

Darsh Patel

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EDUCATION

Texas A&M University
B.S. in Electrical Engineering

College Station, TX
Expected May 2029

SKILLS

PCB & Power: Altium Designer, KiCad, LTspice; schematic capture, PCB layout, power distribution, isolated gate-drive circuits
Test & Embedded: Oscilloscopes, programmable supplies, electronic loads, JTAG, SMT rework; ESP32, TI C2000, Raspberry Pi
Software & Mechanical: C++, Python, MATLAB/Simulink/Simscape, Git; SOLIDWORKS, Onshape, GD&T, FDM printing

EXPERIENCE & RESEARCH

SVTronics, Inc.

Plano, TX

Hardware Test Engineer Intern

Jun.–Aug. 2024; Jun.–Aug. 2025

- Programmed and functionally tested 1,000+ PCBAs with oscilloscopes, programmable supplies, electronic loads, and JTAG.
- Troubleshooted defective boards with schematics, IC datasheets, and manufacturing documentation to find and replace failed components; helped recover 95% of failed boards.
- Ran load, continuity, and functional tests on RF modules, motor drivers, power converters, and 30+ TI evaluation boards.

Advanced Electric Machines and Power Electronics (EMPE) Lab

College Station, TX

Student Technician

Feb. 2026–Present

- Designed a test-point PCB in Altium and a SOLIDWORKS enclosure for the ECEN 442 lab kit used by 70+ students.
- Repair motor test benches by finding root causes, doing SMT and through-hole rework, and verifying with functional tests.
- Measured Nissan EESM stator winding impedance across AC frequencies with an LCR meter and megohmmeter.
- Built Python and MATLAB workflows to sample FEM flux maps and compare surrogate models.

ACTIVITIES

TAMU SOMTECH, MIRAGE URC Team

College Station, TX

Electrical Engineer

Aug. 2026–Present

- Modeling rover and 6-DoF arm power consumption in Simscape Multibody to size the power system.
- Designing a bidirectional DC-DC converter between the 48 V battery pack and the 42 V motor bus.

Robotic Arm Mechanical Designer

Sep. 2025–Aug. 2026

- Designed joint 3 of the 6-DoF arm in SOLIDWORKS for 50 N·m of output torque to lift a 5 kg load, with a clamp that attaches to the carbon-fiber tubes without drilling; created URDF files for Gazebo simulation.

Slip Ring Project Lead

Feb.–May 2026

- Led design of a slip ring, targeting half the cost of COTS parts, and a bench to test its contact resistance and heating.

Aggie Robotics

College Station, TX

Combat Robotics Electrical Engineer

Sep. 2025–Mar. 2026

- Designed a buck converter and simulated it in LTspice; led cost-benefit analysis for component selection.
- Diagnosed ESP32 and NRF24L01 radio failures by probing SPI on an oscilloscope, then moved the link to ESP-NOW.

T.U.R.T.L.E. (CNTR)

College Station, TX

CNTR Electrical Lead

Sep. 2025–Jan. 2026

- Led electrical architecture for a VR-controlled modular humanoid robot, tested servos and actuators, and programmed the ESP32 arm firmware for a live demo; led a battery trade study presented at design review.

PROJECTS

48 V Three-Phase GaN Inverter | Altium, STM32G474 | In layout

- Four-layer 4×4 in board with STM32G474 control and three NCP51810-driven 100 V GaN half-bridges, 36 to 60 V input. Placement is done, routing is in progress, and EM simulation of the layout comes next, before fabrication.

Three-Phase SiC Inverter & Isolated Gate-Drive PCBs | Altium, SOLIDWORKS | Layout only

- Laid out a three-phase SiC switching-stage PCB designed for over 5 kW at 250 V and a separate isolated gate-drive board, keeping high-current switching loops compact; not fabricated.

Operating Room Lighting Arm, TAMUhack 2026 | ESP32, DM556, Onshape

- On a team of four, designed the 24 V power distribution with 3.3 V, 5 V, 6.8 V, and 12 V rails for three DM556 stepper drivers, designed the 2-DoF SCARA arm in Onshape, and wrote a C++ step-pulse library.

Six-Wheel Rocker-Bogie Rover | Onshape, GD&T, FDM Printing

- Designed the rocker-bogie chassis in Onshape and a 3D-printed 16:1 wheel-integrated planetary gearbox over four prototypes.