




Brooke Dolny

Software Engineer

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Experience

Secure Software Developer · ESCRYPT

Jan 2019—Apr 2019

- Contributed to the CycurV2X Software, developing secure vehicle to vehicle communication with C++11.
- Implemented a parallelized manager for validating the format of different types of V2X messages conforming to North American and European transportation standards.
- Identified and resolved race conditions throughout the codebase.
- Modernized C++ codebase.
- Wrote and improved on documentation for the implementation details of various classes and build processes.
- Ran retrospective meetings as part of the team's agile process.

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 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.
- Created a report on security flaws and vulnerabilities in C, C++, and JavaScript codebases.

Projects

Personal Cryptographic Library

Present

- Developed a working implementation of the AES with CBC and ECB operational modes, and SHA2 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 OOP 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

- Electrical Team Member, UW Rocketry Student Design Team
- President's Scholarship with Distinction

Interests

Ice Hockey, Classical Music, Reading, Math, Marvel (MCU)