

RITHIK R NAMBIAR

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SUMMARY

MS Aerospace Engineering graduate from Iowa State University specialized in computational analysis and sustainable system design. Research portfolio spans offshore wind system design, ultrasonic deterrent technologies, aerostat optimization, and computational aeroacoustics through collaborations with leading US and Indian institutions. Published researcher with proven track record of delivering practical engineering solutions. Passionate about translating complex engineering challenges into sustainable solutions that advance both technology and environmental stewardship.

EDUCATION

IOWA STATE UNIVERSITY

Aug 2024 - May 2026

MS in Aerospace Engineering

- Thesis defended: Modeling and Analysis of an OWC Integrated Floating Offshore Wind Turbine Platform

MANIPAL INSTITUTE OF TECHNOLOGY

Jul 2018 - Jul 2022

BTech in Aeronautical Engineering | Minor Specialization in Fundamentals of Computing

- Thesis defended: Numerical Prediction of Generation of Axisymmetric Mode Jet Screech tones using Finite-Volume CFD code for various Mach Numbers and Impinging jets
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EXPERIENCE

Department of Aerospace Engineering, Iowa State University

Graduate Research & Teaching Assistant

May 2025 – Dec 2025

- Executed dynamic modeling and time-domain simulations for a Wave-Augmented Floating Offshore Wind Turbine (WAFOWT) using MATLAB/Simulink and WEC-Sim, evaluating complex wave-body interactions to maximize platform stability.
- Instructed and evaluated 30+ students in AERE 3220: Aerospace Structures Laboratory, directing hands-on structural engineering experiments.

Research Assistant, ISU Computational Aerodynamics and Aeroacoustics Laboratory

Sept 2024-Jan 2025

- Engineered an innovative ultrasonic bat deterrent device using aerodynamic whistles to significantly reduce wildlife mortality risks at commercial wind farms.
- Directed detailed CFD and CAA simulations to map operational principles, directly informing critical design enhancements.
- Maximized device performance by applying Multidisciplinary Design Optimization (MDO) techniques via a Discrete Adjoint approach in OpenFOAM (DAFoam)

Indian Institute of Technology, Bombay, India

Project Research Assistant, LTA Systems Laboratory

Sept 2022-Jun 2024

- Directed a comprehensive feasibility study on solar/wind aerostats for transmission towers, successfully identifying strategies to reduce operational costs by 20%.
- Achieved a 15% increase in power generation efficiency by executing advanced CFD analyses on both horizontal and vertical axis wind turbines.
- Programmed a customized design dashboard that streamlined the aerostat development process, effectively reducing cycle times by 60%.
- Mentored students as a Teaching Assistant for AE664 (LTA Systems) and led laboratory outreach programs, successfully increasing project visibility and engagement.

Indian Institute of Space Science and Technology, India

Research Intern

Jan 2022-Jul 2022

- Modeled complex screech tones in supersonic jets using ANSYS Fluent, investigating the specific impacts of varying Mach numbers on noise generation.
- Analyzed sound pressure levels and complex acoustic behaviors to generate actionable data for aircraft performance optimization.

Hindustan Aeronautics Limited, Bangalore, India

Design Intern

Aug 2021-Sept 2021

- Performed the design and structural analysis of critical Wing and Empennage components, ensuring compliance with strict performance standards.
- Conducted an advanced aerodynamic study on gurney flaps, successfully optimizing their application to yield a 15% improvement in lift coefficient and maneuverability.

PUBLICATIONS

C-Conference proceeding | J – Journal publication

2025

[J2] Nambiar, R. R, Karthik S. K, Manikandan, M., Singh, B., and Nair, M.T (2025) "Numerical Prediction of Axisymmetric Jet Screech Tones in Supersonic Flows." *CFD Letters*, 18(4), 34-53. <https://doi.org/10.37934/cfdl.18.4.3453>

2024

[J1] Nambiar, R. R, Dixit, M., & Pant, R. S. (2024). "Conceptual Sizing Approach for Electric Power Generation Turbine Aerostat." *Journal of Aerospace Sciences and Technologies*, 76(2), 67–80. <https://doi.org/10.61653/joast.v76i2.2024.962>

2023

[C4] Nambiar, R. R, Tripathi, M., and Pant, R.S. "Effect of Horizontal and Vertical Overlap on the performance of two-bladed Vertical Axis Wind turbine." *AIAA AVIATION 2023 Forum*, San Diego, CA. June 2023. <https://doi.org/10.2514/6.2023-4118>

[C3] Nambiar, R. R, Dixit, M., and Pant, R. S. "Methodology for Conceptual sizing of a Turbine Aerostat for Electrical power generation." *AIAA AVIATION 2023 Forum*. San Diego, CA, June 2023. <https://doi.org/10.2514/6.2023-3792>

[C2] Nambiar, R. R, Karthik, S. K, Manikandan, M., and Nair, M.T. "Numerical Prediction of Generation of Axisymmetric Mode Jet Screech Tones at Different Mach numbers." *AIAA AVIATION 2023 Forum*, p. 4389. June 2023. <https://doi.org/10.2514/6.2023-4389>

[C1] Nambiar, R. R, and Gupta, P. "Conceptual Design of a Solar Powered Winged Hybrid Airship for Agricultural purposes." *AIAA AVIATION 2023 Forum*. San Diego, CA, June 2023. <https://doi.org/10.2514/6.2023-3791>

TECHNICAL SKILLS

- **Engineering Software:** Autodesk Fusion 360, CATIA v5, ANSYS, AutoCAD
- **Numerical Analysis Tools:** CFD++, MIME, ANSYS (Mechanical APDL, Fluent), OpenFOAM
- **Programming:** Python (Space Applications, Data Analysis), MATLAB
- **Documentation Tools:** Microsoft Office Suite, Google Workspace, LaTeX
- **Project Management:** Team Leadership, Cross-functional Collaboration, Research Coordination

TRAINING WORKSHOPS & SEMINARS

- Organized and successfully conducted a National Seminar on Emerging Technologies in Aerospace Engineering (eTAE – 2023) attended by dignitaries from the private and government agencies at IIT-Bombay on May'23
- Engaged a Program on Python fundamentals, Data Structures, Program Interfaces, Databases provided by University of Michigan through Coursera (online) in Sept'20
- Attended Coursework including 'hands-on projects that practiced skills in CAD, CAE, and Drone Design' provided by Coursera (online) in Oct'20

CERTIFICATIONS

- Simulation using ANSYS Fluent by Udemy (**Jun 2022**)
- Aircraft Design using CATIA V5 by Upskillz (**May 2022**)
- Python with Space Applications by Spaceonova (**Mar 2021**)
- Complete CATIA V5 Express Training by Udemy (**Jan 2021**)
- Python for Everybody (Specialization) by Coursera (**Oct 2020**)
- Autodesk Certified Credential in CAD and Digital Manufacturing (Specialization) by Coursera (**Sep 2020**)

OTHER

- **Languages:** English, Hindi, Malayalam (Fluent)