ABHISHEK MUKHERJEE

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Professional Summary

Passionate aerospace engineer with a deep interest in the mechanics behind atmospheric and space flight, and the mathematics that govern them. Currently pursuing an M.Tech in Aerodynamics and Flight Mechanics at IIST. I actively build tools to model airflow, aircraft motion, and propulsion systems using Python and its popular libraries.

Education

Indian Institute of Space Science and Technology, Thiruvananthapuram — Aug 2024 – May 2026
M. Tech in Aerodynamics and Flight Mechanics *(Expected)*

- **GPA:** 7.6/10 (upto second semester)
- **Coursework:** Flight Dynamics and Control, Computational Methods for Compressible Flows, Multi-Disciplinary Design Optimization, Design and Modelling of Rocket Propulsion Systems

Kalinga Institute of Industrial Technology, Bhubaneswar — Aug 2020 – May 2024
B. Tech in Aerospace Engineering (Hons.)

- **GPA:** 9.2/10
- **Coursework:** Aerodynamics, Atmospheric Flight Mechanics, Spaceflight Mechanics, Propulsion
- **Course Project:** Investigation of performance characteristics of two-dimensional convergent-divergent nozzles

Experience

Manufacturing Engineering Intern — Sept 2023 – Nov 2023
Tata Lockheed Martin Aerostructures Limited, Hyderabad

- Streamlined the MIS database refactoring process and tool order documentation by automating workflows using Visual Basic, significantly reducing manual effort and turnaround time.
- Supported process planning teams for the C130-J Empennage and F-16 Wings, gaining real-time exposure to assembly techniques and production management workflows.

Industry Trainee — May 2023 – June 2023
Aircraft Manufacturing Division, Hindustan Aeronautics Limited, Nashik

- Observed end-to-end military aircraft production workflows during facility visits, gaining insights into aerodynamic design practices, assembly line operations, and industry standards.

Projects

Numerical solution of flow over airfoils using a constant-strength line vortex panel method

- Developed a panel method solution for a given airfoil geometry, implemented influence coefficient matrix formulation and applied Kutta condition for realistic trailing edge behavior.
- *Tools Used:* Python, XFOIL

Numerical simulation of the six-degree-of-freedom (6DOF) motion of an aircraft with control surface deflection response

- Simulated full 6DOF aircraft motion by solving coupled translational and rotational dynamics equations.
- Investigated dynamic response to elevator, rudder, and aileron inputs under trimmed flight conditions.
- *Tools Used:* Python

Implementation of linear and non-linear regression models for surrogate modeling

- Built surrogate models using linear and non-linear regression, as well as piecewise cubic spline interpolation.
- Evaluated model accuracy using RMSE scores on a pseudo-black box non-linear function.
- *Tools Used:* Python

Highlighted Skills

Languages: Python, C, C++, Bash Scripting, MATLAB, LaTeX, Visual Basic

Software: ANSYS Fluent, CATIA

Tools and Platforms: Git, Github, Linux, Jupyter Notebook,