

Denton Liu

Software Engineer

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dentonliu.com 🌐

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Technical Skills

- Proficient in C, C++, Python, Bash, Solidity, Java and various assembly languages (x86, 6502, ARM, PIC, AVR).
- Experienced with using CMake, GDB and Valgrind.
- Well-versed in cryptocurrency blockchain technology with an emphasis on Ethereum development.
- Longtime Arch Linux user with abundant experience using the command line.
- Extensive knowledge of Git, including its internals.

Experience

Apr – Aug 2018

Embedded Systems Engineering Intern, *Bose Corporation*, Framingham, Massachusetts.

- Programmed I²C support in new products allowing slave chips to be reflashed from master processor.
- Refactored internal product debugging tool written in Python to add Bluetooth Low Energy support.
- Integrated Python debugging tool into the C++ manufacturers' test library.
- Improved codebase quality by integrating linters and warning checks into the continuous integration system.

Jan – Apr 2018

Undergraduate Research Assistant, *University of Waterloo*, Waterloo, Ontario.

- Implemented Karatsuba multiplication and Barrett reduction cryptography primitives using 8-bit AVR assembly.
- Removed timing attacks from the implemented cryptographic primitives while also decreasing number of instructions.

Sept – Dec 2017

Embedded Security Developer, *ESCRYPT - Embedded Security*, Waterloo, Ontario.

- Reverse-engineered messages on car's CAN bus to create demo that could lock and unlock doors.
- Fixed race conditions and memory leaks in embedded C++ codebase, removing all warnings in the build system.
- Refactored classes in the cryptography layer in order to increase maintainability and improve test coverage.
- Worked with DevOps by implementing a web page to graph program performance for build monitor.
- Improved code quality by aggressively enabling warnings in build system and fixing the result.

Jan – Apr 2017

Engineering Intern, *Cask Data*, Palo Alto, California.

- Designed and implemented optimiser to remove unnecessary operations by building and analysing graphs.
- Reduced memory usage of searches by 50% which stopped YARN containers from running out of memory.
- Assisted with system administration and project releases by creating useful and maintainable shell scripts.

May – Aug 2016

Blockchain Engineering, *Ledger Labs*, Toronto, Ontario.

- Built a general-purpose implementation of state channels using Solidity smart-contracts and JS.
- Committed many successful pull requests to the Solidity compiler in C++.
- Contributed to open-source Ethereum projects in JS including browser-solidity, solc-js and testrpc.

Projects

Based Connect

- Reverse-engineered Bluetooth protocol between official Bose Connect app and headphones using Wireshark.
- Analysed compiled binaries to discover addresses of servers used to serve firmware updates.
- Implemented command line application in Linux using C to control headphones over Bluetooth using BlueZ.

Cryptocurrency
Algorithm
Trading

- Developed a reliable algorithm-trading application using Python 3 with 8.8% average monthly return.
- Implemented a market making algorithm, taking advantage of the volatile cryptocurrency market.
- Emulated and reimplemented Poloniex exchange API endpoints locally to accurately backtest algorithm.
- Secured and administrated Raspberry Pi server running trading application.

Education

2015 – 2020

Candidate for Bachelors of Software Engineering, *University of Waterloo*, Waterloo, Ontario.

Interests and Hobbies

- Avid unicyclist.
- Devoted Vim user.
- Enthusiastic user of L^AT_EX.