Bradley Kenneth Hutchings

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💬 PROFILE

I am a passionate computer scientist with a strong foundation in software development and problem-solving. I am a dedicated lifelong learner with lots of curiosity! In my free time you can find me learning languages such as Spanish or practicing solving Rubiks cubes. I am very interested in music and cooking too!

🎓 EDUCATION

Colorado School of Mines - Golden, CO   July 2021 - May 2025
Bachelor of Science, Computer Science   CSCI GPA: 3.04

Mines EE Classes: **Circuits**, **Digital Logic**, **PCB Design**, and **Elements of Computing**.

Napa Valley College - Napa, CA   January 2017 - January 2021
Certifications: **Autodesk Fusion360**

ℹ️ TECHNICAL SKILLS

Languages	Python3, C/C++, Rust, Go, JavaScript, Postgres SQL, Verilog
Dev. Tools	Linux, Docker, Git, Makefile, Nix, Nginx, S3 Bucket
Libraries	Express.js, Flask, NumPy, Pandas, Matplotlib, SciKitLearn
Software Tools	PlatformIO, Fusion360, EagleCAD, FreeCAD, KiCAD, Quartus
Hardware Tools	Oscilloscope, Arduino, THT & SMD Soldering
Protocols	I2C, SPI

💼 WORK EXPERIENCE

Contractor Work: Tech Lead & Manager - SwingLens LLC   May 2025 - June 2025
• Managed a team of 7 intern engineers whilst working closely with other advisors.
• Advised on **Python**, **Flask**, **Hardware** configuration, and industry programming practices.
• Developed and open-sourced a **Python** tool for importing **Jupyter Notebooks**.

Research Internship - CSM & National Science Foundation   May 2024 - September 2024
• Automated data aggregation, filtering, and processing with **Python** and **Pandas**.
• Trained **SciKitLearn** models to identify vulnerable network data.

Product Development Internship - Analytical Data Systems   May 2023 - August 2023
• Developed a toolchain to have LLMs to introspect and reprompt for more normalized results based on user-defined qualities.
• Implemented several interfaces to interact with the service from Discord or a custom web client in **JavaScript**.

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</> PROJECTS

Muserve App - Author   July 2025 - Present
Self hosted music streaming service with future plans of developing compatible hardware.
• Hand rolled, multiprocess safe, authentication using **python**, **JWTs**, and **sockets**.
• Safe data ingest with **mimetype detection**, conversion to **Vorbis ogg**, and storage in **postgres**.
• Web UI written in modular **JavaScript**, using **Flask** templates on static routes.
• Seperation of internal and external network via **Nginx Proxying**

NovaMill Open Hardware PCB Mill - Author   July 2025 - Present
NovaMill is a work in progress Open Hardware desktop PCB Mill with the goal of making
rapid PCB prototyping easier as faster.
• Real-time motor and sensor control with **Pi Pico 2 W** running **Marlin**.
• **Pi Zero 2 W** running custom **Linux** distribution for on-device **machine learning** corrections.

BreadLeaf-8 (BL-8) Hardware Implementation - Author   June 2025 - Present
Working towards implementing my custom **8-bit** Computer based on **74HC** chips. The
architecture is based on my **Distributed Custom ISA Execution Environment** software project.
• Designed and iterating on **custom toolchain** to edit my CPU's **microcode**.
• Implementing **FPGA** adaptaion to be implemented in the **Tiny Tapeout ASIC** project.

Distributed Custom ISA Execution Environment (BL-8 Computer Architecture) - Author   April
2025 - Present
Designed a custom computing ecosystem, including an **Instruction Set Architecture** (ISA),
Assembler, **Virtual Machine** (VM), and a **TCP** machine state transmission networking protocol.
The system enables distributed execution of custom machine code across a client-router-
server architecture.
• The custom **8-bit ISA** is executed by a corresponding **VM** developed in **Go**, featuring 256-
  bytes of RAM.
• The custom **TCP** networking protocol implemented in **Go**, enables distributed execution by
  transmitting machine state packets between client, router, and server.
• The **assembler** translates human-readable assembly into the custom ISA's machine code
  using a **LL(1) Tabular Parser** dynamically generated applying **Formal Language Theory**.

BreadPod (Muserve Hardware Companion) - Author   September 2024 - Present
• **ESP32** based music player with touch control.
• Communicates with **Muserve Server** software project.

Robotics Software Engineer - FRC #7667   November 2018 - June 2019
• Competed in the 2019 Houston World Championship.
• Fabricated and implemented a game piece manipulation mechanism using **C++** and **WPILIB**.

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