

BENJAMIN MILLER

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LinkedIn | GitHub | Portfolio Website

EDUCATION

Computer Science B.S. - University of California, San Diego (UCSD)
GPA: 3.8/4.0, Jacobs School of Engineering, UC San Diego Scholar's Society
Regent Scholar (Merit-based, top 1.5% of class)

Sept. 2023 – June 2027

Relevant Coursework: Advanced Data Structures and Algorithms (**C++**), Embedded Programming (**C, ARM Assembly, Microcontrollers, Microprocessors**), Software Engineering (**JavaScript**), Components and Design Techniques for Digital Systems (**Verilog, Register Transfer Logic - RTL**), Computer Organization and Systems Programming (**C, ARM Assembly, Computer Architecture**), Object Oriented Design (**Java**)

SKILLS

- Programming Languages: **C, C++, Python, ARM Assembly, SystemVerilog, Java, JavaScript**
- Hardware: **ESP 32, Raspberry Pi, Arduino**
- Machine Learning: **NumPy, PyTorch, Pandas, Computer Vision**
- Other: **Linux, Git Version Control, Bash, CI/CD, Agile/Scrum, Virtual Machines**

EXPERIENCE

Embedded Software Engineering Intern

Western Digital

Sep. 2025 - Present
Irvine, CA

- Designed and implemented **C++ firmware** for hard drives in an **Agile** development environment, validated through comprehensive unit and integration testing.
- Enhanced hard drive platform functionality, as measured by higher hardware validation success rates, by collaborating with hardware engineers to refine **low-level interactions**.

Software Engineering Lead & VP

Themed Entertainment Association at UCSD

Jun. 2024 - Present
La Jolla, CA

- Led software development for themed attraction production software on **microcontrollers** and **microprocessors** (**Python, C, C++**), enabling embedded systems to operate and enhance themed attraction operations that were attended by guests campuswide.
- Organized and represented UCSD in national **engineering competitions**, driving successful **interdisciplinary design** through team leadership and cross-functional collaboration.

Software Developer Intern

Center for Applied Internet Data Analysis

Apr. 2025 - Aug. 2025
San Diego, CA

- Created useful automations using **Python** in **Linux** environment resulting in a 70% decrease on average in manual labor required for workflows, such as content updates across the center's project sites.
- Enhanced maintainability and usability using **JavaScript** and **Python**, as demonstrated by successful contributions to the websites' codebase using **Git** for version control in large-scale site environments.

Resident Advisor at COSMOS

Jacobs School of Engineering

Jul. 2024 - Aug. 2024
La Jolla, CA

- Provided mentorship for the Video Game Programming and AI Design group, as demonstrated by meaningful interactions and personalized advice to empower future engineers.

PROJECTS

G.E.S.T. (Gesture Enabled Storytelling)

Python, Computer Vision, AI/ML, COCO Keypoints Dataset

May 2025 - Present
[Project Page](#) | [Github](#)

- Deployed a real-time **computer vision** system on a **Raspberry Pi AI Accelerator Camera** by fine-tuning a machine learning model in **Python**, enabling responsive, gesture-controlled **servo motor** actuation for an interactive storytelling attraction on campus.

Multi-threaded File Compressor Application

C++, Multi-Threading, MakeFile

Aug. 2025
[Github](#)

- Created a high speed compressor in **C++** as measured by a 70% improvement in compression time over a traditional single-threaded approach, by optimizing thread management and synchronization of **thread pool**.

Taro The Talking Bird - Interactive Robotic Figure

C/C++, Linux, Advanced Linux Sound Architecture (ALSA), Raspberry Pi

Dec. 2024
[Project Page](#) | [Github](#)

- Accomplished real-time audio-to-motion translation for a robotic figure, as measured by 100+ live conversation demos and **16K+ social media views**, by developing a **C** audio-to-motion pipeline to synchronize voice actor speech with robotic mouth movements, resulting in a lifelike performance.