

# Swaminath Murugadasan

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## EDUCATION

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| <b>The University of Chicago</b><br><b>Master of Science in Financial Mathematics, GPA 3.71/4</b><br>Courses: Option Pricing, Numerical Methods, Stochastic Calculus, Quantitative Trading Strategies, Stochastic Processes, Fixed Income Derivatives, Credit Markets, Portfolio and Risk Management, Multivariate Statistical Analysis | <b>Chicago, IL</b><br><b>Aug 2023 - Dec 2024</b>    |
| <b>Indian Institute of Technology Bombay</b><br><b>Master of Science in Applied Statistics and Informatics</b>  | <b>Mumbai, India</b><br><b>Aug 2020 - May 2022</b>  |
| <b>Chennai Mathematical Institute</b><br><b>Bachelor of Science Honors in Mathematics and Computer Science</b>  | <b>Chennai, India</b><br><b>Aug 2016 - May 2019</b> |

## EXPERIENCE

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| <b>Mizuho Securities</b><br><b>Quantitative Researcher, University of Chicago Project Lab</b> <ul style="list-style-type: none"><li>Analyzed historical CDS data using clustering and jumps identification techniques for xVA risk management</li><li>Estimated parameters for a Spread Return Mean Reverting (modified Cox-Ingersoll-Ross) process to identify jumps</li><li>Applied clustering algorithms after Independent Component Analysis to enhance grouping and pattern recognition</li></ul>   | <b>Jul 2024 - Aug 2024</b><br><b>New York City, NY</b> |
| <b>Lumena Energy</b><br><b>Quantitative Analyst Intern</b> <ul style="list-style-type: none"><li>Implemented various time series models to capture and forecast volatility dynamics using Carbon credits price data</li><li>Identified specific components, such as jumps and heavy-tailed innovations to enhance standard GARCH models</li></ul>  | <b>Jul 2024</b><br><b>Chicago, IL</b>                  |
| <b>Credit Suisse - Equity Derivatives Division</b><br><b>Quant Strats - Risk Modeling</b> <ul style="list-style-type: none"><li>Reduced RWA by 30% through analysis of fund positions, supporting Fund Decomposition Methodology in Python</li><li>Improved the RFET results by 12.5% for Equity Spot Risk by analyzing trade data of multiple trading desks</li><li>Hypothesized and implemented a conservative approach for FRTB SA Vega Risk calculations using ATM Vols</li></ul>  | <b>May 2022 - Jul 2023</b><br><b>Mumbai, India</b>     |
| <b>Fidelity Investments - AI Center of Excellence</b><br><b>Data Science Intern - Prediction of likelihood of developing Asthma using medical records</b> <ul style="list-style-type: none"><li>Performed EDA on medical claims data containing 1.2B records of inpatient and outpatient service claims with SQL</li><li>Used Recursive Feature Elimination and regularization techniques to identify and discard irrelevant features</li><li>Fitted in Random Forest and AdaBoost algorithms resulting in an accuracy of 0.9 and an F1 score of 0.7</li></ul> | <b>Jun 2021 - Jul 2021</b><br><b>Bangalore, India</b>  |
| <b>CRISIL, an S&amp;P Global Company</b><br><b>Quantitative Analyst</b> <ul style="list-style-type: none"><li>Assessed Var and SVaR of interest rate portfolio for a large Central Counterparty in Europe trading US Treasuries</li><li>Applied Factor Based Scenarios approach for generating PnLs using Principal Component Analysis of yield curve</li><li>Calibrated Probability of Default models for Low Default Portfolio using Pluto-Tasche method in Python</li></ul>   | <b>Jun 2019 - Aug 2020</b><br><b>Chennai, India</b>    |

## PROJECTS

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| <b>Hull Tactical Asset Allocation</b><br><b>Quantitative Researcher, University of Chicago Project Lab</b> <ul style="list-style-type: none"><li>Designed an algorithm to trade ATM straddles before and after earnings report release for equity options in the US</li><li>Used Machine learning models to predict the long/short position based on the Fundamental Ratios and market data</li></ul> | <b>Apr 2024 - May 2024</b><br><b>Chicago, IL</b> |
| <b>Quantitative Trading Strategy using Pairs Trading, University of Chicago</b> <ul style="list-style-type: none"><li>Identified equity pairs across industries having high correlation and mean reverting property using cointegration test</li><li>Applied Copula method and Kalman filtering for modeling the spread and used them to generate trade signals</li></ul>                             | <b>Jan 2024 - Mar 2024</b>                       |
| <b>Neuberger Berman - Capturing Key Macro Dynamics using Generative AI</b> <ul style="list-style-type: none"><li>Systematically summarized sell-side reports using LLM's ability to uncover market views and macrodynamics</li><li>Applied prompt engineering techniques to GPT for effective comparison of views across banks with time</li></ul>  | <b>Jan 2024 - Mar 2024</b>                       |

## SKILLS

**Computing and Software:** Python, R, SQL, C#, C++, SAS, Bloomberg, MATLAB, Tableau, Git, LaTeX, Jira

**Knowledge:** Derivatives Pricing, Machine Learning, Regression & Time Series Analysis, Probability, Risk Management