

JUSTIN LIAO

(626) 658-1757 | justinnlliao@gmail.com | <https://www.linkedin.com/in/justin-liao-jhu>

EDUCATION

Johns Hopkins University | Baltimore, MD

Expected May 2029

B.S. Biomedical Engineering & Electrical Engineering, Minor in Robotics

GPA: 3.85/4.00

Relevant Coursework: FPGA Synthesis, Advanced Digital Circuits, Electromagnetics, Probability and Statistics, Biochemistry, Data Science

PROFESSIONAL EXPERIENCE

Johns Hopkins University

Baltimore, MD

Research Assistant IMERSE Lab

Jan. 2026 - Present

- Designed and assembled KiCad interface PCBs for computer triggering and surgeon-pedal forwarding to an electrosurgical generator; v3 adds LigaSure to CUT, COAG, and bipolar
- Developed an ESP32-to-ROS2 serial bridge to timestamp pedal events and distinguish surgeon commands from robot commands for surgical imitation-learning data collection
- Collected 400+ microrobot swimming samples with a VORIACS electromagnetic actuation system to build an imitation-learning dataset for neurovascular drug-delivery research

University of Southern California

Los Angeles, CA

Research Assistant ACME Lab

Jun. 2024 - May 2025

- Built a USB-controlled positioning stage for electron paramagnetic resonance (EPR) experiments, integrating ball-screw mechanics, a NEMA 17 stepper, and a custom RP2040/TMC2209 controller PCB
- Developed PC software for homing and motion; all 10 home-to-target trials landed within ± 0.03 mm on an inspection microscope's scale
- Completed schematic entry, miniaturization, and KiCad layout for a 1.7 GHz microwave probe under PhD mentorship (not fabricated after the requirements changed)

PROJECTS

Blue Jay Racing

Baltimore, MD

Data Acquisition Team Member

Aug. 2025 - Present

- Designing a four-layer Teensy 4.1 DAQ PCB in KiCad for Engine/CVT Dyno RPM and torque measurement; translating two-transducer characterization and power calculations into signal-conditioning requirements
- Bench-tested two strain-gauge torque transducers and an S7M amplifier with an oscilloscope and DMM; identified a failed sensor and established 2 mV/V sensitivity and amplifier gain requirements
- Built an inductive-clamp RPM prototype on perfboard and bench-tested it to 15,000 RPM; pickup became unreliable on the vehicle

PelviStim

Baltimore, MD

Electronics & Firmware Team Member

Oct. 2025 - May 2026

- Simulated a Howland current pump and DC-DC converter in LTspice; ± 48 V rails could not sustain 22 mA through 3 k Ω , with simulated output reaching about 16 mA
- Wrote Arduino-side Bluetooth command firmware for a NeuroStimDuino-based prototype; tested stimulation output and electrode/contact impedance with an oscilloscope
- Documented a seven-person electrode sensation-threshold comparison; prototype electrodes averaged 7.43 mA versus 10.86 mA for TENS/gel pads
- Prepared design inputs, risk-control tables, and root-cause analyses to support faculty design review and progression to prototype testing

SKILLS

Electronics: KiCad, LTspice, oscilloscope, DMM, signal generator

Programming: C/C++, Python, MATLAB, VHDL, SystemVerilog, ROS2

Embedded: RP2040, ESP32, Teensy, Arduino

Mechanical CAD: Onshape, Fusion 360, SolidWorks

Languages: English, Mandarin Chinese; proficient in Spanish