

Prerak Patel

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Professional Experience

Amazon

New York, New York
July 25, 2022, – Present

Software Engineer

Artificial General Intelligence – Project Hyperion

- Developed **Hyperion**, an internal multimodal interface that serves as a gateway for Amazon employees to harness large language model (LLM) technology, while providing scientists a platform for model training and model improvement through live user interactions.
- To ensure operational excellence and scalability, refactored business logic for LLM model calls from the frontend to the backend. Developed and implemented a seamless conversation streaming solution using RxJava and Rx Flowable, enabling efficient handling of live asynchronous responses from the backend to the frontend.
- Designed and implemented reusable UI components throughout Hyperion's frontend.
- Addressed UI bugs and changes in functionality of features based on intent brought upon by the Product Owner.
- Onboarded numerous LLM models onto Hyperion including 3P models such as Claude, Sonnet, Titan Text Premier, Titan Image generator, Meta Llama models, and Stability's SD3.
- Implemented features for document and image inferences, conversation sharing, and feedback reporting, supporting effective model training and evaluation.

Alexa Info – Monetization

- Engineered the monetization experience for Alexa weather team which transformed advertising revenue from \$0 year over year (YOY) to ~\$5.5 million YOY.
- Designed and created a robust monitoring and alarm system to proactively identify and alert on service issues, ensuring high availability and optimal performance using AWS.
- Implemented feature gates to control gradual roll out of new functionalities, ensuring a controlled and monitored deployment process while minimizing user disruptions
- Decreased Alexa Echo's weather latency by implementing lazy loading for efficient load times.
- Created integration tests and load tests as part of the CI/CD pipeline to maintain code quality and safeguard against bugs.
- Created multiple UI experiences in accordance with product requirements to display monetization content for customers onto Alexa Echo Screens.

Programming Projects

Fast-Trajectory-Replanning – Python

- Developed an AI Agent tasked to find the shortest path to a target position in a grid-world without knowing its environment. The environment contains blockers which hinder Agent from using certain paths. Implemented repeated forward A* search, repeated backwards A* search, adaptive A* search algorithms, and data structures such as priority-queues (min-heap), matrices, hash-maps, sets, etc. Agent found shortest path to target 100% of times for any simulated environment if a path to target existed.

Face and Digit Classification – Python

- Created a Machine Learning program in Python which utilizes classification algorithms (Perceptron, Naïve Bayes, and K-Nearest Neighbors (KNN)) to detect faces and classify digits based on the image features. Each classification algorithm classified digits and detected faces with accuracy > 80%.

Git – Socket Programming – C

- Created a program in C which would emulate applications such as GitHub through a server and client relationship. The clients would be able to connect with the server and perform actions such as (but not limited to) “push”, “pull”, and “commit”. The server would be able to read these actions and communicate with client. Applied multithreading to ensure that many clients can connect to one server. Implemented safety procedures such as mutex locks to ensure server integrity and proper git mechanics.

Skills + Involvement

- **Languages:** Python, C, Java, JavaScript/HTML/CSS, Git, SwiftUI, Scala, SQL
- **Frameworks & Libraries:** Spring, NumPy, Pandas, Matplotlib, Seaborn, pygame, Node.js, React.js, Next.js
- **Tools:** Git, Linux, AWS (Route53, EC2, S3, Lambda, IAM, Amplify, DynamoDB, Athena, etc.), Jira, CI/CD, Vim
- **Competitions:** Salhotra - Quantitative Trading Challenge, Accenture Consulting Case Competition, Bender Trust Equity Research Competition, Aim2Flourish Publication.

Education

Rutgers Business School

Bachelor of Science in Computer Science & Finance
Dean's List: all semesters

New Brunswick, New Jersey

Graduation: May 2022
GPA: 3.7/4.0