

Neel Gupta

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PROFESSIONAL SUMMARY

Mechanical Engineering student at UT Austin with hands-on experience in hardware validation, hydraulic systems, embedded controls, and systems engineering. Seeking mechanical engineering internship roles in robotics, mechatronics, or aerospace and defense.

EDUCATION

The University of Texas at Austin

Bachelor of Science in Mechanical Engineering. GPA: 3.76 / 4.00

Austin, TX

Expected May 2028

SKILLS

- **CAD and Analysis:** SolidWorks, Siemens NX, AutoCAD, Autodesk Inventor, FEA, MATLAB, Excel, P&ID drawings, 3D printing
- **Engineering:** Mechanical design, systems engineering, hydraulic systems, product testing and validation, root cause troubleshooting, design for manufacturability, prototyping, technical documentation
- **Embedded and Controls:** Python, Arduino, Raspberry Pi, OpenCV, I2C, PWM and servo control, closed-loop control tuning, sensor integration and calibration

EXPERIENCE

NOV Inc. (National Oilwell Varco)

Houston, TX

Mechanical Engineering Intern, Test Facility Modernization and Product Validation

May 2026 – Aug 2026

- Conducted high-pressure qualification tests on hydraulic agitators and coiled tubing motors, measuring upstream frequency, peak-to-peak pressure, and mean pressure drop across multiple BPM set points to verify customer specifications.
- Traced a legacy coiled tubing dynamometer test facility by hand, mapping over 200 components across high- and low-pressure circuits to rebuild a system layout that had no documentation.
- Authored the Engineering Definition Package in AutoCAD, producing 8 drawings covering P&IDs, general arrangement, instrument and I/O lists, and controls concept.
- Benchmarked the facility against current standards, compiling 15 prioritized gaps to define the modernization scope.
- Partnered with mechanical, controls, and test engineers to isolate hydraulic and sensor faults to root cause and reconcile drawings against as-built hardware.

University of Houston

Houston, TX

Research and Development Fellow

May 2025 – Aug 2025

- Developed a pressure measurement system reading 8 BMP581 sensors simultaneously via a TCA I2C multiplexer to capture surface pressure distribution across an airfoil in wind tunnel testing.
- Designed airfoil chambers with internal sensor tunnels in AutoCAD and 3D printed them across 3 iterations, refining port tolerances until every sensor sealed airtight.

PROJECTS

NASA L'SPACE Mission Concept Academy

Remote

Thermal Engineer, Lunar Rover Mission Design

May 2025 – Aug 2025

- Owned the thermal control subsystem for a lunar South Pole rover, holding battery, avionics, and payload temperatures within 0 to 40 degrees C nominal and -20 to 50 degrees C survival using MLI blankets, Z93P coating, silver FEP tape, PGS sheets, and resistance heaters within a 25 W average and 75 W peak power budget.
- Modeled radiator placement, heater zones, and thermal interfaces in Siemens NX, iterating with the mechanical engineering team to resolve packaging conflicts against the rover chassis and instrument deck.
- Coordinated with the command and data handling (C&DH), power, science, and programmatic teams to align thermal requirements, interface constraints, and power allocation.
- Presented requirements, ConOps, and verification plans to the review board across 4 design reviews (MCR, SRR, MDR, PDR), delivering 14 mission formulation documents throughout.

Longhorn Baja SAE

Austin, TX

Ergonomics Racing Team Member

Sep 2025 – May 2026

- Designed a competition steering wheel in SolidWorks, shaping spoke geometry and grip profile for driver control, comfort, and manufacturability in off-road endurance racing.
- Validated the design through FEA and 3 rounds of 3D printed prototypes, then defined machining requirements with the shop and aligned packaging and cost targets with the powertrain and business subteams.

AI Vision Tracking Camera System

Houston, TX

Embedded Systems Developer, SNDN Terrace LLC

May 2026 – Aug 2026

- Prototyped an autonomous camera system for SNDN Terrace LLC to monitor a residential property, using Python and OpenCV on a Raspberry Pi 5 with a PCA9685 PWM servo driver over I2C driving a two-axis pan-and-tilt mount.
- Tuned a closed-loop proportional controller converting pixel tracking error into servo commands, adding deadband and smoothing to reduce jitter and hold target centering through continuous motion.