

Aditya Jaiswal

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

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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 - August 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

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

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

POSITIONS OF RESPONSIBILITY

- **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

- **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*