TEJUS SETLUR

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EDUCATION

NEW YORK UNIVERSITY Brooklyn, NY
Master of Science in Financial Engineering, *GPA: 3.7/4.0* *Aug 2022 - May 2024*

JSS SCIENCE AND TECHNOLOGY UNIVERSITY Mysore, Karnataka, India
Bachelor of Engineering in Computer Science, *GPA: 8.4/10* *Aug 2016 - Aug 2020*

SKILLS

Programming Languages: *C++, Python, SQL, R, Scala, C, Excel VBA*

Analytical Engine and Tools: *Spark, Hadoop, Sqoop, Kafka, Airflow, Tableau, Excel, Alteryx, AWS / GCP*

Quantitative Finance: *Linear Algebra, Probability Theory, Statistics, Time Series Analysis, Portfolio Construction & Optimization, Stochastic Calculus, Option Pricing, Financial Computing, Valuation, Monte-Carlo Simulation*

Technical Skills: *Data Structures and Algorithms, Machine Learning, Deep Learning, Big Data Analytics, Data Base Management, Data Mining, High-Performance Computing, Operating System, PyTorch, TensorFlow, Kubernetes*

EXPERIENCE

NUMERAXIAL LLC, Manhattan, NY *Feb 2024 – May 2024*
Quantitative Developer Intern *[C++, Python, SQL]*

- Contributed to the implementation of a reinforcement learning-based trading agent, dynamically reallocating asset weights to adapt to regime shifts outperforming the market with Sharpe 1.2
- Executed portfolio optimization on ETFs with mean-variance optimization and deep learning algorithms, improving Sharpe to 1.5
- Created C++ algorithms to price options, including Asian options and arithmetic basket calls, and calculated all the Greeks
- Implemented bond valuation techniques and yield-to-maturity calculations and calculated risk metrics

ADVANCED PORTFOLIO MANAGEMENT LLC, Manhattan, NY *May 2023 – Aug 2023*
Quantitative Analyst Intern *[C++, Python, SQL]*

- Developed a risk management strategy by leveraging Hidden Markov Models (HMM) to identify and predict market regimes, improving strategy performance by 18%
- Built a ML-based bet sizing algorithm that reduced negative trades by 14% and leveraged several optimization techniques such as mean-variance and random matrix theory to identify the best performing one
- Established a pipeline for acquiring, experimenting, back-testing, and launching financial strategies, validating signals for investing using parallel programming to significantly reduce execution time by 40%
- Implemented multiple research papers involving concepts of probability, statistics, machine learning, and neural networks resulting in the development of a strategy that outperformed SPX with a Sharpe ratio exceeding 1

DANSKE BANK, Bangalore, India *Jan 2020 – Jul 2022*
Associate Software Engineer, Fraud Risk Management *[C++, Scala, Python, SQL]*

- Performed extract, transform, and load (ETL) tasks to store weekly incoming data with Hadoop, Kafka, Sqoop, and Spark
- Collaborated with the compliance team to design and develop logic to flag money laundering behavior on large transactional datasets; Identified precise scores for each criterion using statistical tests and quantitative modeling
- Enhanced the quality of Suspicious Activity Reports with sampling and probabilistic modeling to reduce false positives by 15%
- Engineered libraries in C++ and called it in different languages to boost execution time
- Automated and scheduled end-to-end workflow by designing and developing direct acyclic graphs on Apache Airflow and deploying them onto Openshift containers to reduce manual intervention and resource requirements by 19%

RESEARCH / ACADEMIC PROJECTS

An Optimal Strategy for Pairs Trading Under Geometric Brownian Motions *Jan 2024 – Mar 2024*

- Formulated and solved 2 Hamilton–Jacobi–Bellman (HJB) equations to establish the optimal trading policy for pairs trading;
- Threshold curves are determined as levels for initiating positions. Implemented for PG and KMB- 50% profit with 0 drawdown

Artificial Neural Network for Yield Curve Forecasting *(Github)* *Dec 2023 – Jan 2024*

- Acquired and generated 795 metrics affecting the Euro 3-month, 2, 5, 10, and 30-year bond yields. Performed linear regression, feature selection, multi-layered perceptron neural network with single-task and multi-task learning with different forecast periods
- Multi-task learning outperforms as the forecast window and bond tenure increase. Improved results by using Echo-State Networks

CME Commodities Trading Competition *(Top 25 teams)* *Jul 2023 – Oct 2023*

- Predicted price of WTI futures using statistical and machine learning methods with data like refinery output, interest rates, etc
- Traded on calendar spreads, supply chain bottlenecks, news analysis, and scalping on Energy and Metals

Beta Strategy for S&P 500 Stocks *Sep 2023 – Oct 2023*

- Investigated the alpha and beta values of all S&P 500 stocks from 2003 to 2023, segmenting the data into deciles. Created plots to visualize and identify shifts in behavior over time, highlighting the distinct characteristics and idiosyncrasies of each decile
- Implemented a long-short trading algorithm with weight rebalancing 15-20 days, resulting in a Sharpe ratio of 1.8