Graham Mueller

Oregon State University
GPA : 3.48
Expected Graduation : 2022

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Skills Profile

- C++ | C | C# | Python | System Verilog | Assembly
- Code unit testing, documentation, requirements (C, Python)
- Large codebase and software development experience
- Code reviewing
- Visual Studio, Clion, Pycharm IDEs
- Git in team and personal environment
- PCB Design in Kicad and Eagle
- Modelsim FPGA simulation
- LTSpice and HSpice circuit simulation
- Component datasheet analysis

- Terminal experience, bash scripts
- Microsoft Excel (automation, scheduling)

Work Experience

Embedded Software Engineer Intern | Garmin | 2020spring - 2020fall

- Large and complex C codebase with unique certification requirements.
- Emphasis on clean, understandable code and well thought out unit tests.
- Extensive and in depth code reviews that could span weeks in both roles as equals.
- Responsibility to develop new features and tests that met the equality expected from the team.

KC130 Aircrew | United States Marine Corps | 2012-2017

- Broad understanding of aircraft systems, operation, and limitations to perform ground inspections and in-flight emergencies.
- Planning and mission execution in high stress environments with rapidly changing conditions.

Projects

Star Gazer

- A 2020 summer and fall project to create a device that can be pointed to the sky, guiding you to notable stars and constellations and displaying information about them on an attached screen. The primary goals included a complicated PCB, programming and flashing embedded devices, and working in C to further advance skills and to set a unit testing environment.

  In progress - device assembled and in software proof of concept phase.

FPGA SDRAM Controller

- System Verilog onboard a DE10 Max10 FPGA device. A 2019 summer project to learn how SDRAM worked. The controller operates at 143Mhz and includes a start up test, a simple interface for module integration, a place and use design, and a all-address unit test.

  I gained respect for memory and its importance in the greater system, as well as using data sheets to engineer a system that can not be verified until it is complete.

Wireless Bluetooth Speaker

- PCB I made with safe lithium battery charging, voltage regulation, DAC, and speaker amplification in a 3D printed case with buttons. Wirelessly connected over bluetooth. Interfaces with ESP-32 and written in C++.

  First PCB I have made and many mistakes overcame. Bypass capacitors, poor testing pads, and poor future proofing were major lessons learned.

Junior Design Music Box

- In charge of programming design and implementation on a Max10 FPGA in System Verilog. Systems written by scratch include SPI, signal function generators, clock generators, debouncing, PWM lighting, SDRAM controller, and a large state controller. The overall structure of the code emphasised flexibility and proof of concept testing, as the hardware was not available for most of its development. Notably for a challenge the group only used an FPGA for all logic control.

  I learned project management, code organization and effects of a “sprint stop sprint” style of development.

Procedural Terrain Generator Program

- Written in C# in Unity3D, generated landscapes and continents with temperature, humidity, rainfall, and generalized weather patterns shown visually. To support this an art generation tool was designed to procedurally generate the thousands of art assets as needed. I wrote my own randomization library and techniques to support the overall design. Stress testing, unit tests, and debug interfacing were developed with UI to aid development.

  Mass parallel calculations, C# file I/O