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 Storytellying) 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 **Demo video** | **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.