Anil Kumar

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PROFESSIONAL SUMMARY

MSc **Aerospace Engineering** graduate with hands-on expertise in **mechanical and aerospace design**, **CAD modelling**, **FEA/CFD simulations**, and **prototype development**. Experienced across the **full engineering lifecycle** from concept design to analysis, testing, and commissioning. Passionate about building and iterating practical solutions that integrate **fluid mechanics, structural design**, and **thermal systems**. Recognised for problem-solving, interdisciplinary collaboration, and a drive to see designs come to life in real-world applications.

KEY SKILLS

- **Software & Tools:** SolidWorks, CATIA V5, Solid Edge, ANSYS (CFD/Modal), STAR CCM+, MATLAB, Simulink, AutoCAD
- **Technical:** CAD Modelling, Fluid & Thermal Design, Pressurised Systems, FEA/CFD Simulations, Prototype Assembly, DFM/DFT, PDM (BoMs, Version Control), CNC, 3D Printing
- **Analysis:** Stress/Structural Simulations, Shock & Vibration Analysis, Thermal & Pressure Studies
- **Interdisciplinary Collaboration:** Coordination with engineers, chemists, and software developers for system integration
- **Documentation:** Design specifications, assembly instructions, testing procedures, and reports
- **Languages:** English (Fluent), Hindi (Native), German (Intermediate)

PERSONAL ATTRIBUTES

- Precision-driven and methodical in design and testing
- Analytical thinker with structured problem-solving skills
- Strong interdisciplinary communicator across engineering domains
- Innovative and experimental mindset suited to start-up environments
- Resilient and proactive under fast-paced project conditions

PROFESSIONAL EXPERIENCE

Aircraft Design Engineer | MARS Exploration Pvt. Ltd, India | Apr 2022 – Present

- Designed and modelled electric VTOL aircraft using **SolidWorks and CATIA**, performing **CFD analysis** in ANSYS to enhance aerodynamic efficiency by 15%.
- Led prototype testing and assembly, iterating designs for improved manufacturability and performance.
- Coordinated with a cross-disciplinary team of 5 engineers, integrating **mechanical and control systems** to optimise tilt-wing stability under varying flight regimes.
- Contributed to **product documentation**, version control, and **design-for-manufacture** best practices.

Research Intern | Defence Research & Development Organisation (DRDO), India | Dec 2019 – Apr 2022

- Developed and validated UAV structures using **SolidWorks**, performing **fluid and structural optimisation** to reduce overall weight by 8%.
- Supported **prototype fabrication, assembly, and actuator testing**, applying **DFT principles** to improve testing accuracy.
- Created detailed design documentation and test specifications under senior supervision.

Engineering Intern | DRDO, India | May 2018 – Nov 2019

- Assisted in **manufacturing, structural testing, and system overhaul**, gaining hands-on experience with **CNC machining, welding, and pressurised systems**.
- Collaborated in **structural validation** and **stress analysis** processes, helping to reduce prototyping cycles.

KEY PROJECTS

- **Flutter Analysis in Wind Tunnel (MSc Project):** Designed & fabricated aeroelastic wing model using MATLAB & STAR CCM+; accurately predicted flutter onset speeds.
- **VTOL Aircraft with Tilt Wing:** Modelled and simulated tilt-wing VTOL in SolidWorks & ANSYS; validated system under variable aerodynamic loads.
- **Propulsive Lift Flapping Wing Study:** executed CFD study on flapping-wing mechanisms; presented findings at an international conference.
- **Amphibious Four-Seater Aircraft Design:** Led full design from concept to analysis; carried out **thrust, drag, and component evaluations** in SolidWorks and ANSYS.

ACHIEVEMENTS

- Runner-up, **Aero Modelling Competition** – HITS, India
- Certified Cadet, **Indian Air Force NCC Wing** – Demonstrated leadership and teamwork
- Brand Ambassador, **TUTE-DUDE (IIT Delhi Startup Initiative)** – Represented the university at national events

EDUCATION

University of Hertfordshire, UK | MSc Aerospace Engineering | Jan 2023 – Jun 2024

- Focused on **Aerodynamics, Fluid Mechanics, FEA/CFD, Aeroelasticity, Thermal Systems**, and **Sustainable Design**.
- **Performed wind tunnel experiments** and **flutter analysis**, improving test accuracy by 10%+.

Hindustan Institute of Technology and Science, India | B.Tech Aerospace Engineering | Jul 2017 – May 2021

- Studied **Propulsion, Thermodynamics, Fluid Mechanics, Structural Design, and Flight Controls**.
- Applied theoretical knowledge to **hands-on mechanical system design and manufacturing**.

ADDITIONAL LEARNING

- Mechanical Behaviour of Materials – MIT, edX
- Satellite Communication – Institute Mines-Telecom, France (Coursera)
- Business English – HKUST, Coursera
- From Big Bang Theory to Dark Energy – University of Tokyo, Coursera