Piyush Kumar

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EDUCATION

Vellore Institute of Technology, Bhopal *Aug 2022 – Ongoing*
B.Tech in Aerospace Engineering   CGPA: 8.41/10

TECHNICAL SKILLS

- **Programming:** Python (NumPy, pandas, matplotlib), Java, SQL (MySQL)
- **Simulation:** CATIA FEA, ANSYS Fluent, SimScale (CFD), STK
- **CAD & Tools:** Fusion 360, AutoCAD, Git, MS Excel

INTERNSHIPS

Drone Frame Designer Intern, AirM Pvt. Ltd. *Mar 2025 – Aug 2025*

- Designed foldable quadcopter frame in **Fusion 360**, enabling 75% cost reduction while maintaining Mavic-class performance.
- Validated structural integrity with **CATIA FEA** for payload; iterated prototypes for reliability.
- Developed nano covert UAV for **military reconnaissance**, optimized for stealth and confined-space operation.
- Coordinated manufacturable CAD, prototyping, and led a small cross-functional team for design reviews.

Research Intern, Aeronautical Society of India, Bangalore *Oct 2024*

- Hands-on exposure to UAV systems and aerospace workflows during a one-week intensive program.
- Gained familiarity with flight simulation and industry-standard aeronautics tools.

PROJECTS

Forward-Swept Wing for Aircraft *2023–2024*
Redesigned a conventional wing to introduce forward sweep for improved aerodynamic and fuel efficiency; validated through scaled testing and simulation.

- Built 1:20 scale model, executed wind-tunnel experiments.
- Conducted wind-tunnel experiments and validated results using CFD.
- Analysed lift/drag/stall and confirmed trends with simulations.

Air-Breathing Hypersonic Scramjet *2024*
Developed combustion models and optimised inlet/chamber geometry to support sustained hypersonic combustion, backed by prototype testing and CFD validation.

- Optimised inlet and chamber geometry using ANSYS Fluent.
- Performed high-speed wind-tunnel tests on lab-scale prototypes.

Compact Foldable Drone (Mavic-class) *Mar–Apr 2025*
Designed a low-cost foldable quadcopter frame with Mavic-class functionality and verified structural performance through simulation and prototyping.

- Engineered folding-arm mechanism and central fuselage in Fusion 360.
- Conducted FEA in CATIA to validate 4 kg payload support.
- Led cross-functional reviews to iterate prototypes effectively.

Autonomous Drone Mission Planner *2025*
Built a planner that converts Excel route checkpoints into waypoints and adapts using vision recognition for route optimization.

- Automated waypoint generation from Excel data with upload to drones.
- Simulated complete missions and optimised paths in Ansys STK.

Nano Covert UAV (Military Recon) *2025*
Developed a rugged, palm-sized UAV tailored for military reconnaissance, optimised for silent operation, stealth navigation, and tight-space mobility.

- Designed compact, low-noise frame for covert defence applications.
- Incorporated durability features for high-risk deployment.

ACTIVITIES & ACHIEVEMENTS

- 3rd Prize, Rocket Launching Event (KARMAAN), VIT Bhopal.
- Industrial visit to mechanical and automobile plants in Chennai.
- Core Technical Member, Blockchain Club, VIT Bhopal (Jul 2023–Present).
- NPTEL Elite Certificate (Aircraft Design & CFD) from IIT Madras; Agnirva Space Internship Certificate(ISRO).