Reet Kothari

DATA ENGINEER VOLUNTEER @ DFG
SOFTWARE ENGINEER @ HSL
CS UNDERGRADUATE @ UW

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EDUCATION

Bachelors of Science in Computer Science
University of Washington - Seattle
GPA: 3.68
Graduation - March 2024

WORK EXPERIENCE

Data Engineer Volunteer **10/2023 - Present**
Develop For Good, Remote
- Architected and managed ETL pipelines using AWS Glue and PySpark to expedite access to pivotal strategic nested data hosted on DynamoDB.
- Established an efficient student reporting system through a data warehouse hosted on AWS Redshift to improve teacher interaction with the application..

Software Engineer **09/2023 - Present**
Husky Satellite Lab, University of Washington
- Setup platform for high altitude testing (PHAT-3) to support the launch of HuskySat-2 (a CubeSat initiative by the lab).
- Built a datalink system that supports packaging, encoding, and decoding data.
- Ideated protocol for satellite movement to support a mockup star tracking camera.

Embedded Software Design Intern **04/2023 - 08/2023**
Perasia Technologies LLC, Okemos MI (Remote)
- Trained a convolutional neural network on the MIT-BIH ambulatory ECG dataset to detect Atrial premature beat(A), Premature ventricular contraction(V), Left(L) and Right(R) bundle branch block beat, and Normal Beat(N) in ECG signals.
- Attained 99.4% test accuracy and used model to recognize Arrhythmia patterns.
- Improved the wave R-peak detection by 10% through bandpass, derivative, squaring, and moving window integration filters, and performed heart rate variability analysis.
- Spearheaded a team of five engineers to build a product around the classifier.
- Streamlined productivity by hosting a FastAPI on AWS Lambda for the frontend engineer to query data stored on the S3 bucket and DynamoDB.
- Enforced AWS IoT core rules for preprocessing and storing data in the S3 bucket.

Cybersecurity Research Intern **07/2022 - 09/2022**
Siemens Technologies and Services Pvt. Ltd., Bangalore India
- Assimilated research papers and Siemens Intranet resources to explore security exploits through firmware updates in SIMATIC controllers.
- Proposed a technical report that answered the questions: “What files are changed during updates? How can you inject files during an update? How do you run malware stealthily on a system?”

TEACHING EXPERIENCE

First-Year Interest Group Leader **09/2022-12/2022**
University of Washington

- Led weekly seminars for 24 freshmen on topics like the credit and registration system, career and learning resources on campus, and financial management to provide a comprehensive guide on successfully transitioning to college.
- Devised interactive and diverse modules with a focus on inclusivity for international students, first-generation students, and students from different minorities.

REPORTS

Decoding Corporate DNA: Unraveling the Predictive Power of Balance Sheet Factors and Macroeconomic Conditions on Long-Term Market Performance Link
Pandas, Scikit-learn

- Illustrated predictive power of features such as Number of Employees, Total Liabilities, Stockholders Equity, Unemployment Rate, Volatility Index, Proposed Share Price, and Proposed Share Volume at the time of a company going public, in determining a net gain in the future price of the company's Initial Public Offering.
- Web scraped to create dataset using Nasdaq and Yahoo APIs, and government filings.
- Dataset included IPOs between 2017 and 2022 to improve utility in current market.
- Employed linear models like Logistic Regression and SVM, and non-linear models like XGBoost and Random Forest, to make investment decisions in a simulated environment, yielding a gain of 58% on initial investment.

Speech-based Intoxication Detection Algorithm Link
Spark, Keras

- Extracted 6373 static functional features from audio samples of sober and intoxicated subjects (Blood Alcohol Content > 0.05%) to assess predictive power of these features.
- Utilized the BAS ALC dataset that includes 15180 german samples with a fair split on age and gender.
- Achieved a 60% accuracy with a deep Convolutional Network with huge strides to reduce dimension down to the binary output sober or intoxicated

PERSONAL PROJECTS

Garbage Classifier Link
PyTorch

- Trained a deep network on a 12-class kaggle garbage dataset to classify images for waste management.
- Leveraged ResNeXt blocks to support multiple model layers and train for multiple epochs while countering the vanishing gradient problem.
- Scored an 88.7206% test accuracy and integrated augmentations to enable model performance on custom user images.

Code Racer
MongoDB, Socket.IO Link

- Created a multiplayer type racing platform that supports simultaneous gameplay for multiple parties through socket connections.
- Enacted Java Prompts to improve syntactic knowledge, typing speed, and styling etiquette of the user.
- Presented a hypothetical solution to efficient and professional programming practices across a team.

Sharded Linearizable KV-Store (CSE 452 UW) Link
Java

- Developed a linearizable key-value store that utilizes Paxos servers to create a load-balancing, highly fault-tolerant distributed systems that uses a two-phase commit protocol to support multi-key transactions.

PERSONAL PROJECTS (CONTINUED)

Sudoku Universe Link

REST, MongoDB

- Constructed an API to solve Sudoku puzzles and generate new ones with varying difficulties ranging from easy to very hard.
- Expanded on the API with a platform that manages user authentication, activity, and interaction.

Racial Justice Link

Dplyr, Shiny.R, GGPlot

- Constructed an API to solve Sudoku puzzles and generate new ones with varying difficulties ranging from easy to very hard.
- Expanded on the API with a platform that manages user authentication, activity, and interaction.

TECHNICAL SKILLS

- **Languages:** Java, Python, JavaScript, C++, C, R
- **Data Science:** PyTorch, Tensorflow, Apache Spark, Tableau, Pandas, Scikit-learn
- **Database:** MySQL, MongoDB, DynamoDB, Cassandra
- **Web Development:** Node.js, React, Vue, REST, GraphQL, Socket.IO, Express
- **Miscellaneous:** AWS, Jira, Docker, Github Actions

AWARDS

- **Au'20, Sp'21, Su'21, Au'21, Wi'23, Sp'23** Dean's List, University of Washington
- **2022** Best Use of Data, NASA SpaceApps Hackathon Seattle

LANGUAGES

- **English:** Professional Proficiency
- **Hindi:** Native Speaker
- **French:** Limited Working Proficiency

REFERENCES

Tim Althoff
University of Washington
Associate Professor
althoff@cs.washington.edu

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Perasia Technologies LLC
CEO
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