Kaitlin Calimbahin

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Education

University of California, San Diego **Expected Graduation: June 2026**
Bachelor of Science, Electrical Engineering

Work Experience

Advanced Robotics and Controls Lab | **Research Engineer Intern** | *San Diego, CA* June 2025 — Present
- Designed a multi-finger haptic glove that enhanced robotic teleoperation and VR simulations, delivering realistic directional force feedback and **improving immersion** by enabling users to feel prodding, slip, and shear of various objects.
- Integrated motors, drivers, and encoders into a closed-loop system for responsive, **accurate per-finger force rendering.**
- Mapped physics-engine forces to enable natural haptic and bridging the gap between simulation and physical sensation.
- Optimized wearability by designing 2-DOF per finger, **reducing weight and complexity** without sacrificing haptic fidelity.

Northrop Grumman | **Systems Engineer Intern** | *San Diego, CA* June 2024 — Sept 2024
- Developed an automated System Integration Checkout script in **Bash** to streamline hardware validation processes for an airborne communications gateway program, achieving a projected **annual cost savings of $25,920.**
- Led collaboration efforts between **4+ interdisciplinary teams** to identify and resolve cross-functional obstacles, enhancing product development pipeline between integration and test operations, and **increasing efficiency by 70%.**
- Optimized Acceptance Test Procedures (ATP) for ground systems, **reducing the time per ATP event by 55%.**
- Directed as the lead tester for **30+ Verification and Acceptance Tests** to validate ground-to-aircraft functionality.

Projects

Star Wars: Pinball Machine | *Circuit Design & Analysis, Prototyping, CAD Design* **Pinball Machine Link**
- Designed and built a fully functional Star Wars–themed pinball machine with laser-cut plywood frame and 3D-printed interactive components, featuring an automated "hyperspace" launch lever and themed LEDs, sound effects, and music.
- ***Automated Launch:*** Engineered a servo-driven spring launcher that fired the ball into play, **durably across 60+ play tests.**
- ***Themed Interactivity:*** Integrated solenoid-actuated AT-AT pop bumpers, motorized spinning R2-D2, and glowing Death Star with hidden limiter switch, synced to an OLED display for **instant score and storytelling updates for 10+ events.**

Face Recognition Study Cat Robot | *Machine Learning, Python, CAD Design* **Study Cat Robot Link**
- Developed and designed a 3D-printed interactive cat robot using a supervised learning algorithm, trained to recognize people vs. phones, outputting expressive facial animations via OLED and tail movements to reduce student distractions.
- ***Response Logic:*** Deployed real-time object recognition, reliably classifying people vs. phones with **95% dedication rate**.
- ***Human Interaction:*** Implemented interactive logic where the cat grew angry at phone presence, sad when students left, and happy when students entered or petted the robot via a motion sensor, **increasing student study uptime by 20%.**

Dyanmic Spider-Man Mask | *Sensor Integration, Embedded Systems, C++* **Spider-Man Mask Link**
- Assembled a 3D-printed Spider-Man mask with servo-driven mechanical lenses that widened or squinted in real time based on user input from dual infrared sensors embedded within the mask.
- ***Micro Expressions:*** Developed a sensor-feedback system enabling smooth lens movements with **less than 0.1s latency**.
- ***Interactive Design:*** Integrated an internal control system, eliminating external switches with **100% input recognition.**

Motorized Iron-Man Helmet | *Electronics Analysis & Design, Soldering, Digital Multimeter* **Iron-Man Helmet Link**
- Developed an analog-based system to utilize servos, dual relays, and switches to operate a 3D-printed Iron Man helmet with LED eyes configured to turn on and off according to the positioning of the helmet's face plate.
- ***Circuit Analysis:*** Calculated the optimal component values for LED eyes, achieving a **25% increase in brightness.**
- ***Circuit Design:*** Developed a switch-operated control system for faceplate opening/closing functions with **100% accuracy.**

Leadership

Themed Entertainment Association (TEA), UCSD | **Technical Director** Oct 2024 — Present
- Collaborated with creative teams to design and prototype technical elements for student showcases and experiences.

Institute of Electrical and Electronics Engineers (IEEE), UCSD | **Technical Lead** Oct 2023 — Dec 2024
- Led hands-on electronics/programming workshops and organized outreach events to improve students' technical skills.

Skills and Interests

Technical Skills: C/C++, Python, Bash, Linux, Git, KiCad, SolidWorks, Matlab, LTSpice, Prototyping, Soldering, 3D Printing
Interpersonal Skills: Active Listener, Energizing Influence to Workspace, Effective Communicator, Detail Oriented
Interests: Storytelling, Media Analysis, Traveling, Food Tasting, Hiking, Lifting, Running