JARED MOULTON

Utah State University

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WORK EXPERIENCE

Bentley Nevada

Firmware Engineering Intern

May - August 2022 Minden, Nevada

- **Designed and built** the firmware for the Leviathan Project from start to completion, including **custom hardware** components, **functional driver libraries** and a fast application taking full advantage of direct memory access in a **resource constrained** environment
- Provided **feedback** and suggestions for the **final harware 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**

USU Campus Store

Mac Repair Technician and Store IT

May 2020 - May 2021 Logan, Utah

- Became certified to **repair all apple computers** in three weeks
- **Trained two new repair technicians** to become certified in all repairs and diagnostics
- **Administrated store IT** by onboarding up to 15 employees per day, **managing user database permissions** and troubleshooting networking and computer hardware issues

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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

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Fox Pest Control

Commisssion Sales Associate

Summer 2021 Albany, New York

- Brought in over $53,000 of sales revenue in three months
- Learned the processes, techniques and skills of the sales industry

EDUCATION

Utah State University

Computer Engineering

August 2020 – Current

Accounting Minor

August 2020 – Current

Programming Languages

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

PROJECTS

Programming Language Interpreter from Scratch

- An interpreter for an expression heavy dynamic programmign language with a c/rust like syntax that lexes tokens from an input, parses the token stream using a recursive descent/Pratt parser and interprets the final AST (including function objects) with high quality error handling and messages to the end user in a REPL.

Open Source Contributions

- **esp-hal**: Work on embedded-hal SPI implementation
- **slint-ui**: Treesitter parser and various additions

DACx0501 Library

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

Sodoku Solver

- A Sodoku Solver that generates a valid (although not necessarily solvable) Sodoku puzzle and uses a backtracing algorithm to solve it.

BFS Maze Solver

- A maze solver that uses a Breadth First Search to find the shortest path from the start to the finish of a puzzle created as an array of arrays filled with ones and zeros. Problem from Google Foo Bar Challenge.

Multithreaded Mandelbrot Generator

- A Mandelbrot image generator written in rust 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.

Aggietime Clock API

- A Rocket 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.

Projects in Progress

- Smart Fan using an ESP32-C3 and the Matter protocol. Research stage
- Compiler to bytecode for the programming language listed above. Beginning
- (Note): All projects listed above are on my github with more information