



Shubham J. Tamboli

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Mechanical Engineering
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EDUCATION

- Pursuing **B.Tech in Mechanical Engineering**- current CGPA of **8.49** (Aug 2023 – Present).
- Higher Secondary (Class XII) - **85.83%** (2023).
- Secondary Education (Class X) - **95.2%** (2021).

EXPERIENCE AND PROJECTS

• STOL Aircraft Aerodynamics

Oct 2025 - Dec 2025

Inter IIT Tech. Meet 14.0

- Design / Problem solving / Team work*
- Co-led the Inter IIT high-preparation problem statement sponsored by **LAT Aerospace**, mentoring a team of **8 members**, and delivered the final technical presentation to LAT Aerospace at IIT Patna during **Inter IIT Tech Meet 14.0 (11-14 Dec, 2025)**.
 - Designed an aircraft wing, for ultra-short takeoff and landing (**STOL**) operations, achieving a **lift coefficient of 8.126** and an **L/D ratio of 2.61** in the takeoff configuration. Validated the aerodynamic performance using **CAE analysis** (CFD simulations) with residual convergence up to **10e-3**.
 - Leveraged a **High Performance Computing (HPC) cluster** with **dual-socket AMD EPYC processors (256 cores)** to execute **30+ CFD simulations** over **200+ runtime hours**, managing meshes up to **6 million nodes** with parallel processing for accelerated design iteration.

• Project Trainee at Indiflo Pvt. Ltd.

June 2025 - Dec 2025

CFD / Flight mechanics / AI / Python

Internship

- Developed an **automated wing optimization pipeline** using **OpenVSP**, **VSPAERO**, and **MOPSO** optimizer, achieving a **60% increase in endurance** after **100 optimization iterations**.
- Designed a **scalable** parametric framework with **6 wing planform design variables**, extensible to **50+ variables**, supporting future high-dimensional aerodynamic optimization.
- Validated and accelerated the pipeline through **minimum induced-drag** testing, converging to an **elliptical planform** from a **rectangular baseline**, and reduced compute time by **25%** using **x-z symmetry** (half-wing simulations), with support for **variable airfoil sections**.

• Developed a UAV system for optical surveillance

Jan 2025 - May 2025

Aerodynamics / Electronics integration / Problem solving

Project under Prof. Sudipto Mukhopadhyay

- Engineered and flight-tested a fixed-wing UAV for optical surveillance (**1.6 m wingspan, 1.8 kg weight**), integrating **aerodynamics, structures, avionics, and flight control**.
- Designed and fabricated a lightweight modular airframe with **carbon-fiber reinforced foam wings** and U-tail, integrating an **iNav-based Matek F411 avionics stack** with **BN-880 GPS, 5600 mAh 4S Li-ion battery and BLDC propulsion**.
- Validated live optical surveillance and telemetry using a **5.8 GHz 600 mW** video transmission system integrated with onboard electronics.

• IN-SPACE Model Rocketry Competition (2024-25)

Aug 2024 - Jan 2025

CAD / 3D Printing / Teamwork

Organized by ASI with ISRO

- Served as a team member in the **structural sub-system** of the **NexOrbital team**, the high-powered rocket team of IIT Jodhpur (**Nexus Space Teams**).
- Designed various **CAD models (components)** and assisted in the **final CAD assembly** using **Fusion 360**.
- Gained hands-on experience with **3D printing technology**, including preparing models for print, **operating FDM printers**, and understanding **material properties and print parameters** to ensure successful prototyping.
- Developed multiple **designs** using **OpenRocket** software and created **animations**.
- Assisted in **material selection** and budgeting, considering both mass and financial constraints.

SKILLS

- Technical Skills:** CAD/CAM, CAE, Aerodynamics, Flight Mechanics, 3D printing, Structural design, Material Science, Machine Learning, Data Analysis, Optimization, Programming.
- Programming:** C/C++, Python.
- Tools and Technologies:** Fusion 360, SolidWorks, Ansys Workbench, Ansys Mechanical, Ansys Fluent, XFLR5, XROTOR, OpenVSP, AVL, Ultimaker Cura, INAV, OpenRocket, Excel, Ubuntu.
- Soft Skills:** Leadership, Problem solving, Time Management, Team Collaboration, Technical documentation.