

TEJUS SETLUR

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EDUCATION

NEW YORK UNIVERSITY

Master of Science in Financial Engineering, *GPA: 3.7/4.0*

Brooklyn, NY

Aug 2022 - May 2024

JSS SCIENCE AND TECHNOLOGY UNIVERSITY

Bachelor of Engineering in Computer Science, *GPA: 8.4/10*

Mysore, Karnataka, India

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

ADVANCED PORTFOLIO MANAGEMENT LLC, Manhattan, NY

May 2023 – Aug 2023

Quant 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

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 it 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 key levels for initiating and closing pairs positions, with fixed transaction costs
- Provided a closed-form solution for the optimal pairs-trading problem. 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

Impact of Quarterly Earnings Report on Stock Price (Github)

Nov 2023 – Dec 2023

- Established an object-oriented design and developed C++ program that dynamically downloads 90 days before and after quarterly earnings for all Russel 3000 stocks; Optimized code using low-latency concepts to keep runtime of project below 2 min.
- Implemented bootstrapping and calculated metrics like Abnormal Returns (AR) against IWV, Average AR, and Cumulative AR and STD; Classified the 3000 stocks into 3 groups and plotted graphs to show expected and actual change in price.

Pricing Arithmetic Basket Call in C++ (Github)

Oct 2023 – Nov 2023

- Formulate the pricing model with parameters such as underlying asset values, strike price, time to maturity, volatility, and interest rates; Calculate the initial option price using the Black-Scholes Formula
- Compute deltas by perturbing each underlying asset value, re-evaluating the option price, and determining the sensitivity of the option price to changes in each underlying asset value, ultimately presenting the initial option price and individual deltas

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