

# Aditya Jaiswal

Bachelors in Mechanical Engineering  
Birla Institute Of Technology and Science Pilani, Pilani

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[GitHub Profile](#)

## EDUCATION

### •Birla Institute Of Technology and Science Pilani, Pilani

2021-2025

*Bachelors in Mechanical Engineering*

## EXPERIENCE

### •ideaForge

October 2025 – Present

*R&D Sourcing*

- Automated internal workflows, performance reports and documentation processes to streamline development cycles across the engineering team.
- Responsible for design of in-house propeller, leading the concept development, CAD design, and performance assessment through simulations.
- Coordinating with vendors and composite manufacturers to ensure efficient and timely fabrication of UAV components and propellers. Also assisting in the technical assessment of motors and material quality.

### •Indian Institute of Science, IISc

Aug 2024 - Jan 2025

*Undergraduate Thesis - Computational AeroSciences Lab under Dr. Aravind Balan*

- Developed optimal mesh recombination algorithm converting triangular meshes into quad-dominant configurations to improve the accuracy in anisotropic flow simulations, particularly boundary layer resolution.
- Implemented priority-based greedy selection algorithm in **Python** with **MPI** parallelization, reducing degrees of freedom by **23%**, enabling scalable processing for large meshes.
- Achieved a **93%** quad-conversion rate through optimized element-selection strategy, significantly improving mesh quality for capturing directional flow features.
- Built a custom mesh file format converter, enabling seamless integration with simulation frameworks including **NETGEN** and **gmsh** for cross-platform validation.

### •Indian Space Research Organization (ISRO)

May 2024 – July 2024

*Summer Intern - UR Rao Satellite Centre*

- Contributed to the conceptualization and design of the novel indigenous **Roll-Out Solar Array (ROSA)** mechanism for future ISRO missions requiring compact, high-power deployment.
- Designed deployment mechanisms in **Siemens NX** and modeled tube dynamics in MATLAB to estimate motor torque and reduce the blossoming and telescoping effects.
- Developed tensioning and roller mechanisms that mitigated telescoping errors and improved deployment stability during stowage and retraction.

### •Indian Institute of Technology Bombay, IITB

May 2023 - July 2023

*Research Intern — under Dr. Amol Subhedar*

- Performed perturbation analysis of the Allen–Cahn phase-field equation to correct surface-tension forcing errors in Lattice Boltzmann multiphase simulations, and implemented the models in **C++**.
- Derived correction factors up to  $O(\epsilon^2 \alpha^2)$  and validated them on bubble tests, reducing Laplace pressure error from **1.7%** to **< 0.1%** (when using continuum surface tension scheme) and from **8%** to **0.5%** (when using chemical potential surface tension scheme).
- Work presented at **CompFlu 2023**, IIT Madras; manuscript currently under preparation.

## CONFERENCE PAPERS, POSTER PRESENTATION & PUBLICATION

- Malyadeep Bhattacharya, **Aditya Jaiswal**, Amol Subhedar, Improved surface tension force scheme for two-phase flow in diffuse interface framework, **COMPFLU-2023**, 18th–20th Dec 2023, IIT Madras.

## PROJECTS

### •aerFoLaB

July 2025 - Present

*Personal project.*

- Developing a Lattice Boltzmann Solver for simulating low Mach number flows past NACA Airfoils.
- Implementing in **C++** with openMP and MPI implementation.

### •Analysis of flow past blunt bodies

August 2023 - October 2023

*Project done as a part of Gas Dynamics (MEF415) course.*

- Simulated and analyzed the pressure, velocity, and vortex structures in the flows varying Reynolds number, blockage ratio (B), and L/D ratio for low mach flows using Lattice Boltzmann Method.

## **TECHNICAL SKILLS AND INTERESTS**

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**Languages:** C, C++, Python, BASH (shell), MATLAB

**Software:** OpenFOAM, ANSYS Fluent, Siemens NX, Mathematica, MATLAB, gnuplot, Netgen, Gmsh

## **POSITIONS OF RESPONSIBILITY**

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- **Core Member**, Student Faculty Council (SFC) *September 2022 - May 2023*  
One of 9 students selected from the Mechanical Engineering cohort to serve as a student representative.
- **Mentor**, Peer Mentorship Program. *September 2022 - August 2023*
- **Team Lead**, Sally Robotics (Autonomous Car Development Team). *August 2022 - July 2024*
- **Joint Coordinator**, Photog (Photography club). *July 2023 - July 2024*

## **ACHIEVEMENTS**

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- **JEE Mains Rank:** Top 1% amongst the candidates who took this exam. *2021*
- **JEE Advanced Rank:** Top 5% amongst the candidates who took this exam. *2021*
- **INSPIRE-SHE Scholarship:** Scholarship awarded to students scoring in top 1% of board exams. *2021*
- **AP Calculus BC:** grade 5 in the advanced placement exam which is the highest grade. *2021*