

## EDUCATION

### **MANIPAL INSTITUTE OF TECHNOLOGY | B.TECH AERONAUTICAL ENGINEERING**

2021 - Present | Manipal, Karnataka, India

Expected Year of Graduation: 2025

CGPA: 8.43

### **LALAJI MEMORIAL OMEGA INTERNATIONAL SCHOOL | CLASS 12 (CBSE), CS MAJOR**

2021 | Chennai, Tamil Nadu, India

Grade: 91.2%

### **LALAJI MEMORIAL OMEGA INTERNATIONAL SCHOOL | CLASS 10 (CBSE)**

2019 | Chennai, Tamil Nadu, India

Grade: 90.4%

## RESEARCH EXPERIENCE

### **STUDY OF VORTEX RINGS (IITM)**

December 2023 - Present | Chennai, Tamil Nadu, India

I am currently working on a research project under Dr. A Sameen at the Indian Institute of Technology (IIT), Madras, on analysing vortex rings using pseudo-spectral methods implemented in Dedalus, an open-source Python-based framework built specifically for spectral analyses.

### **APPLICATION BASED AIRFOIL GENERATION**

July 2022 - Present | Manipal, Karnataka, India

I am currently working on a research project under Dr. Manikandan Murugiah to develop a Computational Model for application-based airfoil generation. This involves the automation of the meshing, CFD analysis, and postprocessing processes, following which a database of the aerodynamic characteristics of 3,064 airfoils will be generated. Using the obtained database, several AI models will be run. We have automated the CFD process, and the data collection stage of the research project has been completed. We are currently developing the AI model.

### **MATLAB-ENHANCED WING DESIGN AND AERODYNAMIC MODELING**

December 2023 - February 2024 | Manipal, Karnataka, India

This research project was done under Dr. Manikandan Murugiah and aimed to develop a MATLAB-based framework for efficiently designing intricate wing surfaces, offering an alternative to the cumbersome and skill-intensive CAD software processes.

## RESEARCH INTERESTS

- Aerodynamics
- Aircraft Design
- Multiphase Flows
- Fluid-Structure Interaction
- Supersonic and Hypersonic Flows
- Computational Fluid Dynamics (CFD)
- Turbulent Flows and Turbulence Modeling

## PUBLICATIONS

### **A COMPREHENSIVE DATASET OF THE AERODYNAMIC AND GEOMETRIC COEFFICIENTS OF AIRFOILS IN THE PUBLIC DOMAIN**

The dataset of the aerodynamic and geometric coefficients of 2900 airfoils obtained using the automated CFD framework developed was published by the MDPI Data Journal. The paper can be accessed [here](#).

## MATLAB-ENHANCED WING DESIGN AND AERODYNAMIC MODELING

This paper corresponds to my research project with the same title. The extended abstract of this paper has been submitted to the AIAA Aviation Forum and Exposition 2024 and has been accepted.

## OTHER PROJECTS

### NATIONAL AEROSPACE CONCEPTUAL DESIGN COMPETITION (NACDEC)

September 2023 - Present | Manipal, Karnataka, India

I am currently participating in the seventh edition of the National Aerospace Conceptual Design Competition (NACDeC - VII). The problem statement for this edition is the conceptual design and sizing of a Martian Unmanned Aerial Vehicle (UAV) with an all-up weight of 70 kg for atmospheric exploration close to Mar's surface. A feasible UAV design will be presented after carefully considering different configurations and commercially available technologies. We have cleared the first and second rounds of the competition and are currently working on our submission for the third round.

### STATIC STABILITY ANALYSIS OF THE CESSNA T-37

October 2023 | Manipal, Karnataka, India

I carried out a detailed static stability analysis of the Cessna T-37 as a part of my coursework in the academic year 2023-24 (Flight Dynamics - FD) at the Manipal Institute of Technology, Manipal, Karnataka, India.

### CFD COMPETITION (ICCMEH 2023)

July 2023 - August 2023 | Manipal, Karnataka, India

I participated in the CFD competition organised as a part of ICCMEH 2023. The problem statement dealt with the optimisation of the NACA 4412 airfoil for maximum aerodynamic efficiency constrained to the specified operating conditions and several shape constraints. We secured the third rank and were commended on the quality of our work.

### PERFORMANCE ANALYSIS OF THE AIRBUS A380-800M

February 2023 - May 2023 | Manipal, Karnataka, India

I carried out a detailed performance analysis of the Airbus A380-800M as a part of my coursework in the academic year 2022-23 (Flight Mechanics - FM) at the Manipal Institute of Technology, Manipal, Karnataka, India. My professor praised the quality of the report.

### CLASS SHAPE TRANSFORMATION (CST) PARAMETRIZATION TECHNIQUE

September 2022 - October 2022 | Manipal, Karnataka, India

I wrote a report on the Class Shape Transformation (CST) Parametrization Technique carried out on 15 aerofoils as a part of my coursework in the academic year 2022-23 (Introduction to Aerospace Engineering - IAE) at the Manipal Institute of Technology, Manipal, Karnataka, India.

### E-SHOPPING PLATFORM

2021 | Chennai, Tamil Nadu, India

Successfully developed a CLI-based E-shopping interface using Python and MySQL as a part of my Class 12 final project.

## SKILLS

### TECHNICAL

- C
- Python
- MATLAB
- LaTeX
- HTML
- XML
- MySQL
- OpenFOAM
- ParaView
- Ansys
- COMSOL
- XFLR5
- XFOIL
- Linux
- Solidworks
- Fusion360
- AutoCAD
- CATIA
- 3DEXperience
- OpenVSP
- Simulink
- Photoshop
- Illustrator
- Lightroom
- Canva
- Microsoft Office
- High Performance Computing (HPC)
- Tecplot360
- PBS
- Slurm
- Git & GitHub
- XMGrace

### OTHER

- Expert communication and presentation skills.

## OTHER EXPERIENCE

### **RESEARCH SOCIETY MIT | Co-EXPERTISE HEAD**

September 2023 - Present | Manipal, Karnataka, India

The Research Society MIT is Manipal's official student research body that works on an array of research projects, covering a broad span of fields, from artificial intelligence and robotics to nanotechnology and immunology. I am the co-expertise head of the aerospace, aeronautics, and material sciences domains.

### **IE AEROSPACE | ADVISORY BOARD MEMBER**

September 2023 - Present | Manipal, Karnataka, India

IE Aerospace is a students' chapter affiliated with the Institution of Engineers, India. Their mission is to spread awareness about the booming field of aerospace engineering.

### **MANO AIRCRAFT PRIVATE LIMITED | INTERN**

June 2023 | Coimbatore, Tamil Nadu, India

Learnt and applied several composite manufacturing techniques during my internship. Further, I developed a Python script to automate the pre-composite manufacturing processes. I also created a market survey outreach form as part of a market analysis.

### **AEROMIT | JUNIOR AERODYNAMICS ENGINEER**

December 2021 - April 2023 | Manipal, Karnataka, India

I was part of the Aerodynamics subsystem at AeroMIT, and my responsibilities included writing the design reports for competitions and designing RC aircraft based on aerodynamic principles.

### **ROYAL AERONAUTICAL SOCIETY | STUDENT AFFILIATE**

February 2023 - Present | Manipal, Karnataka, India

The Royal Aeronautical Society is the world's only professional body dedicated to the entire aerospace community. Established in 1866 to further the art, science, and engineering of aeronautics, the Society has been at the forefront of aerospace ever since.

### **ARTICLES | AUTHOR**

December 2021 - Present | Manipal, Karnataka, India

I regularly write multiple technical and non-technical articles for the DefenceXP and ManipalBlog websites.

### **SCOPA | SPEAKER**

February 2020 - March 2020 | Chennai, Tamil Nadu, India

I was one of the key speakers at the Student Conference on the Paris Agreement (SCoPA), where my school represented India. I spoke on a global platform about India's climate issues and what we are doing to mitigate these problems.

### **NATIONAL CADET CORPS | CADET**

June 2017 - April 2019 | Chennai, Tamil Nadu, India

I was part of the NCC unit at my school. Actively participated in various camps, rallies, and social awareness drives. I was awarded the NCC A Certificate at the end of my tenure.

### **OMEGAMUN | SPEAKER**

March 2018 - Apr 2018 | Chennai, Tamil Nadu, India

I represented Canada in the Model United Nations (MUN) conducted by Lalaji Memorial Omega International School. The topic of the MUN was whether Weapons of Mass Destruction (WMD) should be banned. All the countries reached a consensus, and a resolution was drafted.

## ACHIEVEMENTS

### **ICCMEH 2023**

August 2023 | Manipal, Karnataka, India

We secured the third rank for our submission to the CFD competition held as a part of ICCMEH 2023.

### **SAE AERO DESIGN**

March 2023 | Lakeland, Florida, USA

I participated in the SAE Aero Design East 2023 held at Lakeland, Florida, USA, as a part of my tenure at AeroMIT. We were awarded second place for the Design Report and secured fourth rank overall.

## **PAPER PRESENTATION**

December 2022 | Manipal, Karnataka, India

I was awarded the first prize in the Paper Presentation event as part of the Tech Tatva '22. I presented a research paper on the viability of Methane as a fuel for liquid rocket engines.

## **HEARTFULNESS ESSAY EVENT**

2019 & 2020 | Chennai, Tamil Nadu, India

I participated in the Heartfulness Essay event organised in partnership with the United Nations Information Centre for India and Bhutan (UNIC) and received an honourable mention for one of the top ten entries in my state.