

# BENJAMIN MILLER

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LinkedIn | GitHub | Portfolio Website

## EDUCATION

**Computer Science B.S.** - University of California, San Diego (UCSD)

Sept. 2023 – June 2027

**GPA: 3.8/4.0**, Jacobs School of Engineering, UC San Diego Scholar's Society

**Regent Scholar** (Merit-based, top 1.5% of class)

**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**

Sep. 2025 - Present

*Western Digital*

*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**

Jun. 2024 - Present

*Themed Entertainment Association at UCSD*

*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**

Apr. 2025 - Aug. 2025

*Center for Applied Internet Data Analysis*

*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**

Jul. 2024 - Aug. 2024

*Jacobs School of Engineering*

*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)**

May 2025 - Present

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

**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**

Aug. 2025

*C++, Multi-Threading, MakeFile*

**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**

Dec. 2024

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

**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.