

# JOSHUA KO

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## EDUCATION

### San José State University

San Jose, CA

B.S. Computer Science

Expected Graduation: Dec 2026

- Relevant Coursework: Intro to Programming, Intro to Data Structures, Intro to Computer Systems, Data Structures and Algorithms, Object-Oriented Design, Computer Architecture

## EXPERIENCE

### Software Engineering Fellow

July 2024 – Sep. 2024

Headstarter AI

- Built and deployed 5+ AI apps using **ReactJS**, **NextJS**, **Firebase**, **OpenAI**, **AWS**, **Pinecone**, **StripeAPI**, **CI/CD**, **Git**
- Developed projects from **design to deployment** in team of 3 engineering fellows

### Software Engineering Intern

June 2024 – Aug. 2024

San Jose State University - Software & Computer Engineering Society

- Optimized **video caching** for **Dockerized streaming server** in **Python**, implementing preemptive cache downsizing to prevent cache overflow and ensure efficient cache management before streaming to **RTMP media server**
- Added custom **Prometheus metrics** to monitor **API data rate**, **cache performance**, and **HTTP requests** for remote streaming server; utilized **PromQL** for metric queries and added **Grafana panels** for **real-time data visualization**
- Refactored **Express.js endpoint** to secure print requests, implemented **server-side validation** to enforce print limits and update print count, centralized print request logic to backend, preventing **unauthorized access**
- Designed and implemented comprehensive **unit tests** for the updated API endpoint using **Mocha**, **Chai**, and **Sinon**

### Undergraduate Research Assistant

Jun 2024 – Aug. 2024

San José State University - Dr. Robert Chun

- Mentoring high school students in research projects on potentials of a **multimodal College Major Assessment Chatbot** using **OpenAI API's chat completion models** compared to traditional questionnaire interest profilers

### Undergraduate Research Assistant

Sep. 2023 – May 2024

San José State University - Project Engineering Success Program

- Participated in a collaborative research project investigating current application and limitations of **AR/VR/XR technology** in university education through the **Meta Quest 3**

## PROJECTS

### Ginder | *Next.js, React, TypeScript, GitHub OAuth, Octokit, Flowise, Drizzle ORM, Cloudflare (Workers, Vectorize, D1, KV, AI)*

- Led frontend development and key integrations for Ginder, a **personalized chatbot** enabling developers to discover **Open Source repositories** based on their GitHub repository metrics, skills, and interests.
- Jointly developed **LLM orchestration** flow using Flowise for personalized recommendations and integrated the **WebSocket protocol** for low-latency, real-time response streaming, enhancing recommendation accuracy and user experience.
- Implemented **GitHub OAuth** authentication for Octokit to fetch repositories for analysis, summarization, and **vector embeddings** with **Cloudflare Vectorize**, enabling precise similarity search against Open Source projects
- Worked in 3-person team to deploy app on **Vercel** with **Cloudflare serverless functions**, ensuring accurate real-time recommendations

### Pantry Tracker | *Next.js, React, TypeScript, Firebase*

- Deployed a **full-stack web application** on Vercel using Next.js, React, and Firebase, implementing **user authentication** and **real-time pantry inventory management** with **CRUD operations**
- Implemented **recipe generation feature** using **OpenRouter API** with **Meta's LLaMa 3.1 model**, to prompt engineer recipe suggestions based on selected ingredients, enhancing the app's utility.
- Designed and implemented **responsive UI** using **Material-UI** components, featuring **search functionality** and **data export options** (CSV/PDF), resulting in a user-friendly interface accessible across devices.

## SKILLS

**Languages:** Python, Java, JavaScript, TypeScript, MIPS Assembly

**Frameworks:** React.js, Node.js, Express.js, Next.js, Flask, FastAPI

**Developer Tools:** Git, Docker, SQLite, Prometheus, Grafana, Selenium, Firebase, Vercel, Postman