

Prerak Patel

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Professional Experience

Amazon

New York, New York

Software Engineer II

July 25, 2022, – Present

Artificial General Intelligence – Nova Playground

- Developing Nova Playground, an internal multimodal interface through which Amazon employees can experience the capabilities of large language models available on AWS Bedrock.
- Implemented the backend API for asynchronous event streaming using RxJava, Flowables, and Atomic data types.
- Designed and implemented the use of AWS S3 pre-signed URLs to efficiently process large media data for model inference, including support of the s3 data as part of the conversation history.
- Implemented the backend API supporting image generation models and led the implementation to onboard different image generation request types such as inpainting, outpainting, background removal, and image conditioning.
- Onboarded numerous LLMs from Amazon Nova, Anthropic Claude, and Meta Llama.
- Implemented mechanisms to support the training and betterment of the Nova models.
- Addressed UI bugs and changes in functionality of features based on intent brought up by Product team.

Software Engineer I

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 and to proactively identify and alert on service issues, ensuring high availability and optimal performance.
- Implemented feature gates to control gradual roll out of ad-related functionalities, ensuring a controlled and monitored deployment process while minimizing user disruptions
- Decreased Alexa weather latency by implementing a lazy loading solution to provide users with efficient load times.
- Created integration tests and load tests as part of the CI/CD pipeline to maintain code quality and safeguard against bugs.
- Reduced time to debug issues by creating parser rules with Regex for log streams enabling advanced filtering.
- Created multiple UI experiences in accordance with product requirements to display monetization content for customers.
- Deployed AWS resources following Infrastructure as Code (IaC) practices, utilizing tools like AWS CloudFormation and AWS CDK for streamlined and consistent provisioning and management of cloud infrastructure.

Programming Projects

Fast-Trajectory-Replanning

- 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

- 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

- 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, C++
- **Frameworks & Libraries:** Spring, NumPy, Pandas, Matplotlib, Seaborn, PyGame, Node.js, React.js, Next.js
- **Tools:** Git, Linux, AWS, 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