# OLIVIA GUO

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## EDUCATION

**University of California, Berkeley | May 2027** GPA: 3.88/4.00
*B.S. Electrical Engineering & Computer Science; Minor in Bioengineering*
**Relevant Coursework:** Microelectronic Devices, Computer Architecture and Machine Structures, Designing Infomation Devices, Data Structures; **SP26:** Linear Integrated Circuits, Digital Design and Integrated Circuits (w/ ASIC Lab)

## WORK EXPERIENCE

**Spiro Robotics** Castro Valley, CA
*R&D Systems Engineering Intern* May 2025 – Aug 2025
- Developed Arduino-based firmware for joystick controls, implementing CRC protocol between device and its external display, and optimized joystick input to motor sensitivity, eliminating jerky movements in articulation.
- Spearheaded a new feature initiative by engineering a servo motor position tracking system with low-pass filtering to reduce signal noise, modifying hardware, and writing Arduino C++ scripts for data analysis and optimization.
- Repaired Python manufacturing scripts for new device firmware, added save/load features, and created executables to simplify quality control tests; used to validate 50+ device functionalities per ISO 7376 and FDA 510(k) standards.

**Berkeley Imaging Systems Laboratory** Berkeley, CA
*Undergraduate Researcher* Apr 2024 – Present
- Engineer a low-pass pre-amplifier with noise matching: the first-stage analog front-end for the Magnetic Particle Imaging system, a pre-clinical imaging modality with superior resolution, contrast, and safety to nuclear imaging.
- Managed a team of 10+ undergraduates to synthesize, extract, and purify 100+ iron oxide imaging tracer samples by filming instructional videos, writing a liquid-liquid extraction SOP, and delegating shifts for two semesters.
- Designed a self-assembling DNA-based drug delivery device using sCADnano (CAD-based nano-scale application) that allows for a 200% increase in successful drug encapsulation; verified in vitro through 100+ experiments.

## PROJECTS

**Autonomous Maze-Solving Car (IEEE "Micromouse")** Fall 2025
- Design and build an autonomous robotic "mouse" using microelectronics and CircuitPython programming that negotiates a maze of standard dimensions from a specified corner to the center in the shortest time.
- Regulate position using sensors, speed through PID control, and efficient paths with floodfill algorithm.

**Treble Boost Effects Box** Spring 2025
- Engineered a circuit that takes the output signal from an electric guitar, enhances its treble content, and raises its amplitude to provide a more pleasant, distorted tone than from an amplifier alone.
- Modeled effects by deriving a symbolic transfer function, selecting circuit elements, and simulation via SPICE.
- Tested circuit functionality using an oscilloscope and used a network analyzer to confirm the frequency response.

## ACTIVITIES

**UC Berkeley Electrical Engineering & Computer Sciences (EECS)** Berkeley, CA
*Undergraduate Course Instructor - Structure & Interpretation of Computer Programs (CS61A)* Sep 2024 – Present
- Host weekly sections for 50+ students with no programming experience, teaching concepts and guiding exercises.

**Cal Club Volleyball** Berkeley, CA
*Team Captain* July 2024 – Present
- Led to 3rd-place finish out of 503 teams across the US at the National Collegiate Volleyball Federation Tournament.

## SKILLS

**Languages:** C, Python, RISC-V, Java, SQL, Lisp (Scheme), HTML/CSS, R
**Tools & Frameworks:** LTSpice, Microcontrollers, COMSOL, Logisim, Git, GDB, Valgrind, Test Bench, KiCAD