

VISHAL PANCHAL

MSc Aerospace Engineering | Aerospace System Engineering | FEA & MATLAB

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Education

University of Leeds

Leeds, United Kingdom

MSc Aerospace Engineering

Sep 2025 – Sep 2026

- Modules: Aerospace System Engineering, Advanced Aerodynamics, Aerospace Structure, Advanced FEA

Rajasthan Technical University

Kota, India

Bachelor of Technology in Mechanical Engineering

July 2020 – June 2024

Skills

Software: AutoCAD, CATIA V5, SolidWorks, Abaqus, MATLAB, MS Office

Systems Engineering: Requirements Management, System Specification, Systems Modelling & Integration, Verification & Validation (V&V), Test & Evaluation (T&E), Qualification, Certification & Acceptance, Product / Through-Life Support

Engineering: FEA & CFD Analysis, Aerospace Structure, Aerodynamics, Geometry Preparation & Meshing, Engineering Design & Development, Wind Tunnel Data Interpretation, Thermal Management & Power Systems

Manufacturing: CNC Programming & Machining, Product Development & Prototyping, Lean Manufacturing

Other: Regulatory Compliance / Airworthiness (CAA), Technical Documentation, Stakeholder Management, Cross-Functional Teamwork, Written & Verbal Communication

Professional Experience

MARS EXPLORATION

Remote, India

UAV & Rocket Design Intern

Apr 2026 – Present

- **UAV Design:** Analysing drone aerodynamics (lift, drag, thrust, weight), stability, and stall/spin behaviour; developing 3D UAV models in SolidWorks using sketching, feature operations (extrude, sweep, loft, revolve), surfacing, and assembly.
- **Rocket Design:** Designing rocket components (nose cone, fins, body tube, motor mount) in CAD; analysing rocket propulsion, thrust generation, and trajectory dynamics with focus on aerodynamic stability and CP/CG optimisation.
- **Flight Analysis:** Conducting flight performance analysis including weight estimation, apogee prediction, and stability margin calculations using Mission Planner across UAV and launch vehicle platforms.

BRAHMASTRA AEROSPACE & DEFENCE PRIVATE LIMITED

Chennai, India

Aerospace Structures & Materials Engineering Internship – Project Trainee

March 2026 – April 2026

- Completed Project Trainee role on **Damage Tolerance Assessment of CFRP Aerospace Structures Under Impact and Fatigue Loading.**
- Performed FEA in Abaqus on CFRP laminates to assess stress distribution, delamination, and residual strength under impact and cyclic fatigue loading.
- Executed geometry prep, meshing, and post-processing of composite structures; recommended layup refinements aligned with aerospace qualification standards.

ARTASIA – FURNITURE MANUFACTURING COMPANY

Jaipur, India

New Product Development - Graduate Engineer Trainee

June 2024 – June 2025

- Developed 8+ new product designs as a Trainee in New Product Development, applying design, material science, and manufacturing process skills.
- Collaborated with cross-functional teams to reduce material waste by 12%.

SURATGARH SUPER THERMAL POWER STATION, RAJASTHAN

Mechanical Engineer - Intern

Suratgarh, India

July 2023 - August 2023

- Obtained operational experience on 5 thermal units with focus on maintenance procedures, system efficiency, and auxiliary hydraulic and pneumatic sub-systems.
- Assisted maintenance engineers during troubleshooting and qualification checks on turbine and boiler systems, observing fault diagnosis and inspection procedures.

PROJECTS

Regulatory-Compliant Autonomous VTOL Drone

University of Leeds

MSc Aerospace Project - Conceptual Design & Analysis

2025-2026

- Captured and managed system requirements (airworthiness, safety, performance) for a UK CAA-compliant VTOL concept, applying engineering design in a regulated aerospace environment.
- Performed structural analysis using FEA and CFD tools to optimise weight, strength, and efficiency.
- Executed material characterisation and tensile testing on Aluminium H15 and POM using Instron machines to validate mechanical properties and support data-driven material selection for lightweight, high-strength components.
- Troubleshoot design iterations based on FEA/CFD results, refining geometry and material choices to resolve stress concentrations and improve aerodynamic efficiency.

Conversion of Petrol Omni Van into Electric Vehicle

B.Tech Major Project

Team Lead

2023-2024

- Led a team of 6 to convert a petrol Omni van into an electric car, which achieved a maximum speed of 45 km/h under load with a **30%** boost in energy efficiency.
- Managed component assembly and integration (motor, battery pack, drivetrain) into the vehicle chassis, coordinating fit, tolerance, and safety checks.

Skyscraper Glass Cleaning Robot

Smart India Hackathon 2023

- Created a solution for an autonomous skyscraper glass cleaning robot using Fusion 360, which was among the top 10 ideas at Smart India Hackathon 2023.
- Designed suction-based mounting system and modelled kinematics for vertical traversal; project selected among top 10 of 50,000+ submissions.

Review Paper – Humanoid Robot in Manufacturing

Published, ijcr.org

Author

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