimize portfolio construction and skew risk

Northwestern University – *Evanston, IL* *February 2023 - Present*

Research Fellow – Machine Learning for Causal Inference
- Conducted a Caltech Undergraduate Research fellowship studying machine learning applications to causal inference with Professor Zach Wood-Doughty at Northwestern University. Submitted findings to NeurIPS 2024
- Developed a new classification method for measurement error correction in causal inference problems with unobserved confounding, leading to more accurate overall causal analysis on higher dimensional synthetic data
- Built more complex synthetic data generation processes for incorporating differential error on test variables for applying on the classification model to evaluate the accuracy of the model in closer to real-life data

University of Chicago – *Chicago, IL* *February 2020 - December 2021*
Research Assistant - Quantitative Finance
- Authored a paper discussing systemic market crises and the application of cross-correlations and principal component analysis on various assets and market indices to measure friction and potential risk of systemic movements across financial sectors

PROJECTS & OUTSIDE EXPERIENCE

Stocks and Options Momentum Classification Model - *Remote* *August 2023 - Present*
- Developed and back tested an options-picking classification model that calculated bi-serial correlations on various characteristics of momentum indicators to medium-term gains in the underlying asset. Trained a RandomForest Classifier on data identified to be significantly correlated with the binary variable of whether futures gains occurred.
- Built simulation process to evaluate strategy using Market-On-Open buy and sell orders on recent data to classify call options calculated to have positive expected value. Initial tests led to 65% accuracy with low fixed loss risk. Portfolio testing delivered an 80% gain over past 4 years, outperforming the S&P 500 by 32%. Plan to expand model to identify and execute trades by searching options chain for pricing that maximizes expected value of the position.

Susquehanna International Group Trading Discovery Day Fellow – *Bala Cynwyd, PA* *April 2024*
- Participated in lectures on option theory and trading. Explored various hedging and risk management strategies used in trading. Attended live trading demos and discussed intuition and logic behind market opportunities.
- Competed in market making games and tests with fellow invitees, placing 4th out of all invitees in an option theory competition.

Quantitative Finance Club – *Pasadena, CA* *September 2022 - Present*
General Member
- Developed technical skills and explored careers in quantitative finance. Participated in discussions on complex mathematical problems and topics relevant for careers in quantitative finance
- Placed in the top 3% of teams in the IMC Prosperity Algorithmic Trading Challenge. Developed market-making and mean-reversion trading strategies on simulated markets, as well as DFS algorithm for cross-currency arbitrage

Caltech Varsity Baseball Team – *Pasadena, CA* *September 2022 - Present*
- Recruited to play for the Caltech varsity baseball team. Developed effective time management and a robust work ethic to foster personal growth, while also further building communication and teamwork skills.

SKILLS & INTERESTS

Skills: Data Analysis, Data Science, Python, Java, MATLAB, C/C++, Data Structures & Algorithms, Pandas, NumPy
Interests: Poker, Fantasy Football, Card Games, Hiking, Cooking, Golf, Sudoku
Languages: Marathi