Cal Edward McArthur

c3mcarth@uwaterloo.ca linkedin.com/in/calmcarthur github.com/calmcarthur 705-229-9050

Skills

Languages: C++, Python, C, Typescript, Javascript, Embedded C, HTML, CSS, SQL, VHDL
Technologies: React.js, Next.js, Node.js, Express.js, Flutter, Firebase, MongoDB, MySQL, SQLite, FreeRTOS, Arduino
Tools: Git, Linux, Unix, Docker, Jenkins, QT, STM32, Figma, Bash, XCode, Visual Studio, Figma

Experience

BlackBerry Inc | *Applications Software Developer* **Sept - Dec 2022**

- Lead development of a full stack C++ application by implementing and designing software architecture and a process to manage NAT event reporting from the linux kernel, to be displayed on a TypeScript front-end
- Built a system that allows an admin access to the source IP and ports for TCP and UDP flows through their network, while focusing on maximizing throughput when persisting network events
- Created a RESTful API for a sqlite3 database interface, and various processes for storing and interaction with the data
- Added various features such as JSON web keys, JSON web tokens enrollment lifetimes and password bypasses functionality to improve overall runtime efficiency for the BlackBerry Cyclance Gateway application
- Developed a cross-team feature improvement,by changing web servers from HTTP to HTTPS and implementing stricter TLS certificate approvals, increasing endpoint security by 30% and ensuring a timely release

Deep Trekker Inc | *Test and Development Intern* **Jan - April 2022**

- Developed embedded C code for STM microcontrollers, improving network security, diagnostic messaging, and PCB information reporting across the front and back-end interfaces for 4+ remotely operated vehicles
- Collaborated with team members to develop an expandable and efficient automated testing system using the capabilites of the FreeRTOS kernel, GoogleTest and a fake function framework, for use in an agile SCRUM environment
- Performed hands-on testing for 7+ underwater ROV's and their controllers, while addressing software and hardware bugs
- Wrote system and unit level tests in C++ and Python, communicating with a team of developers on strategies to rectify these bugs

Interact Rotary Club | *President* **Sept 2018 - August 2021**

- Managed a group of 20+ young adults and fundraised $9,000+ over 4 years for various charity foundations in Ontario
- Organized charitable events, guests speakers, and the construction of a wash station for an underdeveloped community in Cambodia

Projects

Hack Harvard - The Crimson Cube | *Typescript, Next.js, Firebase, TailwindCSS, C, Arduino, OnShape, Figma, Electrical* **October 2022**

- Developed and pitched an IoT communication aid for children with speaking issues that allows them to express their emotions implicitly; the project included a SLS 3D printed toy, a wired Arduino that sent sensor data to a Firebase database, and a live interactive website
- Led all backend architecture and process design by implementing data packaging and sending on the Arduino, an API on the web application, and informatics to display sensor data in a clear and comprehensive manner for the user
- Collaborated on front-end design in Typescript and had an impact on overall design choice for the project

Automed Testing Framework | *C++, C, Google Test, STM32 Applications, fff* **April 2022**

- Researched, developed, and implemented a software test framework for a team of 20+ developers on STM32 microcontrollers
- Integrated GoogleTest and a fake function framework, utilizing the FreeRTOS kernel and a publish-suscriber messaging system

Basketball Stat Tracking Software | *Python, Pandas, NumPy, Matplotlib* **Nov 2022**

- Developed a Python program to track and compare personal basketball statistics against professional player data fetched from the NBA API; utilized NumPy and Matplotlib to filter and display the player data
- Accurately tracked an increase in shooting statistics of 15% over two weeks of training

Education

University of Waterloo **Sep 2021 – Present**
Canidadate for BASc in Systems Design Engineering *Waterloo, Ontario*

- GPA: 86.22/100
- Awards: President's Scholarship of Distinction, Leslie Klein Engineering Scholarship

Interests

Stories by John Steinbeck and Tolkien, running and mountian biking, Jack Nicholson movies, learning about space, shooting basketballs, stick and puck, backcountry camping in the wilderness, and writing whatever comes to mind