




Brooke Dolny

Software Engineering Student

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Experience

Secure Embedded Developer · ESCRYP

Jan 2019—Present

- Contributed to a mobile phone to car communication scheme for use in commercial vehicles

C++/Backend Developer · DF/Net Software

May 2018—Aug 2018

- Revitalized a data analytics software for use in clinical studies.
- Fixed bug in hashing function, introduced by a change of platform, allowing over 8000 users to login after weeks of lockout; introduced better C programming practices as a result.
- Designed an API endpoint that resulted in up to 4.5x faster page load times for a web application.
- Restructured components of a JavaScript codebase to improve readability and maintainability.
- Reported security flaws and vulnerabilities in C, C++, and JavaScript codebases.

Relevant Experience

Electrical Team Member · University of Waterloo Rocketry Team

Oct 2018—Present

- Wrote drivers for PIC microcontrollers controlling the various electrical components of the rocket, competing in the IREC
- Interfaced with an external CAN module over SPI to communicate with other microcontrollers

Projects

Personal Cryptographic Library

Present

- Contains a working implementation of the Advanced Encryption Standard with CBC and ECB operational modes, and the Secure Hash Algorithm 2 suite of cryptographic hashes, written in C.

Fractal Generator

Apr 2018

- A fractal art generating program written in Java that supports the Mandelbrot and Julia sets.
- Leverages parallel programming to improve performance by using a worker pool.
- Utilizes the principles of object-oriented programming to improve readability.

Traffic Simulator (Traffix)

Nov 2017

- Simulates traffic flow in an arbitrary city defined by a graph.
- A graphical interface presents to the user a real-time view of congestion and traffic patterns.
- The application was written in C++ with the Qt framework.

Education

Candidate for Bachelor of Software Engineering · University of Waterloo

2022

- Joint Honours in Pure Mathematics
- Term Dean's Honour List, December 2017
- President's Scholarship with Distinction