# Jesse Freitag

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## EDUCATION

**The University of Chicago**                                                                   **Chicago, IL**
**Master of Science in Financial Mathematics**                          **Expected December 2024**
- Portfolio Theory & Risk Management, Fixed Income, Python, Option Pricing, Stochastic Calculus, Time Series, Monte Carlo Simulation, Multivariable Statistical Analysis, Foreign Exchange Markets

**Stony Brook University**                                                                      **Stony Brook, NY**
**Bachelor of Science in Applied Mathematics & Statistics (GPA: 3.93/4.0)**     **Graduated December 2022**
**Bachelor of Arts in Economics**
- Probability Theory, Regression Theory, Data Structures & Algorithms, Differential Equations, Graph Theory

## SKILLS

**Computing:** Python, Java, Jupyter, R, Bloomberg Query Language (BQL), MS Office
**Knowledge:** Portfolio Management, Fixed Income, Option Pricing, Statistical Modeling, Time Series Analysis

## EXPERIENCE

**DV Trading LLC**                                                                             **Chicago, IL**
**Quantitative Risk Intern**                                                  **June 2024 – August 2024**
- Coordinated with the Development team to create a Django web application which calculates correlation haircut for different equities and energy derivatives based on a regulatory Principal Component Analysis-based model
- Derived a hedge-model for trading strategy returns to inform the Risk team on how to improve current hedging techniques through the use of PCA, GARCH, and detecting non-linear underlying risk exposures
- Assisted research team in formulating time series models to explain basis trades by aggregating academic research

**BlackRock, Inc.**                                                                           **Chicago, IL**
**Quantitative Researcher – University of Chicago Project Lab**           **January 2024 – March 2024**
- Identified the relationship between Morningstar rating change and change in fund flow for over 80 BlackRock ETFs using time series regression, event studies for each major asset class, and a fixed-effects model
- Evaluated the asymmetric effects that fund-rating upgrades and downgrades have on asset returns and net fund flow

**Neuberger Berman**                                                                          **Chicago, IL**
**Quantitative Researcher – University of Chicago Project Lab**       **October 2023 – December 2023**
- Enhanced prediction accuracy of existing emerging market sovereign and corporate credit spread models to be used in asset allocation decisions between regions using XG Boost, Vector Autoregression, and ARIMA model
- Produced 1-3-6-12 month forecast of JPM's Emerging Market Debt and JPM's Emerging Corporate Debt Indices

**GM Advisory Group Wealth Management (Acq. by Wealthspire Advisors)**           **Melville, NY**
**Research Analyst Intern**                                                      **June 2021 – May 2023**
- Conducted financial machine learning research using Hudson & Thames' MLFinLab and Dr. Marcos Lopez de Prado's work to identify and improve false investment strategies, enhancing the firm's overall approach
- Designed logistic and linear regression models to forecast Consumer Price Index, Unemployment, and Industrial Production in Python while recognizing statistical properties and limitations of time series data
- Utilized Bloomberg Query Language in Jupyter and Excel to analyze market indicators and market conditions

## TECHNICAL PROJECTS

**An Exploration of Variance Reduction Techniques for Pricing European and Asian Options**
**Department of Statistics, University of Chicago**                                        **May 2024**
- Researched and employed variance reduction techniques to estimate European and Asian Option prices using antithetic variates, importance sampling, and control variates including Delta and Gamma-based control variates
- Incorporating Anthetic Variates of Delta and Gamma Control Variates results in a near 100x relative reduction in standard error compared to Classical Monte Carlo Simulation

**INTERESTS:** Weather and other exotic derivatives, geospatial mapping, competitive Geoguessr, piano, and bagpipes