Ashwin Kuppahally

408-666-4748 | ashwin.kuppahally@gmail.com | linkedin.com/in/ashwin-kuppahally | ashwink.org

Education

The University of Texas at Austin — Austin, TX

Bachelors of Science, Electrical & Computer Engineering and Biomedical Engineering — *May 2027*

- Relevant Coursework: Mechatronics, Circuit Theory, Computer Architecture, Signals and Systems

Experience

Hardware Design Engineer — Aug 2024 – Present

Longhorn Racing Electric FSAE Team — *Austin, TX*

- Designed a high-voltage battery management board using a **Tesla ADBMS chip** to monitor cell voltage and temperature, incorporating low-pass filters for accurate cell voltage measurement.
- Implemented **isolated communication via isoSPI** and developed functionality to support **cell balancing** during both vehicle operation and charging
- Designed and manufactured a PCB for charging 6.6 kW electric racecar battery from the ground up, capable of **charging 600 V pack**, to increase future charging compatibility and decrease complexity of battery electronics
- Engineered custom boost/buck converters **achieving 98% efficiency** for low-voltage systems, and led hardware validation efforts including root-cause diagnosis and PCB rework to resolve design errors.
- Developed **STM32 firmware utilizing CAN/SPI protocols** to manage battery sensors and user feedback, while implementing the J1772 charging standard with digital logic for precise vehicle state detection.

Electrical Engineer — May 2025 – Aug 2025

10x Genomics — *Pleasanton, CA*

- **Designed PCB in Altium** to automate optics testing process with high-current LEDs to validate optics sensitivity - prototyped and tested product, conducting **schematic/BOM review** with senior engineers
- Implemented precise LED luminosity/color control with **STM32 firmware** and feedback sensors, and enabled **CAN/I²C** communication to control optics assembly with a thermally efficient PCB design
- Reduced field failures by **85%** on a fluidics stepper motor controller by diagnosing and fixing a failing integrated current sensor through in-house testing and PCB rework
- Reduced prototyping time by **50%** by developing a comprehensive automated test fixture for a production board
- Designed custom electronics fixtures to emulate peripherals, built tailored harnessing, and implemented supporting hardware/firmware to accelerate validation of new board versions

Electrical Engineer - Humanoid Robotics — Jan 2025 – Jun 2025

Feather Robotics — *Palo Alto, CA*

- Designed a centralized **PCB in Altium** after identifying a critical customer pain point in fuse accessibility, consolidating fuse locations and integrating robot control systems, **improving safety and serviceability**
- Integrated control system circuitry while optimizing power electronics, signal integrity, and space constraints
- Cut PCB manufacturing costs by **50%** by sourcing components and establishing turnkey production processes
- Designed an **IEEE and UL-compliant** electrical system, defining the overall architecture, interconnects, and safety features (breaker placement, shutdown system)
- Engineered a custom harness that reduced wiring complexity by **30%**

Projects

25kW Automotive Motor Inverter | *KiCad, PLECS* — May 2025 – Present

- Engineered a custom 3-phase motor inverter for an EV hub motor in KiCad, designing custom gate drive, current sensing, and isolated power topologies to effectively switch Silicon Carbide (SiC) FETs.
- Optimized power stage stability and mitigated FET ringing by validating designs in PLECS and implementing advanced layout techniques such as interleaved power planes and tuned DC link capacitance.
- Implemented critical high-voltage safety features, including discharge circuits and physical isolation, while optimizing the BOM and thermal interfaces to reduce turnkey assembly costs and improve heat dissipation.

Technical Skills

Skills: PCB design (Altium, OrCad), embedded systems software (C, C++, Assembly), CAD (Solidworks, Onshape, AutoCad), Spice simulation, wireless chip communication/telemetry (BLE, 5G), electronics manufacturing, PCB rework/soldering, 3D printing, composite materials, Python, MATLAB, Simulink, LabView