Kausthub Keshava

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EDUCATION

The University of Chicago **Chicago, IL**
Master of Science in Financial Mathematics (GPA: 4.0/4.0) **Expected December 2024**

- Courses: Option Pricing, Advanced Computing, Quantitative Trading Strategies, Numerical Methods

Indian Institute of Science Education and Research (IISER) (Top 5 Research Institute in India) **Mohali, India**
Integrated Bachelor's & Master's in Mathematics, Minor in Data Science (GPA: 3.9/4.0) **June 2021**

- Courses: Measure Theory, Nonlinear Dynamics, Calculus, Random Processes and Graphs, Machine Learning
- Awards: Ranked 3rd in Cohort, Perfect score in Final Year, Scholarship by Government of India

SKILLS

Computing: Python, C++, C#, Git, SQL, SAS, MS Office, LaTeX
Knowledge: Regression Learning, Time Series Analysis, Risk Management (FRM Certified), Bloomberg, Portfolio Theory, Fixed Income Derivatives, Futures, Credit Derivatives, Optimization Theory, Margin Modeling

EXPERIENCE

CME Group **Chicago, IL**
Quantitative Research Intern – Futures & Options **June 2024 - Present**

- Automated PnL calculation for options spread trading strategies in client portfolios; Integrated C# solutions for margin calculation into python and created dashboard to reduce margin-break root cause analysis time by 80%
- Accelerated the generation of margin component time series plots through multi-threading on C#

CloudQuant **Chicago, IL**
Quantitative Researcher – Project Lab University of Chicago **Jan 2024 – March 2024**

- Developed equity option straddle strategy returns prediction model using random forests regressor on Python; Created a large feature space based on academic research and utilized gini importance for feature selection
- Designed a 5-day window theta hedged trading strategy and obtained 1-year back tested returns of 27%

Deloitte India **Hyderabad, India**
Derivative Pricing and Risk Associate **September 2021 – July 2023**

- Analyzed exotic derivative pricing models involving Barrier, Cliquet, and Minimum Performance Basket options; Designed stress scenarios and validated the pricing model through sensitivity tests and intrinsic value analysis
- Calibrated default probabilities of loan books using logistic regression; improved prediction sensitivity by 39%
- Automated a pricing template for Value-at-Risk of a derivatives portfolio on python; reduced calculation time by 55.4% and automated report generation

Bank of Nova Scotia **New Delhi, India**
Data Analytics Intern **August 2020 – October 2020**

- Performed EDA of Gross Refining Margins (GRM) of the bank's energy related debtors using Pandas, Numpy, and Sklearn packages; Decreased variable selection process time by 40.2% and enhanced model selection criteria
- Predicted GRM using piecewise linear regression and improved back-test performance accuracy by 31.7%

COMPETITIONS & RESEARCH

IAQF Student Competition **Chicago, IL**
Team Lead **February 2024**

- Calibrated market implied probability distributions using S&P500 index options market data; Implemented short volatility strategy using butterfly spread and obtained annualized return of 21% over a period of 3 years

CME Trading Challenge **Chicago, IL**
Team Lead **October 2023 – November 2023**

- Executed mean reversion based spread trading strategy on ETF pairs and generated returns of 78% over a one month horizon; Placed in the top 25 teams among 1000+ participating teams

Optimal Prefetching using Markov Decision Processes **Sophia Antipolis, France**
National Institute for Research in Digital Science and Technology **June 2020 – June 2021**

- Published a white paper (Research Paper) on the optimal policy for prefetching web content into local cache modelled as a Markov Decision Process (MDP); Achieved a 17.9% improvement in hit-rate over greedy prefetching