Manikandan P

Aerospace Engineer | Flight Physics, Structures & Simulation

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Professional Summary

Final-year Aerospace Engineering student specializing in Flight Physics, Structural Design, and Simulation. Skilled in FEA, CFD, and MATLAB/Simulink-based modeling with strong programming knowledge in Python. Hands-on experience through internships at DRDO (RCMA – Helicopter Division) and L&T Shipbuilding. Patent holder in Additive Manufacturing, experienced in composites and digital simulation. Passionate about innovative, sustainable, and high-performance aerospace systems.

Technical Skills

Design Tools	CATIA, SolidWorks, Shapr3D, GD&T, Aerospace Drafting
Simulation Tools	ANSYS (CFD/FEA), MATLAB, Simulink, Thermal & Structural Analysis
Programming	Python (NumPy, SciPy, Matplotlib), VBA, HEAsoft, Automation, Data Processing
Domain Knowledge	Flight Physics, Propulsion Systems, Composite Structures, Systems Integration
Documentation	LaTeX, MS Office Suite, Technical Writing, Project Reporting

Soft Skills

Analytical Thinking, Team Leadership, Technical Communication, Adaptability, Critical Problem-Solving, Time Management, Innovation, Collaboration, Professional Ethics

Education

2022 – 2026 **B.Tech in Aerospace Engineering**, *Hindustan Institute of Technology and Science (HITS)*, Chennai, India
CGPA: **7.54/10** (Till Sem 6)
Relevant Courses: Flight Physics, Structural Dynamics, Propulsion, CFD, Space Systems Engineering

Internship Experience

Dec 2024 – Jan 2025 **Research Intern**, *DRDO – RCMA (Helicopter Division)*, Bengaluru, India
- Conducted aerodynamic load and stress analysis for rotor components using MATLAB and SolidWorks.
- Automated data reporting and performance evaluation with Excel-VBA and Python.
- Assisted in evaluating structural behavior of rotating machinery.

Jun 2025 – Jul 2025 **Engineering Intern**, *L&T Shipbuilding*, Chennai, India
- Conducted FEA on marine structural joints based on aerospace load cases.
- Supported process optimization for inspection and material testing workflows.

Jul 2025 **Research Trainee – Space Data Analysis (SPARC)**, *MCNS, MAHE*, Manipal, India
- Processed astrophysical data for spectral fitting using HEAsoft and Python.
- Applied noise filtering and statistical modeling for space research datasets.

Sept 2024 **SPARC III – Fundamentals of Space Radiation**, *MCNS, MAHE*, Manipal, India
- Simulated CubeSat radiation exposure using NASA OLTARIS.
- Optimized shielding materials for low Earth orbit applications.

Major Projects

2025 **Space Radiation Shielding Simulation:** Simulated CubeSat radiation dose reduction using NASA OLTARIS; analyzed shielding effectiveness and mass efficiency.

2025 **AI-Powered Drone for Aquaculture:** Designed UAV system with AI-based water-quality monitoring using Python and OpenCV.

2024 **Rotating Detonation Engine (RDE) Design:** Designed micro-scale detonation chamber using MATLAB & ANSYS Fluent; optimized flow for CubeSat propulsion.

2024–2025 **Composite Aircraft Radome FEA:** Conducted structural and thermal FEA; achieved 39% reduction in deflection with Astroquartz/Epoxy composites.

2024–2025 **Additive-Manufactured Sandwich Core (Patent):** Filed Indian Patent titled *"A Process for Preparing Sandwich Core using Additive Manufacturing"*; validated lattice core structures via SLM.

2023 **Solar Sail with Hall Thruster Simulation:** Modeled hybrid propulsion in MATLAB/Simulink; analyzed orbit transfer and thrust optimization.

Achievements & Leadership

Patent 2025 – Additive-Manufactured Sandwich Core (India Patent Filed)

Publications Two technical papers under review – composites and propulsion systems

Conferences ICSMT 2025, SPARC, FLIGHT'25, NASA Space App Challenge 2024

Leadership Junior Researcher – Nebula Astro Club; led 10+ outreach programs impacting 300+ students

Awards Finalist – AeroHack 2025 (Collins Aerospace); Winner – NASA Space Apps 2024 regional round

Certifications

2021 Advanced Diploma in Python Programming – CSC Institute

2024 SPARC III – Fundamentals of Space Radiation (MCNS, MAHE)

2025 SPARC – Analysis & Statistical Modelling of Space Data (MCNS, MAHE)

2025 AeroHack 2025 Participant – Collins Aerospace

2024 NPTEL Certification: Introduction to Aerospace Structures & Materials

Languages

English Full Professional Proficiency

Tamil Native / Bilingual Proficiency

Hindi Limited Working Proficiency

Research Interests

Flight Simulation, Composite Structures, Additive Manufacturing, Spacecraft Design, Digital Twin Systems, Propulsion Research, AI-driven Aerospace Systems