Aishna Jain

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SUMMARY

- Mechanical Engineering graduate student rapt on simulation-driven analysis, focused on sustainable solutions.
- Expertise in simulation tools (like Ansys Fluent) with demonstrated experience in domains of aerospace, energy efficiency, biological flows and single crystal modelling for semiconductor application.
- Experience in design software, acquired through working with mBaja, eBaja, and Formula Motorsports teams.
- Adept with mathematical modelling, data visualization and data analysis with engineering-friendly coding languages.

SKILLS

Simulation and Analysis: Ansys Workbench, Ansys Fluent, COMSOL, OriginPro
CAD/Design: SolidEdge, Fusion 360, SolidWorks, AutoCAD, OpenRocket
Programming and others: MATLAB, Python, Arduino IDE, C, Microsoft Office Suite

EDUCATION

Master Of Science in Mechanical Engineering   Expected June 2027
University of Washington, Seattle
GPA: 3.88/4 **||** *Relevant Coursework***:** Introduction to Control Theory, Compressible Fluid Mechanics

Bachelor of Technology (Honors) In Mechanical Engineering   Nov 2021-May 2025
Indian Institute of Technology, Bhilai, India
GPA: 9/10**||** *Relevant Coursework***:** Advanced fluid dynamics, Computational Fluid Dynamics, Combustion in IC Engines, Refrigeration and air conditioning, Additive Manufacturing
Additional: Braking Department, Motorsports Team; Social Executive (National Service Scheme)

EXPERIENCE

Improvements and Innovation in 2D/3D Particle Tracking Velocimetry (PTV)   Sep 2024 - ongoing
Graduate Student Researcher, Quantitative Flow Visualization for Fluid and Turbulent Flow Studies Laboratory, UW, Seattle
- Researching the use of Physics-Informed Neural Networks to improve PTV.
- Developing novel-architecture to recreate flow fields obtained from PTV, to closely align with results from DNS.

Numerical Study of Drug Diffusion Through Human Skin   Sep 2023 - May 2025
- Developed an in-house code to model non-invasive drug diffusion through human skin presented as B.Tech Honors thesis.
- Identified and characterized diffusion coefficients and enhancement strategies (MATLAB) for important medicinal drugs.
- Utilized COMSOL to model porous medium flow through an in-house designed model for Stratum Corneum.

Natural Ventilation Potential Hours of a building predictor   Dec 2023- Dec 2024
- Developed a MATLAB-based tool to predict the passive thermal capacity of buildings based on location, building materials, thermal comfort models and real-time meteorological data.
- Achieved 20-26% energy consumption reduction and reduced dependence on active thermal systems.

Numerical Prediction and Separation control of flows around turbine blade
Summer Research Intern, IIT Kanpur, India   May 2024 - Aug 2024
- Analyzed flows in low-pressure turbine cascade test cases to identify and mitigate losses due to flow separation, leveraging RANS and LES models in ANSYS Fluent (utilizing HPC for 75% more efficiency).
- Reported the effectiveness of passive control strategies and post-processed results in MATLAB and Tecplot.
- Presented critical findings at the *Asian Congress on Gas Turbines (*ACGT) ,2024.

CFD Investigation of Solidification during Single Crystal Growth and Transitional Turbulence Using PANS Models
Summer Intern, Defense Research and Development Organization (DRDO) India   May 2023- July 2023
- Simulated thermal–fluid coupling in metallic solidification using ANSYS Fluent with C-based UDFs.
- Applied Partially Averaged Navier–Stokes (PANS) turbulence models to accurately capture transitional flow regimes.
- Tailored ANSYS Fluent backend through TUI scripting and solver-level modifications to enable problem-specific modeling and control.