Kunaal Kumar

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EDUCATION

The University of Texas at Austin   Graduation Date: May 2020
B.S. Computer Sciences, Economics Minor
Relevant Coursework: Algorithms, Computer Vision, Artificial Intelligence, Data Mining, Cloud Computing, Data Structures, Computer Architecture, and Operating Systems

PROFESSIONAL EXPERIENCE

Lofty AI – *Remote Software Engineering Intern*   April 2020 - Current
- Worked on building a classifier to determine which customers are most likely to pay for the product.
- Currently working on web scrapers to add more real estate listings to the core product.

Faceboook – *Software Engineering Intern*   May - Aug 2019
- Interned on the Core Single Review Tool (SRT) team under Community Integrity.
- Created an internal tool to help other teams debug why their SRT API calls are getting throttled.
- Built data pipeline using SQL and Python to aggregate throttling events, identify spikes in usage, collect and rank the top stack traces associated with the throttling errors, and write them to a database.
- Used PHP/Hack and React to build a visual tool to display these events, along with other diagnostic information. Used the tool to map out a solution to a recurring bug that causes between 3 and 6 million throttling errors per day.

Amazon – *Software Development Intern*   Sep - Dec 2018
- Worked on the Network Load Balancing team under AWS EC2.
- Created a resource auditor; the program periodically reads snapshots of all necessary resources at a predetermined interval. By converting all resources into a JSON representation, resources across multiple Amazon regions were compared to make sure that they were in sync. The program collected metrics and issued alarms in the event that errors exceeded a certain threshold.

Unchained Capital – *Software Engineer Intern*   May – Aug 2018
- Worked as a full stack developer to update, maintain, and add features to their web app.
- Built a backend framework using wkhtmltopdf to extract customer information from the database and automatically generate relevant legal documents.
- Worked on connecting the backend with Twilio in order to increase application security; numerous browser attacks are capable of manipulating bitcoin addresses when served on a webpage. By sending users confirmations of the relevant bitcoin addresses, they can be certain that they're sending money to the correct address.

PROJECTS

Algorithms Researcher at Texas Spacecraft Laboratory   Jan - May 2018
Skills*: Python, Tensorflow, OpenCV*
- Worked on a computer vision system for the SEEKER satellite mission, which launched in April.
- Tuned Tensorflow training hyperparameters (including adding dropout and L2 regularization) in order to decrease overfitting and decrease the model's false positive rate.
- Extracted features from the image feed in order to characterize which postprocessing methods should be used to contour the satellite and find its centroid. Mainly worked on extracting local binary pattern histograms of each image as a method of categorizing the overall textures present.

Stock Portfolio Optimization Tool
Skills*: Python, Scipy*
- Created a program that uses gradient descent to maximize the Sharpe ratio (maximizes returns adjusted for risk) of a given set of stocks.
- Program takes stocks to be considered as input, initializes a random starting point, and then minimizes the negative Sharpe ratio of the overall portfolio with the constraint that the stock distributions must add up to 1.
- Returns the proportion of each stock that you should buy. Only uses historical data without directly making predictions on the future Sharpe ratios.

RELEVANT SKILLS

Programming languages: Java, Python, HTML/CSS/JavaScript
Technical Skills/Libraries: Git, React, Bootstrap, Node.js

ACTIVITIES

Undergraduate Computational Finance Director   February 2018 - Present
- Give multiple trading strategy pitches each semester based on both fundamental analysis and quantitative signals.
- Latest pitch involved using a Kalman filter to estimate the spread between two cointegrated stocks to perform a pairs trade.
- The responsibilities of one of the directors include handling logistics, ideating trading strategies, and assembling and managing a team to backtest those strategies.