Prabhuling Masoodi

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EDUCATION

Master of Science in Financial Engineering, University of Illinois at Urbana-Champaign **August 2022 - May 2024**
Coursework: Time Series, ML, Statistics, Financial Derivatives, Interest Rates, Options Trading, Stochastic Calculus GPA: 3.6/4.0

Bachelor of Engineering in Computer Science, Ramaiah Institute of Technology **August 2015 - June 2019**
Coursework: Algorithms, Data Structures, Operating Systems, Compiler Design, DBMS, Computer Networks. GPA: 3.9/4.0

SKILLS

Technical: C++, Python, Java, R, SQL, JavaScript, Pandas, Scikit-learn, PyTorch, TensorFlow, AWS, GCP, Financial Modeling, AMPL.
Math & Finance: Linear Algebra, Probability, Stochastic Calculus, Adv. Time Series, Options & Futures pricing, Fixed Income derivates.
Certification: Akuna Capital's invite only, **Options 201 (**Market Making and Volatility based Options Trading strategies).
Tools: R-Quant libraries, Excel, BigQuery, VertexAI, Bloomberg, Databases, Git, Visual Studio, Eclipse, XCode, Gurobi, WinDbg.

WORK EXPERIENCE

CME Group, **Quant Analyst Intern** | Chicago, IL, USA **May 2023 - October 2023**

- Secured the **runner-up** position in an intern **Algo trading hackathon** by developing a profitable futures trading strategy.
- **Large Trader Position Liquidation:** Created an efficient **liquidation strategy** tailored for **Portfolio Managers** handling substantial positions in **Fixed Income** markets. Utilised historical market data to analyse price and volume trends, employing machine learning models including **linear regression, random forest,** and **ridge regression** to forecast **mid-price changes** during liquidation. Developed a **test harness** for market data simulation and strategy evaluation, thereby enhancing expertise in **data analysis, market microstructure, order book dynamics,** and **portfolio management**.
- **Replication of "Time-Series Residual Momentum Strategies":** Leveraged **R** libraries (quantmod, xts, quantstrat, fPortfolio, PerformanceAnalytics) to evaluate various trading strategies through hypothesis testing of different **lookback periods**, **momentum-weighted** and **return-weighted** Portfolios. Utilised **Ken French's** data and validated using **Sharpe ratio.**
- **Backtesting of Volatility-Based Option Trading Strategy:** Designed and backtested a profitable Options trading strategy based on volatility, utilising Equity Options data from January 2020 to December 2021. Incorporated **implied volatility, VIX index**, and advanced risk management techniques to outperform the benchmark S&P index, validated through metrics such as Standard Deviation and Sharpe ratio.
- Utilized **Asymptotic Principal Component Analysis (APCA)** in R to analyze monthly returns of 40 NASDAQ and NYSE stocks (2022-2023). Identified key factors explaining **return variations** by extracting principal components and visualizing the results with a scree plot and time series plots of the **loading matrix**.
- Performed **factor analysis** on **monthly excess returns** of 10 U.S. stocks (1990-2003) using R. Implemented Principal Component Analysis **(PCA), maximum likelihood estimation**, and a constrained model based on industry sectors. Compared the three models to identify underlying factors explaining **return variations**.
- Developed an **LSTM model** for predicting the Market type (bear, bull, neutral) for **Fixed Income Futures** in the next second, based on parameters such as RSI, EMA, SMA and MACD with an **accuracy of 90%.**

Trellix (Formerly McAfee), **Software Engineer** | Bangalore, India **July 2019 - July 2022**

- Key contributor in **developing and debugging** critical features for Endpoint Security product, specialising in Threat Prevention, Web Control, and Firewall using **C++, Python, and Javascript**.
- Skilled **in low-level C++** debugging, **REST API** development, and **multithreaded** programming, with extensive expertise in Joint Threat Intelligence, Exploit Prevention, and Security Rule implementation.
- Acquired proficiency in Process Monitor and **Windows Debugger** for both **user-level** and **kernel-level** processes, while also streamlining deployment processes through **Python** scripting to significantly improve team efficiency.
- Comprehensive proficiency spanning the **development, testing, and deployment** phases of **cubersecurity** products.
- **Proactively resolved critical product issues** (memory leaks, crashes, deadlocks, BSODs) for improved performance, cost savings, and customer satisfaction. **Recognised** by the Director and SVP of Engineering for outstanding contributions.
- Assumed a **leadership role** and **mentored** two new team members, facilitating their seamless integration into the team and contributing to a successful product release in the quarter.
- **Collaborated** with **cross-functional** teams to resolve product issues, ensuring smooth **interaction** and **data exchange** between components.

Trellix (Formerly McAfee), **Software Engineer Intern** | Bangalore, India **February 2019 - July 2019**

- Spearheaded the **automation** of JTI build testing and analysis through the development of a **Python, SQLite3, and CSS-**based **framework**. Achieved a remarkable **70% increase** in tests run per iteration, while significantly reducing **effort** and **time** spent on analysing the data. Attained a profound understanding of the **building and testing processes**.

PROJECTS

- Developed a **Vector Autoregression (VAR)** model in R to analyze the relationship between monthly **US 1-year** and **3-year Treasury rates** (1953-2004). Estimated impulse response functions and **generated** n-step-ahead **forecasts**.
- Speech Enabled Visual Question Answering using LSTM and CNN with Real Time Image Capturing to assist the visually impaired. Implemented a **Python** application leveraging **Keras, TensorFlow, Pandas, Scikit-learn,** and **Kivy** libraries, achieving a high accuracy rate of **57%.**