

Kaitlin Calimbahin

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EDUCATION

University of California, San Diego

Bachelor of Science, Electrical Engineering

Expected Graduation: June 2026

WORK EXPERIENCE

Advanced Robotics and Controls Lab | Research Engineer Intern | San Diego, CA

June 2025 — Present

- Collaborated with medical robotic researchers to develop the N2D Haptic Glove, a multi-finger wearable that renders 2D fingertip forces for teleoperation and VR, **preserving 95% of natural hand motion** for axial and transverse probing tasks.
- Engineered a torque-transparent closed-loop actuation system with direct-drive motors and encoders, validated in planar actuation experiments showing **<5° deviation between commanded and measured force vectors**.
- Demonstrated in humanoid teleoperation studies that 2D haptic feedback **improved control by 50%+** vs. visual-only cues.
- Publication: ***The N2D Haptic Glove: A Multi-Finger Glove for 2D Directional Force Feedback***, IEEE ICRA (Submitted 2026)

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%**.
- 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% detection 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%**.

Dynamic 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