

# OLIVER KRAUSE

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## EDUCATION

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### University of California, Los Angeles (UCLA) Los Angeles, CA

B.S. Mechanical Engineering, Technical Breadth in Electrical Engineering June 2025

GPA: 3.88 / 4.0 • Dean's List (2021–2023) • Relevant coursework: Circuits, Digital Logic, Power Electronics, Controls

## TECHNICAL SKILLS

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**Embedded & EE:** Schematic & PCB design (KiCad, Altium, Eagle), high-speed layout (USB 3, MIPI, PCIe, impedance control), power electronics (buck/boost, LDO, load switches), power budgeting, analog and mixed-signal, ESP32, ATmega

**Firmware:** C, C++, Python, MATLAB; bare-metal & RTOS firmware, serial communications debugging (logic analyzer), Git

**Mechanical & CAD:** SolidWorks, Onshape, Fusion 360; large-assembly management, PDM/version control workflows, design intent and parametric modeling, FEA and thermal modeling, GD&T

**Fabrication & Sourcing:** Reflow soldering, 3D printing, MIG/TIG welding, CNC mill, lathe; domestic and overseas supplier development, DFM negotiation, cost reduction

## WORK EXPERIENCE

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### Humble / Fieldpack Los Angeles, CA

Co-Founder and Head of Product

Jan 2023 – Present

- Sole engineer across electrical, firmware, mechanical, and supply chain for five hardware generations of a commercial 7 kWh / 10 kW portable battery system. Deployed fleet under a ~\$100K city contract and on productions including Benson Boone and Coldplay music videos, a Def Leppard photo shoot, and a Weather Channel commercial where battery power saved thousands of dollars in fire marshal permitting, and allowed the shoot to continue during a last-minute location change amid the 2025 LA fires.
- Designed three generations of an all-terrain studio cart purpose-built for the Fieldpack battery system, iterating from initial concept through production-intent sheet metal construction. The cart folds flat for transport, handles rough terrain safely, and features a familiar latching parking brake.
- Designed the Control Node (ESP32-S3 based) with fully isolated architecture: isolated CAN and RS-485 transceivers, isolated load switches, isolated buck. Polls all inverter and charger registers over CAN and RS-485, compares against a configuration table, auto-corrects any misconfiguration, monitors for faults, and logs all device data to per-device SD card CSVs organized by day. Integrates IMU, RTC, and 915 MHz LoRa for remote monitoring.
- Designed 240A copper busbars: Python thermal model validated against real-world testing to size cross-sections to UL 891 limits and calculate joint torque specs; sourced laser-cut, bent, nickel-plated, epoxy-coated parts from a Chinese CM at ~90% cost reduction, one of dozens of overseas suppliers developed across Fieldpack hardware generations.
- Investigated acoustic noise from chargers via thermal imaging, anemometry, and oscilloscope fan tachometer measurement; developed thermal models (revised against real-world testing); sourced a heat-pipe fin assembly reducing fan speed 12.7% (80 to 73 dBA); characterized fan alternatives; debugged PMBUS common-mode noise traced to incorrect ground reference.

### Second Order Effects Seattle, WA

Electrical Engineering Intern

Jul 2024 – Sep 2024

- Designed an 8-layer impedance-controlled compute board for an autonomous agricultural robot fleet (NDA) integrating an NXP SOM, LTE module, NVMe SSD as well as USB 3.2, MIPI, and PCIe hardware. Revised power subsystem schematics (budgeting, buck/LDO, load switches) and executed full ground-up layout. Boards are in active service across the client's commercial fleet.
- Debugged serial communications on a DC fast-charging powerline module and analyzed resolver phase behavior for a lunar vehicle.

### ZeroAvia Hollister, CA

Aerospace Engineering Intern

Jun 2022 – Sep 2022

- Executed start-to-finish mechanical design of a 2 MW peak-discharge battery (containerized in a 20 ft shipping container for mobile tow testing) for hydrogen-electric aircraft development: designed 49 CFR shock-rated LiFePO4 module racking, developed a full-system thermal model validating safe operation at edge-case loads, specified HVAC requirements, lithium fire suppression, and produced ANSI drawings that put construction underway. Battery was completed shortly after my internship and saw one year of service before the company relocated and the system was retired.
- Managed a 10,000+ component master assembly using hierarchical subassembly nesting, lightweight and SpeedPak configurations, and graphics and rebuild optimization to maintain workable performance at scale; worked within a SolidWorks PDM environment for file and revision management.

## PROJECTS

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### UCLA Bruin Racing

Shell Eco-Marathon Fuel Cell Team, Member, Technical Director

Oct 2021 – Jun 2024

- Advised component selection for BLDC motor controller and power distribution; engineered award-winning carbon fiber monocoque chassis (theoretical Cd 0.16, 6x drag reduction, 22 kg saved); placed 2nd nationally in Urban Concept Electric, won design award for chassis manufacturing process.