

JARED MOULTON

Utah State University

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WORK EXPERIENCE

Bentley Nevada

Firmware/Software Engineering Intern

📅 May - August 2023 📍 Remote

- Continued previous work on the Leviathan project. Designed the **communication protocol** between host and device for communication over **USB**.
- Wrote the protocol implementation in C for the device and in C# for the **software backend**.
- Implemented the USB application for communication in C# using **libusb**
- Built other necessary **drivers** (and a GUI) for the project

Bentley Nevada

Firmware Engineering Intern

📅 May - August 2022 📍 Minden, Nevada

- Designed and built** the V 1.0 firmware for the Leviathan Project from start to completion, including **custom hardware** components, functional driver libraries and a fast application taking full advantage of **DMA and ISRs** in a **resource constrained** environment
- Provided **feedback** and suggestions for the **final hardware design** of the leviathan project
- Rebuilt a dual channel direct digital synthesizer** firmware project including application and a library increasing the **speed** of the existing program by over **100x**

Fox Pest Control

Commission Sales Associate

📅 Summer 2021 📍 Albany, New York

- Learned the processes, techniques and skills of the sales industry

Service Organization

Full Time Spanish Speaking Volunteer

📅 August 2018 - April 2021 📍 Cochabamba, Bolivia

- Became **fluent in the spanish language** in six months and spoke only Spanish for 19 months
- Managed and **led groups of 9-12** other service volunteers, coordinating work efforts, managing safety and providing training

EDUCATION

Utah State University

Computer Engineering

📅 August 2020 - Current

Accounting Minor

📅 August 2020 - Current

Programming Languages

- Expert: **C, Rust**,
- Also: **C++, Python, Bash, System Verilog, Java, C#**

PROJECTS

Reverse Engineering Standing Desk

- Reverse engineered the communication between the user controller and the motor controller. A voltmeter to find the power lines, logic analyzer to watch signals on all 6 ethernet wires. Recognized as a half-duplex uart communication. Fully decoded the structure of frames, packets and segments.
- Built an embedded application to act as a remote control using bluetooth on dual-core esp32s3. (in progress)

Compiler from Scratch

- Side Project: An interpreter and a compiler with a custom parser for a programmign language with a rust like syntax. Compiles to a bytecode and is run in a custom virtual machine with high quality error handling and messages to the end user.
- Class: CS5300 C compiler from scratch in Java

DACx0501 Library

- A Rust library supporting the Texas Instruments x0501 family of DACs using the rust embedded-hal traits

Open Source Contributions

- esp-hal**: Work on embedded-hal SPI implementation
- slint-ui**: Treesitter parser and various additions
- floem**: Various efforts to improve the UI framework

Aggietime Clock API

- A web app that acts as a man in the middle to re-expose the USU Aggietime API in an accessible way. This app parses tokens from the HTML responses of Aggietime and then forwards along a proper request with the credentials from the end user.

Dense Neural Network from Scratch

- A dense, fully connected neural network made to recognize hanwritten digits from the MNIST dataset written from scratch in numpy.

Static Website Generator

- Personal website and blog with content being written in markdown and then generated using a custom static site generator with awesome code syntax highlighting and theming.

Multithreaded Mandelbrot Generator

- A Mandelbrot image generator that splits the image's rows to be processed by multiple threads. The final output format is a bpm where the image header information is written as a stream of raw bytes followed by the image data.