Aishwerya Singh Gahlot

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EDUCATION

Georgia Institute of Technology Atlanta, GA
***PhD**, Aerospace Engineering, Minor: Mathematics,* GPA: 4.0/4.0 Aug 2021- July 2025

- Topic: Develop Physics-Based Models for Rotor Aerodynamics under Adverse Weather
- Advisor: Dr. Lakshmi N. Sankar

Georgia Institute of Technology Atlanta, GA
***MSc**, Aerospace Engineering,* GPA: 4.0/4.0 Aug 2021- May 2024

University of Petroleum and Energy Studies Dehradun, India
Bachelor of Technology, Aerospace & Avionics Engineering, GPA: 3.87/4.0 Aug 2016- May 2020

EXPERIENCE

GT-AE Computational Fluid Dynamics Lab Atlanta, GA
Graduate Research Assistant Aug 2021- Present

- Conduct research in Rotorcraft Aeromechanics using in-house Computational Fluid Dynamics codes (GT-Hybrid).
- Developed both low and high-fidelity tools to investigate the effects of rain and ice accretion on multirotor VTOL vehicle performance and validation using industry standard solvers (LEWICE).
- Project supported under the Georgia Tech Vertical Lift Research Center of Excellence (VLRCOE).
- Close collaboration with the NASA Glenn Research Center and the US Army.
- Mentored undergraduate students in conducting lab and computational research in Rotor Aerodynamics.

Leonardo Helicopters Philadelphia, PA
AW609 Aircraft Systems Integration (ASI) Intern/Co-op with the Aerodynamics Department Jun 2024 - Dec 2024

- Conducted analyses of rain and ice crystal ingestion into the AW609 engine using Ansys Fluent and FENSAP.
- Developed an agile CFD engine intake model for aerodynamic analyses, including pressure distortion, temperature distortion, rain, and icing effects.
- Modeled, validated, and integrated the Virtual Blade Model (Fluent VBM) for AW609 rotors.
- Performed ice shedding analysis on rotor blades to assess kinetic energy impact on the fuselage.

Georgia Institute of Technology Atlanta, GA
Course Instructor for undergrad Aerodynamics (AE 3030) Aug 2023- Dec 2023

- Instructed and designed a curriculum for 51 undergraduate students.
- Taught the technical content of both low and high-speed aerodynamics, including analytical and numerical methods to compute lift, drag, pitching moment for 2D and 3D bodies.
- Provided guidance and answered questions to support student understanding and mastery of course material.

VFS 40th Annual Student Design Competition, 2nd place (Graduate Category) Atlanta, GA
Rotorcraft Design I & II Aug 2022 - June 2023

- As a key member of 'Team Soteria' responded to the Request for Proposal (RFP) for the 'High-Speed Vertical Takeoff and Landing (HSVTOL) Aircraft.'
- Challenge: Design a large VTOL aircraft that balances sustained hover operations with high-speed and altitude cruise capabilities, with a minimum mission radius of 500 nm and cruise speed of 450 kt at 20,000 ft altitude.
- Designed and sized a transonic main wing for high-speed cruising by developing a MATLAB framework integrating OpenVSP with FlightStream (Panel Method based tool).

- Conducted high fidelity CFD simulations of the wing and fuselage using Ansys Fluent for drag analysis and fuselage shape optimization.

Kimberly Clark Corporation Atlanta, GA
CFD simulation projects (Part-time) Mar 2022- May 2023

- Analyzed the aerodynamic effects of wall cavity on Channel Flows using commercial software, Ansys Fluent.
- Modeled and assessed the fluid behavior in an aspirator model by conducting various parametric studies.
- Provided consultancy support to the design team on geometry modification to improve the overall product performance.

NewSpace Research and Technologies Bangalore, India
Design Engineer-1, Aerospace Systems (Full-time) Mar 2020- Jul 2021

- Developed a framework for multidisciplinary design and optimization for conceptual fixed-wing UAV models using commercial optimization tools such as Mode Frontier and Siemens HEEDS MDO.
- Optimized the geometry of a glide pod using the ModeFrontier MDAO tool.
- Conducted a research study on the multidisciplinary design and optimization (MDO) of Launch Vehicles.

SKILLS

- **Simulation & Analysis:** Ansys Fluent, FENSAP-ICE, STAR-CCM+, OPENFOAM, GT-ICE, FlightStream, OpenVSP, XFOIL, AVL, XROTOR, Actuator Disk, Blade Element Momentum Theory (BEMT), Virtual Blade Model (VBM)
- **Programming & Software:** MATLAB, Python, FORTRAN, C++
- **CAD, Meshing, Post-Processing Tools:** SolidWorks, CATIA, Hypermesh, Pointwise, TecPlot, CFD-Post
- **PLM & Data Management:** Enovia, KISTERS, JPanda
- **Design & Optimization:** HEEDS, ModeFrontier, MDO, Numerical Optimization
- **Operating Systems:** Linux/UNIX
- **Professional Skills:** Effective Presentation Skills, Adaptability & Learning Agility, Collaboration & Teamwork

PAPERS/PUBLICATIONS

- **Gahlot, A.,** Von Hardenberg, P.H., Sankar, L. N.," Application of Low-Fidelity Methods to eVTOL Propeller Icing and Performance Degradation," Accepted for presentation at the 51st European Rotorcraft Forum, Venice, Italy, September 2025
- **Gahlot, A.,** Kim. J., Sankar, L. N.," A Comparison of Low-and High-Fidelity Models for Tail Rotor Icing Phenomena," Proceedings of the 50th European Rotorcraft Forum, Marseille, France, September 2024 (Pending publication)
- Ku, M., **Gahlot, A.,** Sankar, L. N.," Application of an Inverse Design Methodology to Rotor Tip Design," Proceedings of the 50th European Rotorcraft Forum, Marseille, France, September 2024.
- **Gahlot, A.,** and Sankar, L. N., "Effects of Rain on Hover and Forward Flight Performance of the S-76 Rotor," AIAA 2024-1117, AIAA SciTech Conference Proceedings, American Institute of Aeronautics and Astronautics, DOI: 10.2514/6.2024-1117
- **Gahlot, A.,** and Sankar, L. N., "Aerodynamic Effects of Rain on Quadrotor Performance." First International Conference on Advanced Air Mobility Systems, Bengaluru, India December 4-6, 2023.
- Gupta, A., **Gahlot, A.S.** & Sankar, L.N. Drone rotor performance under icing conditions. *CEAS Aeronaut J* (2025). https://doi.org/10.1007/s13272-025-00817-2.
- **Gahlot, A.**, Sankar, L. N., and Chen, P.W, "Effect of Light Rain on Coaxial and Tandem Rotor Performance in Hover," VFS Forum 79 Paper 86, Florida, May 2023
- **Gahlot, A.**, Eschol, R. M., Sankar, L. N., and Kreeger, R. E., "Numerical Simulations of the Adverse Effects of Rain on Airfoil and Rotor Aerodynamic Characteristic," Journal of the American Helicopter Society, 68, 022004 (2023), DOI: 10.4050/JAHS.68.022004.

- Sankar, L. N., **Gahlot, A.**, Costello, M.F., Collins, K.B., "Retrofitting an existing helicopter with eVTOL Capabilities: Challenges and Opportunities," Proceedings of 48th European Rotorcraft Forum, Winterthur, Switzerland, September 2022
- **Gahlot, A.**, Sankar, L. N., and Pitchitkul, A., "Computational Modeling of the Effects of Rain on Wind Turbine Performance," Proceedings of the ASME Turbo Expo Turbomachinery Technical Conference and Exposition, GT2022-82500, Rotterdam, The Netherlands, June 2022.

HONORS AND AWARDS

Vertical Flight Foundation Scholarship - Dr. Jing Yen Cost Awareness Scholarship	May 2023
Sidhu Mall & Sons Gold Medal (Best All-Round performance in the University)	Aug 2021
Dean's List - every semester, University of Petroleum and Energy Studies	Fall 2017-Spring 2020

AFFILIATIONS

- Vertical Flight Society (VFS) — Aug 21-Present
- GT Women of Aeronautics and Astronautics (WoAA) & Women in Engineering (WIE) — Aug 21-Present
- American Institute of Aeronautics and Astronautics (AIAA) — Aug 23-Present