Michael Bradley

michaelmbrad@gmail.com | (647) 852-9696 | linkedIn/michaelmbradley | github/MichaelMBradley | mmbradley.ca

EDUCATION

Bachelor of Computer Science (Honours) - Carleton University — Ottawa, ON | Sep 2020 - Dec 2024

Accepted with scholarship. Achieved a major CGPA of 11.52/12 (A+), recognized by the university as High Distinction. Graduated from the Artificial Intelligence and Machine Learning stream. Took courses in SQL, OpenGL, and Haskell.

WORK EXPERIENCE

Software Analyst - Hitachi Rail — Toronto, ON | March 2025 - Present

- Developed C++ code for light rain signalling in the Ground Transit System division

Embedded Software Development Student - BlackBerry QNX — Kanata, ON | May 2024 - August 2024

- Created a generic C abstraction on data protected by mutexes to make multi-threaded code simpler and safer
- Simplified C++ class responsibilities to allow data streaming to multiple observers using QNX APIs
- Tracked down memory leaks, race conditions, and deadlocks in interconnected multi-threaded C libraries
- Refactored code to comply with MISRA C 2012 standard, revealing threading bugs in the process
- Created open source example applications to demonstrate our Sensor Framework APIs

Software Developer - Emids — Remote | May 2023 - August 2023

- Nominated for Carleton's Co-op of the Year award due to "overwhelmingly positive" feedback from coworkers
- Optimized React UI components until updates to the underlying data created no perceptible lag
- Created a filter component to dynamically update a list and calculate the appropriate zoom level to display a map
- Added features to the back-end of an active healthcare solution using an in-house functional language
- Reworked existing InQ Telehealth UI to accommodate new settings for clinicians to enhance clinic discoverability

Test Automation & Software Developer - Ross Video — Hybrid - Kanata, ON | May 2022 - April 2023

- Re-hired part-time after my co-op placement to research automated unit testing for an internal test framework
- Revamped an internal test automation codebase by single-handedly refactoring fifteen thousand of lines of Python to standardize the return types of the internal library functions, add type hints, and improve readability
- Created generic Jenkins CI/CD jobs to build and test products, enabling product teams to rapidly iterate features
- Automated OWASP ZAP and tenable.io security scans using an in-house test framework to access their Python APIs
- Wrote Bash scripts to add features to Jenkins jobs like Microsoft Teams messages indicating build status
- Rewrote an internal SharePoint site to improve readability and make it easier to search for specific documentation
- Updated processes for managing equipment in server racks to ensure consistent documentation and cleanliness

SKILLS

C, C++ - OpenGL, CMake

- Analyzed threading model of Sensor Framework at BlackBerry QNX to fix existing lock-ups and avoid future bugs
- Combined Phong lighting and real-time shadows to render Perlin noise on over 130M vertices at several FPS
- Wrote a top-down video game for a group project on my own after my group mates dropped the course, got an A+

TypeScript - React, Vite

- Integrated with Google Maps APIs to build a map component to filter and display a list of clinics
- Profiled and improved an un-optimized list component until updating the underlying data did not create lag
- Took initiative to reduce the use of the `any` type at Emids, improving developer experience and catching more bugs
- Designed my personal website using TypeScript/Vite/React, then set up SSR to generate a minimized static site

Python - NumPy, TensorFlow

- Refactored and type hinted a test automation library at Ross Video to fix bugs and improve developer efficiency
- Tracked code execution for Ross using custom wrapper objects that recorded attribute access and function calls
- Researched automatically generating unit tests to save developer time and improve stability
- Scraped and analyzed price data to determine how much money you would lose on video game lootboxes

POSIX - Linux, QNX

- Set up a custom Arch Linux installation for my daily personal use over the last 2 years
- Maintained the system and researched solutions when my extensive customization broke it
- Worked with QNX APIs at BlackBerry to write efficient multi-threaded C code
- Managed a VPS to serve my personal website, code forge, and game servers using Nginx and Docker
- Scripted with Bash to add functionality to Jenkins at Ross Video

Git - DevOps, CI/CD

- Used GitLab to manage code and reviews at BlackBerry and exported commits into legacy SVN repos
- Used Azure DevOps to develope and collaborate on a monorepo at Emids
- Used Gerrit to conduct and receive code reviews on several Git repositories at Ross Video
- Managed personal projects and hosted custom websites on GitHub and my personally hosted Forgejo

PERSONAL PROJECTS

Real-time Shadow Simulator — C++, OpenGL

- Built an OpenGL renderer in C++ that could cast real-time shadows on over 130M vertices
- Designed a multithreaded Perlin noise generator optimized to generate tiles in parallel
- Created lighting solution that scaled as needed so the renderer was limited only by VRAM
- Optimized matrix and vector operations with the GLM library

N-Body Gravity Simulation — Python

- Implemented time-stepped gravity simulations over N bodies with visualization in 2 or 3 dimensions
- Generalized physics functions to function in an arbitrary number of dimensions
- Optimized physics using NumPy to perform vector calculations in parallel

Electronic Holiday Card Distribution — JavaScript, HTML, CSS

- Created a website from scratch (deployed using GitHub Pages) to distribute holiday cards to friends and family
- Used JavaScript APIs to encrypt the messages to ensure they were only read by the intended recipient
- Integrated the p5.js graphics library to generate unique assets and animated backgrounds
- Implemented a limited set of markdown functionality using regular expression replacement

Personal Website — TypeScript, CSS, React, Vite

- Designed personal homepage to be responsive to device size, resizing as necessary using pure CSS
- Made website accessible by respecting user's preference for reduced motion and a dark mode toggle without JS
- Set up Vite and React to develop with HMR, but then deploy to a single HTML file with embedded CSS and no JS

ACCOMPLISHMENTS

University - Carleton University — Ottawa, ON | Sep 2020 - Dec 2024

Nominated for the Co-op of the Year award by Emids	December 2023
Deans' Honour List	Every year
Top 100 in Canada at solving multiple Rubik's Cubes blindfolded	Hobby

High School - Riverdale Collegiate Institute — Toronto, ON | Sep 2016 - Jun 2020

Math club president	Grade 12
High honour roll	Grade 12
Honour roll	Grade 9-11
First place in the OAPT Physics contest	Grade 11