



# Shubham J. Tamboli

Bachelor of Technology  
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

### • 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**.

## PROJECTS

### • STOL Aircraft Aerodynamics ⚡

Oct 2025 - Dec 2025

*Design / Problem solving / Team work*

Inter IIT Tech. Meet 14.0

- 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.

### • 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 structural sub-system member of the **NexOrbital team (Nexus Space Teams)**, contributing to the design of a **1.8 m, 14 kg high-power rocket** delivering a **1 kg payload to 1 km apogee**.
- Designed multiple **CAD components** and supported final assembly in **Fusion 360**, while working with **FDM 3D printing workflows** including preparing models for print, **operating FDM printers**, and adjusting **print parameters**.
- Performed **OpenRocket simulations** and created **animations**, supporting motor selection and validating **1.52 caliber static stability**.

## 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.