

Sebastian Zapata

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EDUCATION

The University of Texas at Austin

Austin, TX

B.S. Electrical and Computer Engineering; GPA: 3.9

Dec 2027

- Relevant Coursework: Circuit Theory, Linear Systems & Signals, Embedded Systems
- Honors: 2024 HSF Scholar

EXPERIENCE

POWER Engineers

Denver, CO

Electrical Engineering Intern

May 2025 – Present

- Automated model synchronization across PSS/E & PSLF, cutting workflow time by **80%** and eliminating cross-tool drift.
- Validated **7** substation/plant models, improving fault-study reliability and transient stability accuracy (PSCAD, PSS/E, PSLF).
- Authored **2** design reports from motor-configuration studies, reducing misconfiguration risk across project teams.

FSAE Longhorn Racing Electric

Austin, TX

Power Electronics Subsystem Lead

Aug. 2024 – Present

- Delivered subsystem bring-up **2 weeks early**; led **8** engineers across **4** power-electronics projects for drivetrain integration.
- Designed **600 V** high-voltage schematics & PCBs (VCU, wheel-speed, HVC logic) with creepage/clearance compliance and **40 A+** delivery.
- Achieved **100%** communication reliability in wet-track tests via STM32 firmware (encoder capture, CAN bootloading) validated with scope & JTAG.
- Qualified telemetry/dashboard boards under vibration and 70°C thermal cycling with zero latch-ups or data loss.
- Coordinated integration with mechanical & software subsystems, ensuring cross-disciplinary safety compliance and on-time vehicle readiness.

Texas Aerial Robotics

Austin, TX

Electronics & CAD Member

Aug. 2024 – Jan. 2025

- Reduced UAV assembly weight by **10%** via CAD redesign while maintaining structural integrity for flight performance.
- Co-developed flight-controller PCB with improved signal integrity under high-load switching, supporting autonomous UAV operations.

PROJECTS

High Voltage Control Board | BMS Integration

- Developed the **HVC main PCB** as the hub for 10 BMBs, enabling multi-cell voltage/temperature acquisition, pack current sensing, and reliable isoSPI daisy-chain communication with full creepage/clearance compliance for 600V operation.
- Implemented hardware for **contactor and precharge control, IMD monitoring, and accumulator indicator**, while supporting open-wire detection and fault propagation (OV/UV/OT) through the shutdown circuit as the vehicle's primary high-voltage safety interlock.

High-Speed RC Car | ESP32+RF control, 3D-printed chassis

- Integrated ESC control with **50 ms** latency; validated drivetrain for **70 mph** loads across repeated durability sessions.
- Iterated chassis for stiffness & serviceability, simulating aerospace-style vibration and structural reliability.

TECHNICAL SKILLS

Design/Simulation: KiCad, Altium, LTspice, PSCAD, PSS/E, PSLF, SolidWorks, Fusion 360

Firmware & Validation: C, STM32, Python, CAN, isoSPI, UART, Oscilloscope, DMM, SWD/JTAG, HV/BMS Safety, Soldering & Rework