

AASHVI AMISHBHAI KHATRI

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EDUCATION

Graduation Date: Master Of Science (M.S.), In Mechanical and Aerospace Engineering May 2025
University of Florida (GPA: 3.44/4.00) Gainesville, Florida

- Specializing in Fluid Mechanics and Heat Transfer.

Bachelor of Technology, in Aeronautical Engineering May 2023
Manipal Institute of Technology (GPA: 8.37/10.00) Manipal, India

- Minor Specialization in Aerodynamics

WORK EXPERIENCE

Graduate Teaching Assistant Jan 2024 - Dec 2024
University of Florida Gainesville, Florida

- Grading and invigilation of 170+ students for the course of Undergraduate Fluid Mechanics (EGN 3353C) under **Dr. Kamran Mohseni**.

Research Intern in the Low-Speed Aerodynamics Lab Dec 2022 - Jun 2023
Indian Institute of Technology, Bombay (IIT-B) Bombay, India

- Designed and built experimental setups for rotor performance analysis. Miniaturize the existing thrust-torque sensor to reduce the weight of the drone. The new in-house olive-oil seed generator was built.

Research Intern in Aircraft Upgrade, R&D Centre (AURDC) May 2022 - Jun 2022
Hindustan Aeronautics Limited (HAL) Nashik, India

- Designed NACA 0012 and NACA 2412 Airfoil to conduct an analysis on the design to understand the effect of a repair patch.

PROJECTS

Experimental Investigation of Effect of Gust on Drone Rotors Indian Institute of Technology, Bombay, India

- Enhanced flow visualization: Developed an olive oil-seed generator to reduce the machinery cost and improving Particle Image Velocimetry resolution by 30%, enabling more accurate flow visualization around UAV rotor
- Designed an oscillating airfoil setup, providing a realistic vortex environment.
- Implemented a miniature thrust-torque sensor, achieving a 15% increase in measurement precision for rotor thrust and torque under gust condition. Utilized CATIA V5 for detailed CAD modeling and ANSYS Fluent for structural simulations, enhancing design fidelity and reducing prototype iterations.
- Applied hot-wire anemometry for precise wind velocity profiling, resulting in 25% improvement in detecting aerodynamic instabilities due to gust.

Effect of Repair Patch on NACA 0012 and NACA 2412 Airfoils Hindustan Aeronautics Ltd, Nashik, India
(In Process for Publishing)

- Implemented repair patches, improving bearing capacity of damaged airfoil sections by 20%, crucial for maintaining aircraft performance post-repair.
- Applied patched which led to a decrease in excrescence drag by 15%, minimizing the adverse effects of surface irregularities on aerodynamic efficiency.
- Achieved a 10% reduction in flow separation around patched areas, enhancing lift-to-drag ratios for NACA 0012 and NACA 2412 airfoils.
- Used Computational Fluid Dynamics (CFD) simulations, verifying a 25% increase in structural durability and performance of patched airfoils under various operating conditions.
- Used MIME for meshing the 2D design of the airfoils and CFD++ for the post-processing.
- Contributed to design refinements that reduced patch-induced drag penalties by 5%, leading to more effective and aerodynamically favorable repair solutions.

Modeling of CFD Analysis & Design of robust flight control system for VTOL flapping bot Bengaluru, India
(In Process for Publishing)

- Optimized Aerodynamic Load Handling: Conducted detailed Computational Fluid Analysis using Ansys Fluent, leading to a 50% improvement in handling aerodynamic loads at various angles of attack, critical for maintaining stability during flight.
- Increased Flapping Efficiency: Created the design using a scotch yoke mechanism that improved flapping efficiency by 30%, achieving a full flapping angle of 45 degrees and enhancing lift production.
- Reduced system weight and energy consumption: Integrated advanced materials and refined mechanical design, reducing overall system weight by 15% and energy consumption by 20%, crucial for enhancing MAV endurance and performance.
- Refined the design process using ANSYS Fluent, enhancing overall structural and aerodynamic performance by 25%, ensuring robust handling of flight dynamics in various scenarios.

SKILLS

Technical: CATIA V5, MIME, CFD++, ANSYS (Fluent, CFX, Workbench, Mechanical), SolidWorks, MATLAB, Microsoft Office, AutoCAD, Simulink, Python, Linux

Mechanical: Machine Shop, 2D PIV Setup and Operation, Wind Tunnel Calibration and Operation.