Michael Tao

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Skills

Software Languages: C, C++, Python, Java, Javascript, CSS/HTML/Bootstrap, SQL, Matlab
Firmware: RISC V, ARM, System Verilog, VHDL, FPGA, STM32, Raspberry Pi
Tools: Git, Linux, Visual Studio, Amazon AWS, OpenCV, Jenkins, Postman, Jira, Confluence

Work Experience

Teaching Assistant Sept. 2023 – Dec. 2023
University of Waterloo *Waterloo, Canada*

- Guided 12 project groups, facilitating their work across many tech stacks, including Raspberry Pis, Computer Vision, Databases, Machine Learning and Mobile Applications.
- Created comprehensive test plans for the students' final projects, ensuring their projects would run smoothly.
- Graded the students' assignments, projects and exams. This included evaluating their code and test cases.
- Provided help to students on certain algorithmic approaches for solving their C assignments.

Teaching Assistant Jan. 2023 – Apr. 2023
University of Waterloo *Waterloo, Canada*

- Provided both academic and non-academic support for first-year engineering students.
- Mastered concepts in linear circuits and electromagnetism to an extent that enabled effective tutoring to students.
- Conducted testing and setup of lab equipment (primarily power supplies like oscilloscopes).
- Organized and held multiple review sessions for over 50 students in preparation for exams.
- Created automated grading programs using C++, streamlining the assignment evaluation process.
- Led the development of lab manuals within OpenEdX (online learning platform), incorporating Python for custom modules and utilizing CSS/HTML for styling.

Software QA Tester/Developer May. 2022 – Aug. 2022
Genellipse Inc. *Mississauga, Canada*

- Created and refined 15+ test scenarios to allow the testing of documented future features.
- Developed automated test suites based on documented test scenarios through the use of Postman.
- Conducted weekly regression testing using Jenkins to ensure the stability of the system.
- Built a recurring payout system using Python to streamline financial processes.
- Created and maintained an SQL database in AWS RDS to store and manage policy data.
- Created API calls between the front end and database by implementing an API gateway and AWS Lambda.

Projects

Uniprocessor Real Time Operating System | *Embedded C, STM32, ARM* Jan. 2024 – Apr. 2024

- Created an operating system on a single ARM Cortex processor with dynamic memory management and concurrency.
- Implemented a scheduling algorithm to prioritize real-time periodic tasks.
- Utilized hardware interrupts to switch process contexts with little impact on timing delays.

iBERT Hardware Accelerator | *System Verilog, FPGA* Jan. 2024 – Apr. 2024

- Created a hardware accelerator for an iBERT model.
- Developed hardware code implementation for matrix operations and memory management.
- Fully pipelined to perform operations on vector inputs.

Web Crawler | *C, cURL, Multi-threading, Linux* May 2023 – July 2023

- Created a web crawler in C to navigate web pages and gather URLs of valid, non-corrupted PNG images.
- Implemented pthreads and synchronization concepts for parallel webpage parsing, significantly enhancing the speed of the web crawling process.
- Employed a hash to store visited web pages, preventing redundant searches and optimizing the efficiency of the crawler.
- Utilized the cURL library to access webpages and retrieve the necessary information.

Spellchecker | *C++* Nov. 2022 – Dec. 2022

- Used a "Trie" data structure to efficiently store "correctly spelled" words. Letters are stored separately in nodes to prevent redundancy from similar words.
- The Trie is traversed to compare stored words with potentially incorrectly spelled words.
- Enabled dynamic modifications to the Trie by implementing recursive procedures for adding or deleting words.

Education

University of Waterloo Waterloo, Canada
Candidate for Bachelor of Applied Science in Computer Engineering *2021 - 2026*