Aditya Murarka

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EDUCATION

The University of Chicago **Chicago, IL**
Master of Science in Financial Mathematics (GPA: 3.92/4) **Expected Dec 2024**

- Courses: Quant Trading Strategies, Credit Markets, Stochastic Processes, Multivariate Statistics, Options Pricing

Birla Institute of Technology and Science **Pilani, India**
Dual degree: Master of Science in Economics & Bachelor of Engineering in Mechanical Engineering **Sep 2020**

- Awarded up to 80% scholarship for excellent academic performance across 5 years **(GPA: 8.38/10)**
- Achieved 99.6th percentile rank in JEE out of 1.2 million candidates, High Stakes Poker Club founder

SKILLS

Certification and Computing: CFA Level 1 (Access Scholarship); Python, SQL, R, MS Office, VBA, Bloomberg
Knowledge: Multi-Asset Solutions, Machine learning, Statistical Modeling, Portfolio Optimization, Structured Products

EXPERIENCE

Calamos Investments **Chicago, IL**
Quantitative Analyst Intern, Research **Jun 2024 – Present**

- Designed an algorithm to detect bid-ask anomalies for equity options across strikes, expiries with ~80% accuracy which led to improved data quality for computing cap rate of Structured Alternative Protection ETFs
- Developed a model to detect concave implied volatility curves and bimodal Risk-Neutral Distributions (RND)
- Implementing Delta- and Vega-neutral options strategies to capture Gamma Risk Premium during earnings releases

Loomis Sayles & Co. **Chicago, IL**
Quantitative Researcher, University of Chicago Project Lab **Sep 2023 – Dec 2023**

- Engineered a Convolutional Neural Network (CNN) model for classifying stock chart images, analyzing 30+ years of equity price data and forecasting 5-day ahead returns using TensorFlow
- Designed a long/short decile trading strategy optimized for turnover and costs and achieved a 2.1+ Sharpe Ratio
- Adapted the framework to multi-asset futures to evaluate prediction accuracy and out-of-sample performance

Nomura **Mumbai, India**
Associate, Quantitative Investment Strategies (QIS) – Global Markets **Jul 2019 – Jul 2023**
Accomplishments:

- Achieved 1.2 Sharpe Ratio through a multi-asset strategy of in-house indices, using portfolio optimization and diversification techniques like PCA, risk parity, factor investing, skew balance, volatility control in Python
- Selected to work in the London office (summer 2022); developed a long/short trend-following strategy on money market futures in Python; pitched to clients under defensive and inflation hedge themes
- Instrumental in developing bond benchmark replication suite by analyzing credit, duration, and short volatility risks
- Implemented exponential volatility scaling model (IGARCH) leading to increased spread capture by 10% due to tighter volatility control and reduced slippage for competitive structured products with elastic demand
- Received a full-time offer as an Analyst post 1-year internship and promoted to Associate within 3 years

Key responsibilities:

- Research and develop investment strategies across Rates, Credit, Commodities and Equity using proprietary research on different investment themes, to tap into alternative risk premia via derivatives
- Engage with clients on bespoke mandates to tailor structured products, leveraging systematic trading strategies
- Lead a team of three analysts and steer stakeholder management to drive strategy development and trade execution

RESEARCH

Pairs trading via unsupervised learning, Graduate project **Feb 2024 – Mar 2024**

- Applied K-means and DBSCAN clustering techniques to identify trading pairs from 2000+ companies based on their price (past 48 months) and characteristic features (50+ financial ratios) using WRDS database
- Backtested a mean reversion strategy to identify statistical arbitrage opportunities; prepared an investor's pitch highlighting performance across various market conditions, diversification benefits and French-Fama analysis

Self-adjusting GARCH model for risk estimation, Bachelor project **Aug 2018 – Dec 2018**

- Developed a dynamic GARCH model using ensemble learning to forecast volatility and estimate 1-day ahead VaR at 95% confidence level in Python, leveraging 18 years of NIFTY Index (India's Equity benchmark) data