Alexander Mao

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Experience

Amazon

Software Development Engineer – Alexa Primitives *Dec. 2022 – Mar. 2024, New York, NY*

- Developed an middleman API using Java that takes complex payloads generated using a large language model based on customer input, to trigger Alexa Smart Home devices features. API enabled triggering of multiple Alexa Smart Home devices and multiple Smart Home features using a single command, removing one device/one feature limitations of existing features.
- Developed a transformer microservice to convert JSON data between DFI (Device Facing Interface) and AFI (Application Facing Interface) formats, enabling bidirectional communication between Alexa software and Alexa Smart Home devices with Primitives capabilities.
- Implemented a backend service enabling customers to publish of custom Alexa Smart Home capabilities. This feature allows third-party partners to define and upload bespoke functionalities as Primitives capabilities for their products that are integrated with Alexa Smart Home. Utilized Java and AWS (DynamoDB, SQS/SNS).
- Achieved an 80% reduction in running costs for the Alexa Smart Home state quality service, which generates quality metrics gauging the consistency of states reported by Alexa Smart Home devices. Accomplished this by documenting legacy code, analyzing high-cost AWS services, and collecting/triaging existing issues through introducing a dead letter queue.
- Led operational initiatives to improve integration and load testing reliability for Primitives capabilities, including monthly events to simulate peak loads. Analyzed and fixed end-to-end test errors, improving integration and load test reliability from 20% to over 90%.

Software Development Engineer – Halo Multimodal Applications *Aug. 2021 – Dec. 2022, Sunnyvale, CA*

- Developed core features for Smart Alarms such as processing sleep states and sending alarm triggers to Alexa utilizing Java and AWS (Lambda, DynamoDB, SNS/SQS, Glue, Kinesis, API Gateway).
- Set up microservices essential for Halo Glow's Smart Alarms functionality, which dynamically awaken users based on their sleep pattern data using AWS and CDK (AWS Cloud Development Kit) for infrastructure as code.
- Collaborated with UX/UI team to design and develop multimodal experiences, in order to visually display Alexa Halo health data on Alexa Show devices using APL (Alexa Presentation Language).

Software Development Engineer – Alexa for Halo *July 2020 – Aug. 2021, Sunnyvale, CA*

- Designed and implemented core backend features and microservices for an Alexa backend skill supporting Amazon Halo using Java. Enabled Alexa to be compatible with wearable devices and software for monitoring and improving customer health.
- Implemented backend support for tonal health data integration with Alexa, utilizing a Lambda transformer written in TypeScript and GraphQL for efficient data processing.
- Developed feature for group-based feature filtering, enabling subscription-based access to different subsets of specific features for customers using Java.
- Drove operational initiatives for Alexa support during launch of Amazon Halo product.
- Implemented mobile support to enable Halo features in Alexa, enabling functionalities such as data deletion and DSAR requests. Utilized React Native, TypeScript, and DynamoDB for development.

Apple

Software Development Engineer in Test – IMG Connected Media *Sept. 2019 – July 2020, Cupertino, CA*

- Built testing libraries in Python and JavaScript for integration and automation testing of iOS features, focusing on Carplay and Airplay support. Additionally, established a test harness to facilitate CI/CD pipelines using Python.
- Developed Python scripts for operating physical robot arms for handling phones, TV remotes, and CarPlay headunits in for end-to-end testing in lab environments.
- Designed comprehensive test plans and determined coverage for the implementation of new CarPlay and AirPlay functionalities in both iOS 14 and iOS 15.

Education

University of California, Berkeley *Aug. 2015 – May 2019, Berkeley, CA*

B.A. Computer Science

Technical Skills

Languages: Java, Python, JavaScript, TypeScript, Kotlin, SQL, GraphQL
Frameworks: JUnit/Mockito, Android Java SDK, Spring, React, Node.js, Flask
Developer Tools: AWS (Lambda, DynamoDB, RDS, S3, Kinesis, SNS/SQS, etc.), Git, Redis
Libraries: Guava, Jackson, pandas, NumPy, Matplotlib