HAYDEN BUSCHER

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EDUCATION

California Polytechnic State University, San Luis Obispo September 2022 - Present
B.S. in Computer Engineering

GPA	3.67 (Major) - 3.47 (Overall)
Relevant Coursework	Microcontrollers, Systems Programming, Digital Design, Computer Architecture, Data Structures, Object Oriented Programming, Digital Signals, Circuits
Student Activities	IEEE-HKN, Amateur Radio Club, Computer Engineering Society

EXPERIENCE

Software Engineering Intern June 2024 - Present
JHB, Inc. *Buffalo, NY*

- Designed replacement for a legacy hydraulic test system in collaboration with mechanical engineering team
- Interfaced with industrial pressure and flow sensors using a LabJack T7 data acquisition device
- Implemented real-time data acquisition and visualization in a .NET-based desktop application
- Controlled a servo amplifier programatically while simultaneously logging and graphing sensor data
- Supported deployment and ongoing user assistance in remote and on-site environments

PROJECTS

ClusterDuck Protocol Port September 2025 - Present
C++, LoRa, Embedded, Linux

- Contracted by OWL Integrations and Cal Poly Swanton Pacific Ranch as part of a five-person team
- Developing a Raspberry Pi-based solution for livestock monitoring using LoRa communications
- Porting the open-source ClusterDuck communications Protocol from bare-metal ESP32 to Linux
- Producing extensive technical documentation for both client and personal reference

Digital Function Generator October 2025
STM32, C++, Digital Signal Processing

- Built a variable-frequency digital function generator on a STM32 microcontroller
- Wrote from-scratch frequency generation, MCP4921 DAC, and matrix keypad libraries
- Directly interacted with STM32 hardware on a register-level, including the use of interrupts

RISC-V Otter MCU September 2023 - March 2024
RISC-V, Verilog, Assembly, Vivado

- Built an FPGA-based implementation of a 32-bit RISC-V architecture
- Implemented a five-stage pipeline with hazard detection, memory caching, and interrupt handling
- Wrote and debugged multiple applications in RISC-V assembly running on real hardware

TECHNICAL SKILLS

Languages	C, C++, C#, Assembly (ASM), Python, Bash, Verilog, JavaScript, Java
Platforms	STM32, RISC-V, Arduino, Linux, Windows
Tools	GCC, GDB, Git, Valgrind, Vivado, LTspice, Vim, Visual Studio, WPF