Anushka Subedi

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Summary

Ph.D. student developing turbulent flow control methods using CFD, numerical modeling, and high-performance computing to optimize advanced aircraft surface performance.

Relevant Experience

Arizona State University
Ph.D. Researcher, 01/2023 - today
- Developed frequency-tuned flow control approaches to wall-transpiration control methods using Fourier transforms and averaging in spectral code Nek5000 [1].
- Developed a novel flow control method based on wall-information on a turbulent channel [2].
- Performed DNS of a backward-facing step (BFS), studied modal decomposition of the flow on a BFS, and compared with the experiments.
- Exploring the wall-information method for flow separation control on a backward-facing step using high performance computing [3].

IOE, Tribhuvan University
Teaching Assistant, 11/2021 - 10/2022
- Teaching assistant for the course - ME 431: Engineering Drawings I. Taught classes and led labs on engineering drawing and CAD modeling.
-Teaching assistant for the course- SH 601: Numerical Methods at IOE, Pulchowk. Led labs on numerical methods using C and Python.

Skills

CFD codes: Nek5000, OpenFOAM, ANSYS Fluent.
Mathematical & Theoretical: Spectral Methods, Finite Difference Methods, Finite Volume Methods, High Performance Computing.
Programming Languages: FORTRAN, MATLAB, Python, C, C++.

Selected Awards & Honors

Experiential Learning Grant 2024
GPSA Travel Grant Award 2024

Professional affiliations

Member, American Institute of Aeronautics and Astronautics (AIAA).
Member, American Physical Society (APS).

Education

Arizona State University
Tempe, AZ, USA
Ph.D. Mechanical Engineering, GPA: 4.0/4.0.
Research Focus: Computational Fluid Dynamics, Turbulent flow control, Spectral Methods, High Performance Computing. 01/2023 - 05/2026 (Anticipated)

Pulchowk Campus, IOE, Tribhuvan University
Pulchowk, Lalitpur, Nepal
Bachelor's of Mechanical Engineering, Distinction.
Research: *Modal decomposition of flow during dynamic stall [4], Design of Pelton turbine bucket using CFD [5].*
11/2017 - 05/2022

Relevant Coursework

Fluid Mechanics, Turbulence, Partial Differential Equations, Spectral Element Methods, Computational Fluid Dynamics, High Performance Computing, Modal and Analysis of Fluid Flows, Multiphase Flows, Statistical Machine Learning.

Selected Publications

[1] **A. Subedi**, and Y. Peet. *Frequency-Tuned Approaches to Wall Transpiration Control.* AIAA SciTech Forum, 2025.

[2] **A. Subedi**, and Y. Peet. *Turbulent Flow Control using Wall Sensing.* AIAA Aviation Forum and Ascend, 2024.

[3] **A. Subedi**, and Y. Peet. *Flow separation control on a backward facing step using wall information.* Bulletin of the American Physical Society, 2024.

[4] A. Pandey, M. Timsina, **A. Subedi**, S. Gautam, K. Darlami, & S. Bhattrai. *Modal Decomposition of Flow During Dynamic Stall in NACA 4412 Airfoil Using Proper Orthogonal Decomposition.* AIAA SciTech Forum, 2025.

[5] N. Adhikari, A. Pandey, **A. Subedi**, N. Subedi. *Design of Pelton Turbine and Bucket Surface using Non-Uniform Rational Basis Spline and its Analysis with Computational Fluid Dynamics.* Journal of the Institute of Engineering, 2021.

Full list on Google Scholar.

Academic Activities

TALKS: ASU ISSC- Panelist for "PhD at ASU for International Students", 2024

REVIEWING: ASU GPSA Research Grant reviewer, 2023/24 academic year