Thomas Kou

2A Software Engineering at University of Waterloo

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SKILLS

Languages JavaScript, Java, Python, C++, C, HTML, CSS, SQL
Tools Node.js, React, Redux, Sass, Express.js, React Native, jQuery, Git, Adobe Creative Cloud

EXPERIENCE

Prizm Media Inc. Junior Web Developer • Vancouver, BC — Apr. 2019 – Aug. 2019

- Built a web/mobile prescription ordering service using a **Node.js/Express** backend and **React/Redux** frontends.
- Revamped legacy web pages by creating responsive, scalable components using **React**, **Redux**, and **Sass**, resulting in an approximately **200% increase** in load speed and reducing frontend development time by **over 70%**.
- Created functionality for users to find/save discount cards using **MongoDB** and **REST API** endpoints.
- Queried, parsed, and memoized responses from GoGoMeds and ScriptSave APIs, facilitating over **15x greater computational efficiency** in generating price listings.
- Refactored obsolete PHP-based backend to a **Dockerized Node.js monorepo** that adopts an adapter design pattern, allowing for efficient reuse of modular API wrappers.
- Automated cross-browser continuous integration testing of user flows using **LambdaTest**, **Nightwatch**, and **CircleCI**, saving over 15 hours per week.

PROJECTS

React-Snake — Aug. 2019

- Created a web-based Snake game in **TypeScript**, **React**, and **Sass**, with game data stored in a local **Redux** store.
- Saved and fetched high scores to/from a **Firebase** server, allowing scores to be submitted and displayed to all other players.
- Deployed the **Node.js**-based app to an **AWS Amplify** server.

LED Matrix Audio Visualizer — Nov. 2018

- Developed a **Python** program to visualize microphone or music data live on an LED matrix using a **Raspberry Pi**.
- Serialized audio information in real time using Fourier analysis, allowing for parsing of different audio frequencies.
- Used a cloud-based **MQTT** messaging protocol to send decoded audio information to the Raspberry Pi.
- Implemented **multithreading** to simultaneously analyze and transmit data, fixing audio stuttering and latency issues.

Markov Chain Sentence Predictor — Nov. 2018

- Built a **Java** program that predictively generates sentences modeled after user input.
- Devised an algorithm that builds a **Markov-chain** database based on inputted text, then outputs words in succession based on the probability of them appearing.

Gameboy Emulator — Ongoing

- Began development of a **low-level emulator** for the Nintendo Gameboy.
- Created an **interpreter** for the Zilog Z80 CPU's **instruction set** based on opcode tables, schematics, and other documentation.

EDUCATION

University of Waterloo • Candidate for Bachelor of Software Engineering (BSE) 2018 – 2023 (expected)

- Math & Engineering Dean's Honours Lists – GPA 3.95/4 (90.7%)