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, Bash, VHDL
Technologies: React.js, Next.js, Node.js, Express.js, Vite, Firebase, MongoDB, MySQL, SQLite, FreeRTOS, Arduino
Tools: Git, Linux, Docker, RestAPI's, Jenkins, QT, STM32, XCode, Visual Studio, Figma

Experience

BTC - Business Transitioning Consulting | *Consulting Analyst* **May - Aug 2023**

- Led the execution of a Python software product by conceptualizing, developing, and pitching an algorithmic predictive model to be used in the utilities industry.
- Developed end-to-end database applications in PowerApps to exceed client needs.
- Performed comprehensive analysis and migration on asset data for clients, including data transformation, cleaning, and validation.
- Increased runtime efficiency by over **2x** by improving various Typescript features including JSON web keys, JWK enrollment lifetimes, and password bypasses for the BlackBerry Cyclance Gateway test application.
- Pivoted web servers from HTTP to HTTPS and implemented stricter TLS certificate approvals to ensure secure data transmission, which led to an increase in endpoint security by **30%** and a timely release.

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

- Led the development of a full-stack C++ application by designing and implementing software architecture and an efficient process to manage NAT event reporting for the Linux kernel which was interfaced with a TypeScript front-end.
- Built a feature that allows an admin access to the source IP and ports for TCP/UDP flows through their network, with a focus on maximizing throughput when persisting network events.
- Created a scalable API to allow for secure retrieval, updating, and deletion of networking data stored in a SQLite3 database.
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Deep Trekker Inc | *Test and Development Intern* **Jan - Apr 2022**

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

Interact Rotary Club | *President* **Sep 2018 - Aug 2021**

- Managed a group of **20+** young adults and fundraised **$9,000+ over 4 years** for various charity foundations in Ontario.
- Organized charitable events, guest speakers, and the building 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* **Oct 2022**

- Developed and pitched an IoT communication aid for children with speaking issues that allows them to express their emotions non-verbally; the project included a SLS 3D printed toy, a wired Arduino that sent sensor data to a NoSQL Firebase database, and a live interactive Next.js website.
- Led all backend architecture and process design by implementing data packaging and transfer on the Arduino, database fetching and deletion from Firebase, and informatics on the live application to display sensor data in a clear and comprehensive manner.
- Collaborated on front-end design in Typescript and impacted the overall design choice for the project.

Education

University of Waterloo **Sep 2021 – Present**
Candidate 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 mountain biking, Jack Nicholson movies, backcountry camping in the wilderness, learning about space, shooting basketballs, stick and puck, learning acoustic guitar, and writing whatever comes to my mind

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