



OMKAR KULKARNI

Newark, CA

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Education

University of Colorado Boulder

M.S. Electrical Engineering, Focus in Power Electronics | Graduating May 2027 | GPA: 3.85/4
Microelectronics GLA | Engineer-in-Training (EIT) certification from California BPELSG

Aug 2025 – May 2027

Boulder, CO

University of Illinois Urbana-Champaign

B.S. Electrical Engineering, Minor Computer Science | GPA: 3.89/4
James Scholar Honors Program | IEEE-HKN Member | Grainger Power Award Recipient

Aug 2021 – May 2025

Urbana-Champaign, IL

Relevant Coursework (UIUC - ECE, CU Boulder - ECEN)

- ECEN 5817: Resonant and Soft-Switching Techniques in PE
- ECEN 5517: PE and Photovoltaic Power Systems Lab
- ECE 598: Adv. Power Electronics
- ECE 464: Power Electronics (PE)
- ECEN 5827: Analog IC Design
- ECEN 5797: Intro to PE
- ECE 469: Power Electronics Lab
- ECE 445: Senior Design Lab
- ECE 444: IC Device Theory & Fab.
- ECE 431: Electric Machinery

Experience

Illini Solar Car

Student Advisor | Prev. Physics Lead, Strategy and Telemetry Team

Aug 2021 – July 2025

Urbana, IL

- Constructed Python physics library to improve accuracy of vehicle state prediction algorithm intended for competition.
- Characterized 35+ Li-Po battery pack modules with high power supply/load setup for new car battery pack

Prev. Array Lead, Electrical Team | ASC '22, '24 Electrical Pit Crew | Battery Management System Member

- Devised wiring configuration and placement for 257 array cells, and installed array on new car.
- Revamped KiCAD layout of sensing board, enhancing cell voltage/temperature measurements for Li-ion battery pack.
- Hand-soldered 10+ PCBs for vehicle powertrain, validating performance and reliability with test equipment.

ECE Department, UIUC

TA, ECE 330: Power Circuits & Electromechanics | Grader, ECE 333: Green Electric Energy

Aug 2024 – May 2025

Urbana, IL

- Held weekly office hours, graded assignments, and proctored exam sessions for 145+ student course.

The Aerospace Corporation

Electronics and Power Systems Department Technical Intern | Space Force 2030

May 2023 – July 2023

El Segundo, CA

- Analyzed, simulated, and breadboarded differential amplifier circuit with SIMetrix to validate the proof-of-concept.
- Implemented Python script to interface with an e-load/power supply, enabling solar array IV curve characterization.
- Drafted KiCAD schematic captures for capacitor stress test board and Device Under Test (DUT) current sense board.

Research

Colorado Power Electronics Center

Graduate Research Assistant, Maksimović Research Group

Aug 2025 - Present

Boulder, CO

- Simulated TSAB+multiphase buck topology for proof-of-concept, efficiency tuning, and control loop validation
- Devised initial PCB layout in Altium Designer for 4-layer GaN Point-of-Load (PoL) board for space applications

The UIUC Grainger Electric Machinery Lab

Undergraduate Research Assistant, Haran Research Group

Jan - Apr 2023, Sept 2023 – Jan 2025

Urbana, IL

- Implemented instrumentation setups for multiple thermal experiments with a vacuum chamber and cryocooler
- Constructed layout for 1500V SiC PWM 4-layer Inverter PCB intended to measure self-inductance of coil windings.
- Aided graduate student with motor coil insulator reliability testing by modeling partial discharge inception voltage.
- Measured initial phase-to-phase PDIV for all coils with power supply/transformer setup driving 800-1300V.

The UIUC Advanced Power Applications Lab

Undergraduate Laboratory Assistant, Banerjee Research Group

Aug – Nov 2021, Aug – Oct 2022

Urbana, IL

- Fabricated 3 acrylic safety enclosures for graduate students' power electronic projects with Adobe Illustrator.
- Laser cut and assembled acrylic sheets, drilling extra holes and gluing with adhesives as necessary.

Technical Skills

Programming Languages: C/C++ · Python · LC3/Assembly

Tools & Frameworks: Git/Github · VS Code · Node.js · MongoDB · Matlab · Docker · Eclipse

Hardware & Electronics: KiCAD · LTspice · Altium Designer · SIMetrix · Arduino