

Deeraj Kakumani

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EDUCATION

- **University of Illinois Urbana Champaign** August 2022 - May 2024
Master of Science in Statistics ————— GPA: 4.00/4.00
- **Indian Institute of Technology Madras (IITM)** July 2016 - May 2020
Bachelor of Technology in Electrical Engineering —GPA: 8.85/10.00

Work Experience

- **Research Statistical Analyst - Data Modeling** August 2021 - June 2022
IIT Madras, Prof. Radhakrishna Ganti
 - Led the creation of a stochastic model for 5G wireless channels, improving comprehension of network behaviors across different environments. led to a 15% improvement in model accuracy for urban and rural layouts.
 - Developed 25 probabilistic models, focusing on dynamic user behavior and environmental interactions., similar to analyzing market conditions and investor behaviors in finance.
 - Applied linear algebra techniques to tackle correlation between models, ensuring they reflect real-world scenarios. This work parallels quantitative modelling by developing predictive models that simulate complex scenarios.
- **Machine Learning Engineer - Qualcomm** June 2020 - May 2021
 - Enhanced power efficiency of neural processing units, reducing energy consumption by 20%, aligning with the quant role by optimizing system performance—akin to refining financial models for better market prediction and efficiency.
 - Automated data extraction and validation processes with Python, demonstrating proficiency in increasing data processing efficiency by 30%, essential for developing and implementing quantitative algorithms.
- **Research Intern - Qualcomm** May 2019 - July 2019
 - Leveraged advanced optimization techniques to enhance low-latency and code density of execution code, achieving 25% quicker execution speeds and reduced memory usage.
 - Designed a parallel processing module for system validation, improving data throughput by 40% and demonstrating capability in managing complex, multi-threaded algorithmic operations, relevant for creating robust financial models and algorithms.

Quantitative Finance Projects

- **Trading Strategy Development - Equities [GitLab]**
 - Developed and implemented multi-faceted trading algorithms on highly liquid equities, including the Mid-Price Imbalance Strategy and Momentum Market Making. These strategies were rigorously backtested and optimized to ensure effectiveness under various market conditions.
 - Analyzed equities using time series data from 1-ns intervals, aggregated into 1-s intervals. Applied machine learning techniques to create signals and developed LSTM and Transformer models for accurate financial forecasting.
- **Processing Trades in an Order Book Consisting of Bid-Ask Customer Orders**
 - Engineered a system to process trades within an order book, implementing priority queues for bid and ask orders to facilitate efficient trade matching.
 - Developed algorithms to update customer balances and calculate the effective number of processed trades, enhancing the system's operational efficiency.
- **Predicting Company Sectors from 10-K Filings Using Machine Learning**
 - Leveraged NLP techniques to convert unstructured 10-K filing texts into meaningful data representations, using averaged word embeddings for enhanced accuracy.
 - Conducted a comparative analysis of clustering and classification algorithms (K-means, Logistic Regression, Naive Bayes), achieving an 87% accuracy in sector prediction—a 10% improvement over baseline models.

Skills

- **Certifications:** Bloomberg Market Concepts, Akuna Capital 101 Options Course.
- **Programming Languages:** Python, C++, C, R, SQL and Matlab.
- **Technical Proficiencies:** Strategy Studio, MS Excel, VBA, Google Cloud Platform, Google Colab, Jupyter Notebook, Linux, L^AT_EX, RStudio, and MS Office.
- **Quantitative Skills:** Probability and Quantitative reasoning, Equity Financial analysis, Linear Algebra, Algorithmic trading strategies, Back testing, Time series forecasting, Statistical analysis, and Financial modeling.

Leadership & Involvement

- **Teaching Assistant:**
 - Served as a Teaching Assistant for a graduate-level course, 'Statistical Learning,' where I facilitated learning through engaging discussions and support during office hours.
- **Course Assistant:**
 - Course Assistant for both 'Advanced Bayesian Analysis' and 'Applied Bayesian Analysis,' where I was tasked with developing comprehensive solutions to intricate problem sets and assignments."