Matthew Lee

*EECS student with proven hands-on experience designing **PCBs**, developing **embedded firmware**, and leading large hardware projects. Seeking an Electrical Engineering **Hardware Design** & **Validation** internship to apply skills in **PCB bring-up**, **test development**, and **system-level debugging**.*

Contact

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Education

University of California Berkeley — Berkeley, CA
Bachelor of Science in Electrical Engineering and Computer Sciences — *Aug 2024 – May 2027*

- **Relevant Coursework: Computer Architecture**; **Signals and Systems**; **Microelectronic Devices and Circuits**
- **Accolades:** Member of **Eta Kappa Nu** (EECS Honor Society) and **IEEE**
- **Positions**: Supernode Makerspace **Electronics Admin**
- **GPA:** 4.0/4.0

Experience

Electrical Team Project Manager — Apr. 2025 – Present
UC Berkeley Solar Vehicle Team (CalSol) — *Berkeley, CA*

- **Gen11 Solar Vehicle**
  - Developed the solar vehicle's **high-voltage (120V Li-ion)** and **low-voltage CAN power system architecture**, integrating a **BMS** and **distribution boards** for safe, efficient, and reliable operation.
  - Validated **custom PCBs** on the bench through **oscilloscope measurements** and functional load testing, ensuring each subsystem's correct operation before integration.
  - Performed extensive debugging on-vehicle **harnessing** to ensure clean signals in **CAN, SPI, isoSPI, and I2C lines**.
  - Deployed **ESP32 firmware** supporting **CAN-based communication** between boards.
- **Leadership & Management:**
  - Bridges mechanical and electrical designs to increase efficiency and streamline **system integration**.
  - Managed **20+ member** electrical team across **10+ projects**, driving the vehicle's **two-year build cycle**

Car Horn PCB Lead Designer — Oct. 2024 – Apr. 2025
UC Berkeley Solar Vehicle Team (CalSol) — *Berkeley, CA*

- Designed, brought up, and verified a **mixed-signal PCB**, integrating both **hardware** and **embedded firmware**.
- Completed **PCB schematic, PCB layout, and PCB bring up** of a custom board from scratch, gaining hands-on experience with the full **hardware development cycle**.
- Engineered and flashed a self-made **ESP32 Dev Board** with a **CAN transceiver** and **UART bootloading**, supporting seamless and uniform integration.
- Implemented an **I2C-based DAC**, **bandpass filtering**, and **high-gain amplification** to optimize **horn signal integrity** and minimize **power loss**.

Guitar Pedal Engineer — Mar. 2025 – Aug. 2025
Personal Projects — *Berkeley, CA*

- Engineered custom **analog** guitar pedals using **op-amp circuits** and active **bandpass filters** to shape signal output.
- Applied **frequency analysis** and **LTspice** simulations to validate circuit behavior prior to physical verification.
- Applied **MOSFET circuit design** to implement **signal clipping** and achieve a custom distortion effect.

Technical Skills

Tools & Platforms: KiCAD, Platform.io, Git, LTspice, VS Code, Python, Jira, Confluence, SolidWorks
Hardware: **PCB Design & Layout**, **Mixed-signal Circuit Design**, Power Electronics, Signal Filtering, PMOS/NMOS
Embedded Systems & Languages: C/C++, RISCV Assembly, ESP32, CAN, SPI, isoSPI, I2C, I2S, UART, Python
Validation & Testing: **PCB bring-up**, **System-level verification** and **integration**, BUS Monitoring, Harnessing, Soldering, Oscilloscope Testing,