

NISHAN JAIN

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EDUCATION

University of Maryland, College Park, MD Doctor of Philosophy in Aerospace Engineering	GPA: 3.9/4.0 <i>Turbulence, Rotorcraft Aerodynamics, Multiphase Flow</i>	Aug 2017
University of Illinois, Urbana-Champaign, IL Master of Science in Aerospace Engineering	GPA: 4.0/4.0 <i>Computational Fluid Dynamics, Internal Aerodynamics</i>	July 2011
Indian Institute of Technology, Kharagpur, India Bachelor of Technology in Aerospace Engineering	GPA: 9.0/10.0 <i>Finite Element Analysis, N-body problem</i>	May 2008

RESEARCH EXPERIENCE

Post-Doctoral Associate **U.S. Army Research Laboratory / University of Maryland** **Oct 2017 – May 2020**

- Modeled interacting particle physics to address challenges in particle-wall interactions, and moving contact line problems.
- Identified strategies to develop hierarchical multiscale method for particle-laden flow with coupling across micro and macro scales.
- Developed SPH framework to predict wettability behavior of thermal barrier coating at high temperature operating conditions.
- Assessed Hybrid RANS-LES and SGS models for turbomachinery applications by analyzing transient flow over pitching airfoil.
- Performed high-fidelity grid convergence LES simulations of flow through single-stage gas turbine using CharLES framework.

Research Assistant **Alfred Gessow Rotorcraft Center, University of Maryland** **Sep 2011 – Aug 2017**

- Successfully integrated hybrid RANS-LES methods to the in-house computational solvers for rotorcraft applications.
- Validated implemented techniques by conducting extensive simulations over 2-D and 3-D unsteady turbulent flows.
- Proposed a novel parameter within DES model framework that led to improvement in predictions of aerodynamic forces.
- Conducted high-fidelity Improved Delayed Detached Eddy Simulations (IDDES) in order to investigate dynamic stall phenomenon by utilizing High-Performance Computing (HPC) cluster.

Research Assistant **University of Illinois, Urbana-Champaign** **Sep 2009 – June 2011**

- Developed framework to model complex flow through supersonic bypass jet in a joint project with Gulfstream and Rolls-Royce.
- Completed turbulent flow simulations on the jet engine to understand flow predictions in non-circular bypass channels.
- Identified most suitable turbulence models based on flow physics and assessed their performance.
- Thoroughly analyzed simulation results and performed extensive validation with experimental data provided by NASA.
- Served as a teaching assistant for advanced level Aerospace Propulsion course, graded homework and occasionally lectured.

APPROVED GRANT

PI: Professor Alison Flatau

Co.PI: **Nishan Jain**

Duration: 2019 – 2023 (4 years)

Title: Uncertainty-based Mathematical Methods for Simulating Confined, Unsteady Flow Dynamics with Particle Entrainment.

Agency: Mathematical Sciences Division, U.S. Army RDECOM, Army Research Office.

SKILLS

Programming C, Python, Fortran, MATLAB, MPI, CUDA C/C++

CFD | FEA OpenFOAM, Ansys Fluent, Basilisk, CharLES Cascade, CONVERGE | AutoCAD, Abaqus, FreeCAD

Pre | Post-processing Ansys ICEM CFD, Ansys Gambit, Gridgen, Gmsh | Tecplot, Paraview, Blender

Platforms & Tools Linux, Windows | Git, Bash, Vim, Tmux, Doxygen