

# Piyush Kumar

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## EDUCATION

### Vellore Institute of Technology, Bhopal

B.Tech in Aerospace Engineering, CGPA: 8.30/10

Aug 2022 – Ongoing

### Modern Vidya Niketan, Faridabad, Haryana

Class XII, Percentage: 70%

2022

### St. Columbus School, Faridabad, Haryana

Class X, Percentage: 88%

2020

## WORK EXPERIENCE

### Drone Frame Designer Intern, AirM Pvt. Ltd. (Remote)

Mar 2025 – Ongoing

- Designed a foldable drone frame (DJI Mavic clone) in Fusion 360, achieving 75% cost reduction.
- Conducted FEA in CATIA to validate structural support for 2 kg payload.
- Led a small team, coordinated tasks, and managed design reviews.

### Research Intern, Aeronautical Society of India, Bangalore (On-site)

Oct 2024

- Hands-on exposure to UAV systems and aerospace technologies during a one-week program.
- Learned industry-standard aeronautics tools and flight simulation workflows.

## UNIVERSITY PROJECTS

### Forward-Swept Wings in Commercial & Small Aircraft

2023–2024

- Designed and built a 1:20 scale wing section with 10° forward sweep for aerodynamic testing.
- Conducted wind-tunnel experiments to map lift, drag, and stall behavior.
- Validated data via CFD and optimized structural layout using CAD/CAM tools.

### Air-Breathing Hypersonic Scramjet Engine

2024

- Developed theoretical models for airflow and fuel injection to sustain combustion at Mach  $\geq 8$ .
- Optimized inlet and combustion-chamber geometry using ANSYS Fluent.
- Built lab-scale prototypes, performed high-speed wind-tunnel tests, and validated via STK simulations.

### Compact Foldable Drone (DJI Mavic Clone)

Mar 2025 – Ongoing

- Engineered ultra-compact drone frame in Fusion 360, reducing cost by 75% while preserving performance.
- Re-designed fold-arm mechanism and central fuselage; performed FEA for 2 kg payload support.
- Integrated basic computer vision into the flight controller to detect traffic signals and hospital markers.

### Autonomous Drone Mission Planner with Visual Route Optimization

2025

- Created a mission planner that parses route checkpoints from MS Excel and converts them to drone waypoints.
- Integrated onboard camera to recognize road signs (e.g., traffic lights, “+” hospital markers) and adjust flight paths autonomously.
- Simulated complete missions in STK to validate route optimization and automated behaviors.

## ACTIVITIES & ACHIEVEMENTS

- 3rd Prize, Rocket Launching Event (KARMAAN), designing a custom rocket (VIT Bhopal).
- Industrial visit to mechanical and automobile plants in Chennai, gaining hands-on experience.
- Core Technical Member, Blockchain Club, VIT Bhopal (Jul 2023 – Present): Frontend development and event coordination.

## ADDITIONAL

**Technical Skills:** Java, SQL, SMS, Python; Fusion 360; CATIA; AutoCAD; STK; Git; MS Excel.

**Certifications:** VITyarthi Certification in Python & Fundamentals of AI & ML; STK Software Course; Agnirva Space Internship; Agnirva Space Internship: NPTEL Elite Certificate(Aircraft Design and Computational Fluid Dynamics).

**Languages:** English (fluent); Hindi (native).