

Education

College of Computer, Mathematical, & Natural Sciences, University of Maryland
B.S. in Computer Science, Minor in Statistics

College Park, MD
Spring 2023

Work Experience

Peloria, Artificial Intelligence Research Group

Fullstack Engineer

Washington, DC

February 2024-Present

- Engineered a WebGL-based real-time rendering pipeline to visualize historical, biweekly satellite imagery across 70 regions of interest, processing over 300GB of data. Built an image processing server to convert and compress large geoTIFF images from Google Earth into optimized PNG formats, significantly enhancing rendering speed and performance in the browser. Implemented a custom caching mechanism to avoid redundant and expensive queries, ensuring smooth, real-time user interactions.
- Developed dynamic dashboards using React and D3, along with an internal GeoJSON SVG library, to visualize regional data (crime, migration, birth rates), enhancing data presentation and insights.
- Collaborated with World Bank to build APIs and infrastructure tailored to client-specific needs, improving data accessibility and utility.
- Developed web crawler and ETL pipelines, utilizing Llama 3.1, to process language data and build migration prediction models.

Learn Prompting, eLearning Platform for Prompt Engineering

Lead Fullstack Engineer

College Park, MD

December 2023-May 2024

- Spearheaded the migration of a Webflow proof of concept to Next.js, optimized SEO, and configured CI/CD pipelines with Vercel and error-tracking tools (Posthog and Sentry), enhancing performance, scalability, and workflow efficiency.
- Created transpiler to automate migration of existing prompt engineering courses from markdown to MDX
- Developed and deployed a RAG chatbot and an LLM playground for interactive prompt engineering learning, and implemented a robust authentication system with rate limiting, whitelisting, and blacklisting features.
- Created an accessible and responsive internal component library using shadcn and Tailwind CSS, and automated build processes and workflow management, including GitHub Actions-based integration testing.

Fannie Mae, Single Family Analytics, Distressed Assets Team

Data Science Intern

Washington, D.C.

June 2021- August 2021

- Collaborated with business partners on Loan Review team to streamline workflow. Reduced loan review time by 40% by creating dedicated web app for loan processing, using RShiny and MSSQL, instead of tracking through email.
- Authored RMarkdown with year-to-date analysis on length of time foreclosed properties are held by Fannie Mae. Designed Tableau dashboards to validate modeled repair costs of foreclosed properties using business checks.
- Worked with Enterprise Data team to productionalize changes to their tool by updating back-end Oracle & Netezza databases and leveraging Git version control.

Maryland Code Collective

Fullstack Development Intern

Washington, D.C.

January 2021-April 2021

- Developed Python based Web Scraper, used on various freelance websites (ex: Upworks.com), to automate the process of obtaining relevant contracts, based on criteria provided by the Project Managers.
- Engaged in cross-functional collaboration with UX/UI designers and backend engineers to deliver cohesive and visually appealing frontend dashboards, using React and Typescript.
- Migrated all existing architecture into containerized microservices, using Docker. Used GitLab to develop a CI/CD pipeline, to test, build and deploy containerized applications automatically on existing EC2 infrastructure.

Projects

Sanitize

Individual

July 2023-Present

- Typescript, Redux, Tailwind, NodeJS, Express, Redis, SageMaker, Docker, EC2, Selenium, FFmpeg, Whisper, GPT, Python, Git
- An AI content moderator, where users upload media and explicit content is automatically filtered based on content moderation policies of intended media platform (i.e. YouTube, Twitch, Twitter)

Features include:

- Dockerized microservice architecture using Nodejs. Authentication using OAuth2.0 and MongoDB as a User DB. Rate limiting with Nginx. Auto-scaling SageMaker inference.
- A Twitter bot, automating translation of media from any source to target language using entirely web-scraping.

Social Trends

Individual

April 2022-December 2022

- React, NodeJS, Express, Amazon RDS, Python, Selenium, Docker, Redis, PostgreSQL, Git, Linode
- A scalable Web Crawler that aggregates data from TikTok. Allows users and advertisers to follow social trends, identify most engaging influencers, best posting times, average description lengths and most used hashtags. Aggregated more than 7 million unique posts and users in a span of 2 weeks.

Features include:

- Dockerized Selenium Web Scraper, with autoscaling to maximize number of crawlers based on compute resources.
- Redis based Distributed Task Queue for worker instances to pull jobs. Persistent and distributed storage in AWS RDS.
- Dashboard created with React, showing aggregated User and Post metrics, with a write-back cache for larger queries using Redis

Skills and Interests

Languages: TypeScript, JavaScript, Next.js, Java, Python, C, C++, SQL, R, Tableau, HTML/CSS, Go, Zig, Rust

Frameworks: React, Node.js, Next.js, Express, Redux, PyTorch, Numpy, TensorFlow, OpenCV, OpenMP, Selenium, Flask, FFmpeg

Tools: Docker, Git, GitLab, AWS, Azure, VS Code, Slurm, Tableau