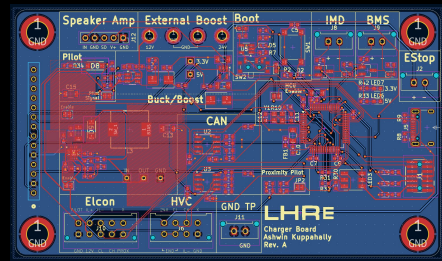
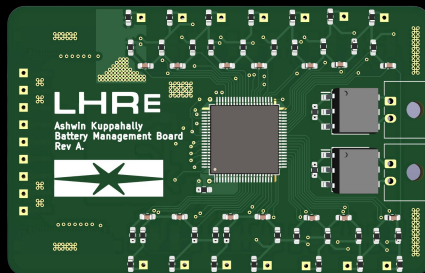


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# Ashwin Kuppahally

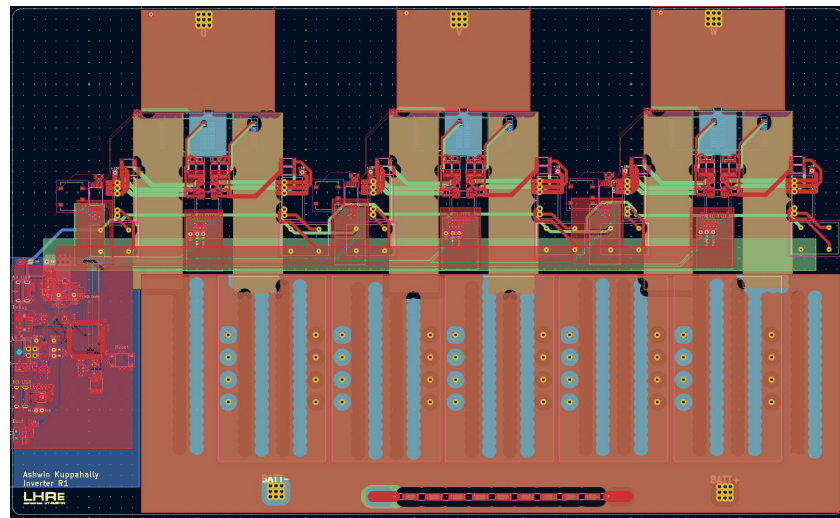
## Engineering Portfolio



Electrical and Computer Engineering  
The University of Texas at Austin, May 2027

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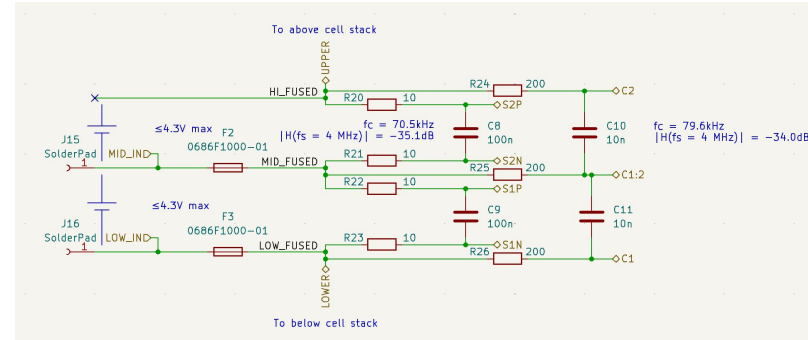
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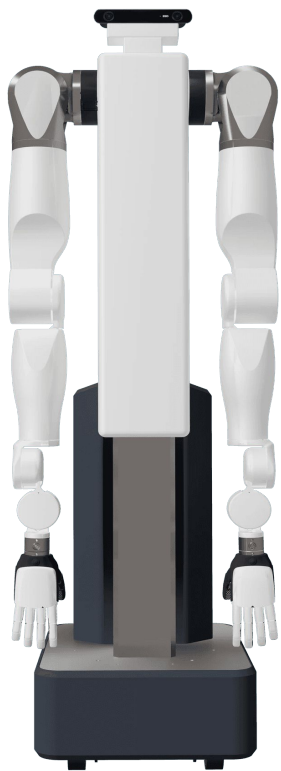
## Isolated DC-DC Converter

## Low Pass Filter Circuit for Voltage Reading

- Developed circuitry for Tesla ADBMS chip
- Created low pass filtering circuits to accurately read lithium cell voltages
- Designed isolated communication system via IsoSPI, using transformers to ensure a physical isolation boundary
- Implemented temperature safety system with thermistors to monitor each cell



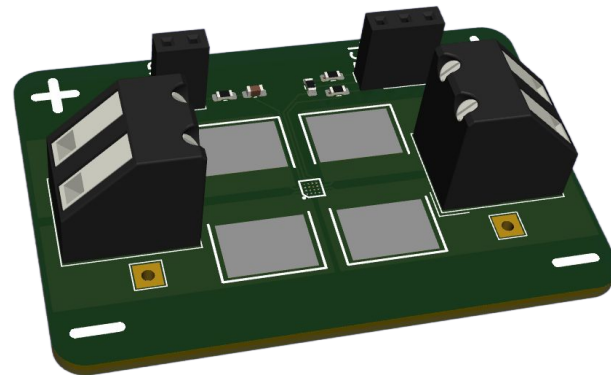
## Low Pass Filter Circuit for Voltage Reading



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# Feather Robotics

- Designed power control PCB in Altium
  - Consolidated power delivery electronics into centralized board
  - Monitored current and voltage of all subassemblies with TI chip, scanned for failures, reported data through CAN
  - Focused on efficiency of power electronics, signal integrity, and space constraints

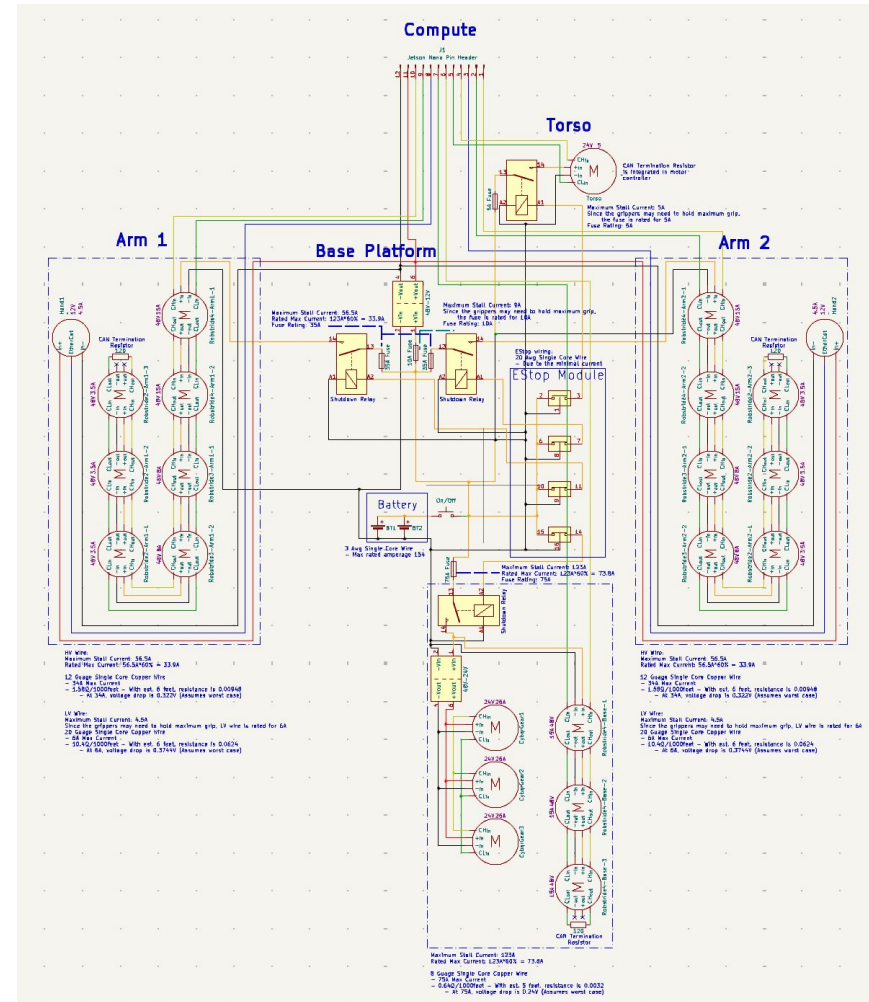


Simple tester board for current sense validation.  
Not the main board I designed due to confidentiality.

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# Feather Robotics

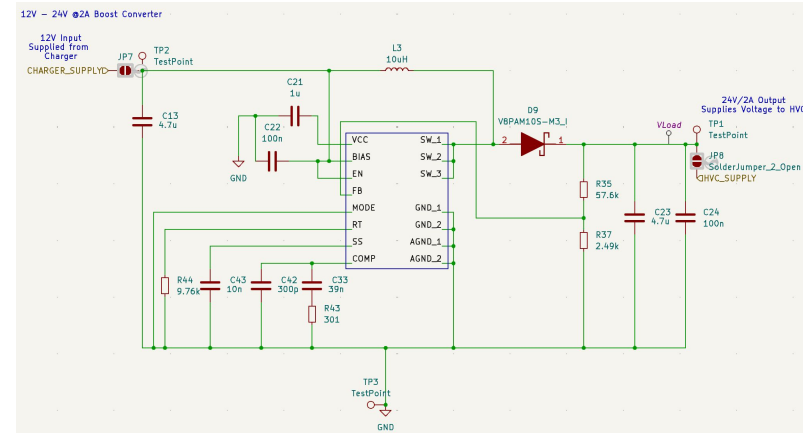
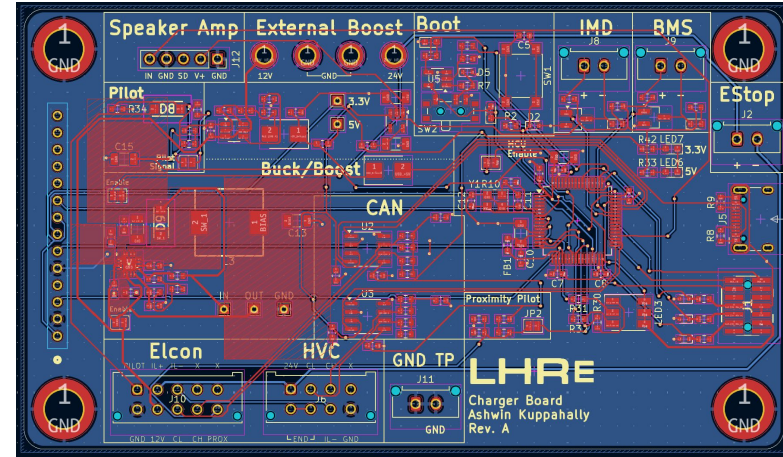
- Created UL-compliant electrical safety architecture
  - Defined interconnects, shutdown system, breaker and shunt placement
  - Specded wire harnessing for current needs
  - Reduced wiring complexity by 30%
- Setup Turnkey PCB Production
  - Revised BOMs and reduced production cost by 50%





# Longhorn Racing

- Designed PCB for charging 600V electric racecar battery
  - STM32 firmware for CAN/SPI communication with BMS
  - Custom boost/buck converters achieving 98% efficiency
  - Developed battery safety systems and shutdown loop
  - Implemented the J1772 charging standard
  - Tested prototypes with oscilloscopes and did PCB rework to fix issues



Custom Boost Converter Circuit

# 10X Genomics

- Designed PCB in Altium for optical sensor testing
  - Controlled optical motor assembly over CAN
  - Precisely controlled high-current LEDs with luminosity feedback sensors
- Diagnosed issue on production board affecting 10% of instruments
  - Conducted PCB rework to find and fix issue
  - Helped firmware and field engineering teams implement fixes



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**Resume:**  
[ashwink.org/resume](http://ashwink.org/resume)

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