Shivam Garg

5115 S Ellis Ave, Chicago IL, 60615| 872-818-2202 | shivamg@uchicago.edu | LinkedIn

Education

The University of Chicago **Chicago, IL**
Master of Science in Financial Mathematics **Expected December 2024**

- Courses: Option Pricing & Numerical Methods, Fixed Income & Derivatives, Quantitative Trading Strategies, Multivariate Statistical Analysis, Stochastic Calculus, Applied Partial Differential Equations, Python, Advanced C++

Indian Institute of Technology **Delhi, India**
Bachelor of Technology in Mathematics & Computer Science **April 2021**

- Courses: Probability Theory, Statistical Methods, Linear Algebra, Optimization Methods, Real and Complex Analysis, Analysis and Design of Algorithms, Machine Learning, Operating Systems, Theory of Computation

Skills

Computing: Java, Python, C++, Spring, Hadoop Map Reduce, KDB+, Jupyter, OpenCV, MATLAB, Git, Unix/Linux

Experience

Barclays Capital **New York, NY**
Quantitative Research Associate Intern, Credit Systematic Market Making **June 2024 - August 2024**

- Researched on Corporate Bond Liquidity: Validated a model which utilizes past volume, bond characteristic features combining into a score; compared it against MarketAxess Liquidity Scores on TRACE, and other extensive bond volume datasets fetched from KDB+; Productionized the liquidity score validation framework using Python
- Improved the model by 3% by enhancing one of its key features, leveraging insights from Machine Learning techniques Elastic Net, Random Forest, and XGBoost for feature selection and identifying non-linear relationships

Goldman Sachs **Bangalore, India**
Full Time Analyst, Knowledge Graph Team **June 2021 – July 2023**

- Designed and Maintained big data solutions on top of peta-scale, firm-wide data modeled into a graph with vertices (entities) and edges (relationships) for applications to banking activities like compliance and investment banking
- Developed the infrastructure for a knowledge graph deduplication system from scratch in Hadoop MapReduce, Java sourcing data from multiple sources (60 million vertices, 4 billion edges), leading to duplication of nodes in the graph
- Designed an algorithm using the longest common subsequence to identify the company domain and then the best person in graph for making introductions to potential clients of IBD; Integrated using REST API, Spring in Java

Estee Advisors Ltd. **Gurgaon, India**
Quantitative Research Intern **May 2020 – July 2020**

- Designed and implemented alpha-generating signals in C++ for optimizing weight allocation across a portfolio of 130 Indian stocks, utilizing Technical Indicators on OHLCV daily frequency data, Sharpe ratio for performance evaluation
- Leveraged Time Series forecasting techniques ARCH, and GARCH to estimate volatility as a risk measure in alphas
- Conducted comparative analysis of Deep Learning models (RNN, LSTM, CNN) for predicting stock prices

Projects

The University of Chicago **Chicago, IL**
NLP-Driven Trading Strategy Based on Corporate Disclosures **April 2024 - May 2024**

- Developed long-short trading strategy using NLP to analyze changes in 'Risk Factors' section of 10-K and 10-Q filings
- Conducted comparative analysis for models (BERT, Bag Of Words) across different NLP metrics, ensuring stable performance with minimal signal decay; Achieved a Sharpe ratio of 0.72 in the S&P 500 universe

Pairs trading via unsupervised learning **February 2024 – March 2024**

- Utilized unsupervised ML (K-Means, DBSCAN) to identify company pairs based on fundamental and price features
- Backtested a mean reversion strategy on the clustered pairs, identifying statistical arbitrage opportunities; Assessed the strategy's performance across various market regimes, confirming its effectiveness in diversification

Indian Institute of Technology **Delhi, India**
Synthetic Data Generation using Additive Noise **February 2021 – April 2021**

- Performed a literature review of existing techniques (SMOTE, AdaSyn) to handle class imbalance for classification
- Designed and demonstrated a novel technique using additive noise to handle class imbalance in improving classification accuracy for machine learning models (Random Forest, Naive Bayes, SVM, XGBoost, Logistic)

Additional Information

Interests: Competitive Programming, Poker, Guitar, Running, Volunteer work