

Gaurav Gupta

SENIOR UNDERGRADUATE, AEROSPACE ENGINEERING

Indian Institute of Space Science and Technology, Thiruvananthapuram

(+91) 9083722796 | gauravxpgupta@gmail.com | https://airwarrior91.github.io/ | airwarrior91 | gauravgupta030

Summary

A senior undergraduate student majoring in aerospace engineering at IIST, I'm focused on bio-inspired flight, aerodynamics, and control systems. My research blends nature's ingenuity with cutting-edge aerospace technologies. Motivated to learn new skills and take on challenges, I have strong expertise in aerodynamics, computational fluid dynamics, programming, and aircraft design. Additionally, I excel in leadership, teamwork, and management, driving innovative and collaborative project outcomes.

Education

Indian Institute of Space Science and Technology

Thiruvananthapuram, India

B.TECH. IN AEROSPACE ENGINEERING

Dec. 2021 - Present

- Current Cumulative Grade Point Average (CGPA): 8.07/10
- Relevant coursework: Aerodynamics, Computational Fluid Dynamics, Aircraft Design, Flight Dynamics & Control, Optimization Techniques, Astrobiology
- Relevant Labs: Aerodynamics Lab, Modelling and Simulation Lab, Flight Mechanics Lab, Propulsion Lab, and Programming
- Extracurricular Activities: Aeroclub, Conscientia and Basketball

Engineering Research Experience

Incompact3D

GitHub

OPEN-SOURCE CONTRIBUTOR

Jul. 2024 - Present

- Developed a fortran subroutine to calculate lift and drag forces for a 3D immersed body simulations using Incompact3D.
- Working on improving the performance of importing STL files for high-fidelity simulations using Incompact3D.

Indian Institute of Technology, Kharagpur

Kharagpur, India

RESEARCH INTERN

Mar. 2023 - Present

- Investigating the aerodynamics of birds through computational methods with implementation in aircraft design.
- Conducted high-fidelity DNS on HPC (Paramshakti and Virgo) using Incompact3D and NEK5000.
- Pursued under the guidance of Dr. Sandeep Saha, IIT KGP and Dr. Manu KV, IIST.

Skills

Modelling and Computer Aided Design

DS Solidworks, DS Catia, Autodesk Fusion 360, Autodesk Autocad, Blender

Computational Fluid Dynamics

Incompact3D, NEK5000, Ansys Fluent, XFLR5, GMSH, Coreform Cubit, Paraview, HPC

Programming

Python, MATLAB, FreeFEM++, Fortran, Julia, C++, LaTeX, Linux, GitHub

Creative

Adobe Illustrator, Inkscape and Powerpoint

Soft Skills

Passionate, Hardworking, Determined, Motivated, Punctual, Organized, Focused

Language

English, Hindi, Bengali

Certificates

Oct, 2022 **Design of Fixed Wing Unmanned Aerial Vehicle (Topper)**, IIT Kanpur and NPTEL

Nov, 2022 **Aircraft Design**, IIT Bombay and NPTEL

Publications

Base and Exponent Prediction in Mathematical Expressions using Multi-Output CNN

arXiv

SALAM, MD. LARAIB, BALSARAF, AKASH S., GUPTA, GAURAV

2024

Determining surface tension of various liquids and shear modulus of paper using crumpling effect

Journal of Emerging Investigators

GUPTA, GAURAV, SALAM, MD. LARAIB

2021

Formation and sticking of air bubbles in water in d-block containers.

Journal of Emerging Investigators

GUPTA, GAURAV, SALAM, MD. LARAIB

2021

Projects

Design and development of a Loitering Munition

Aircraft Design, Python

AE412: AEROSPACE VEHICLE DESIGN

Aug 2024 - Present

- A low-cost loitering munition with a payload capacity of 2 KG is being designed and developed.
- Undertaken conceptual and preliminary design of the loitering munition.

Aerodynamics of Avian Tails

CFD, Fortran, Python, FreeFEM++

RESEARCH INTERNSHIP

Mar 2023 - Present

- High-fidelity simulations were conducted to understand the role of avian tail in gliding flight.
- The Common Swift was modelled and DNS simulations were conducted using NEK5000.
- Developed a FreeFEM++ based Euler equation solver to study the inviscid flow around birds.

Honors & Awards

INTERNATIONAL AWARDS

2020 **4th Place**, Scientist of the Future 2020, Moscow State University

Online

2021 **Team India**, Beamline for School, CERN

Online

DOMESTIC AWARDS

2021 **Finalist**, Young Scientist India

Chennai, India

2021 **Certificate of Merit (AISSCE)**, Central Board of Secondary Education

Delhi, India

2019 **Certificate of Merit (AISSE)**, Central Board of Secondary Education

Delhi, India

2019 **Certificate of Merit**, Government of West Bengal

Kolkata, India

Leadership and Extracurricular

Conscientia, IIST

Thiruvananthapuram, India

CHIEF COORDINATOR

Mar. 2023 - Nov. 2023

- Organized and managed the 14th edition of IIST's technical and astronomical festival, Conscientia, from September 22nd to 25th, 2023.
- Conducted competitions and workshops, attracting over 1,000 student participants from across India.
- Oversaw a budget of approximately 22 lakhs, generating a profit of 4 lakhs.

Conscientia, IIST

Thiruvananthapuram, India

WEBSITE COORDINATOR

Aug. 2022 - Nov. 2022

- Developed and managed the website of 13th edition of IIST's technical and astronomical festival, Conscientia 2023.
- Designed the front-end of the website using Vanilla and Django.

AeroClub, IIST

Thiruvananthapuram, India

STUDENT MEMBER & STUDENT COORDINATOR

Mar. 2022 - Nov. 2023

- Designed and built fixed-wing and rotor-based model aircrafts.
- Conducted workshops on "UAV Design" for school students with a practical glider building session.
- Conducted sessions for junior members of the club on UAV Design including glider and water-rocket design competitions.