Om Manish Patel

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Charleston, SC — U.S. Citizen

Summary

Aerospace engineering graduate with six years of hands-on maintenance and troubleshooting on pressurized fluid, mechanical, and electrical systems, with project experience across the engineering lifecycle. Seeking to apply propulsion analysis, CAD, and systems thinking to support propulsion and mechanical design, testing, modeling, and integration.

Education

Bachelor of Science in Aerospace Engineering *May 2026*
University of South Carolina, Columbia, SC *GPA: 3.25*
Relevant Coursework: Propulsion Technologies, Thermodynamics, Finite Element Analysis, Materials, Compressible Aerodynamics, Flight Dynamics and Controls, Aerospace Structures, Mechanical Vibrations, Manufacturing, Aerospace Laboratory I & II

Projects

Rocket, Ramjet, and Resistojet Propulsion Analysis *ANSYS Fluent, MATLAB — Fall 2025*

- Built 2D geometries for three propulsion systems (ramjet, rocket, resistojet) in ANSYS Fluent with species transport, finite-rate combustion, and k-omega SST turbulence; confirmed grid convergence over five meshes
- Ran a 15-case sweep of Mach, propellant, fuel-air ratio, chamber length, and nozzle geometry, reducing exit data to thrust, specific impulse, and TSFC; peak simulated ramjet performance reached 122 kN at 2,492 s I_{sp} on hydrogen at Mach 3
- Diagnosed incomplete methane combustion and excessive Mach 3 inlet shock losses from flow-field contours and recommended a longer combustor and refined inlet lip

High-Altitude Balloon Flight System *CATIA V5, Python, Raspberry Pi — Spring 2026*

- Executed the full engineering lifecycle on a recoverable 30 km payload: requirements definition, mechanical design, build, qualification testing, and verification, delivering an integrated flight article in 16 weeks
- Led the avionics, telemetry, and power subsystems and drove their integration with the structural, thermal, and recovery groups, managing procurement and supplier lead times and presenting at multiple formal design reviews
- Ran ground qualification covering endurance, telemetry range and packet integrity, parachute drop, suspension load, cold-soak, and GPS accuracy testing, verifying 15 of 22 requirements; HABSAT never flew after ATC denied airspace access

Structural Beam Design and FEA Validation *Abaqus, CNC Machining — Fall 2024*

- Designed and iterated a structural beam against a strict 1 lbf mass constraint, using lightening-hole placement to reach a final mass of 0.974 lbf at a factor of safety of 3.4, the highest load capacity in the class
- Worked alongside the machinist through G-code programming and CNC fabrication, then validated the machined part against Abaqus predictions: deflection matched three-point bending data to within 4.2% up to 6,250 lbf

Experience

Maintenance Technician — *EZ-Stop, Ridgeland, SC* *June 2020 – Present*

- Maintain and repair fuel equipment at a 24/7 site: replace nozzles, hoses, breakaway couplings, and filters; troubleshoot dispenser and pump faults; check tanks for water intrusion and escalate work beyond site scope to certified contractors
- Service building mechanical systems including HVAC, refrigeration, plumbing, and electrical by diagnosing faults, sourcing replacement parts from vendors, and keeping equipment in service
- Handle most repairs in-house rather than waiting on a service call. Promoted to sole site technician after six years of continuous service while completing a full engineering degree

Skills

Design & Engineering: Mechanical design, 3D printing, GD&T and 2D drawings, 3D modeling and assembly, pumps and pressure regulators, rocket propulsion, gas and fluid dynamics, FEA, engineering lifecycle and design reviews

Lab & Testing: Pipe flow testing, heat transfer testing, tensile and bending testing, wind tunnel testing, strain gauges and LabVIEW data acquisition, uncertainty analysis

Software: SolidWorks, Creo, CATIA V5, MATLAB, ANSYS Fluent, Abaqus, Python, LabVIEW, Microsoft Office