Kevin Mao

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Technical Skills

Programming Languages: C/C++, Java, Kotlin, Javascript, React.js, HTML/CSS, XML, VHDL, Python, SQL
Tools/Libraries: pandas, NumPy, Matplotlib, MySQL, Git, Bitbucket, STM32Cube, Figma, Vercel, RESTful APIs
Relevant Courses: Programming (C++), Project Studio, Digital Circuits, Linear Circuits, Engineering Economics

Experience

Firmware Developer November 2023 – Present
UWaterloo Formula Electric *Waterloo, ON*

- Developed hardware-in-the-loop (HIL) simulations with **Python** to validate electric vehicle components and determine expected behavior of unit and **RTOS**
- Conducted in-depth examination of firmware in **C** and schematics to identify source variables and functions
- Used **STM32CubeMX**, **VirtualBox**, and **Vagrant** for mapping correlation between code and firmware inputs
- Currently developing an RTOS-based dashboard display system for the vehicle

Mobile Developer October 2021 – May 2022
Game of Apps *Vancouver, BC*

- Utilized **Java and XML** within **Android Studio** to develop functional and visually appealing Android apps for volunteering, bill-splitting, and custom resume generation
- Utilized **Atlassian Sourcetree** for version control and **Figma** for design within an Agile Scrum setting
- Spearheaded user interviews and real-world testing, incorporating feedback into the iterative development process to ensure a user-centric approach and refine user experience
- Led the complete Android development life cycle, from conceptualization and design through to development, quality assurance, experimentation, analysis, and deployment; Gained experience in **Android UI design**, multimedia, and animations and components such as Activities, Fragments, Services, and Content Providers

Projects

Mapping Algorithm Comparison | *Python, pandas, NumPy, Matplotlib, MySQL*

- Developed a project to compare routing strategies across various mapping services, leveraging **Python** (**pandas**, **NumPy**, **Matplotlib**) for data manipulation and analysis
- Collected and pre-processed geographic data from the Wikibase **RESTful API** and routing data from popular mapping APIs including Google and Apple Maps, utilizing a **MySQL** database for storage and management
- Applied statistical analysis to identify trends, variations, and outliers in routing data, providing insights into the performance of each mapping service

PomoRise | *C, Fusion360, STM32CubeIDE, Git*

- Developed and implemented a smart alarm clock and productivity timer **utilizing C** on a **STM32** Microcontroller
- Documented requirements and process through a Project Proposal, Design Document, and Implementation Report
- Utilized **Fusion 360** to create detailed models for 3D-printing and **GitHub** for collaborative version control

Arduino Keyboard | *C, Fusion360*

- Utilized **Fusion 360** to design and 3D-print an Arduino-based keyboard, overseeing the manual assembly and hand-wiring of circuitry components
- Hand-soldered diodes to enable N-key rollover functionality
- Implemented custom firmware **programmed in C,** featuring reactive animations and customizable keymaps

React e-Portfolio | *JavaScript, React.js, HTML/CSS, Vercel*

- Designed and developed a personal e-Portfolio website using **React.js** and deployed to **kevmao.com** using **Vercel**
- Implemented responsive design elements and animations ensuring compatibility across devices and browsers
- Leveraging **AWS Lambda**, **Python (FastAPI)** and OpenAI API to implement a custom virtual assistant

Education

University of Waterloo Waterloo, ON
Bachelor of Applied Science (BASc) in Computer Engineering (Honors) *September 2023 – Present*

- Cumulative: 94%
- Term Dean's Honour List