Jeyadave Nuntha Kumar

San Diego, CA | (408) 763 2417 | jnunthak@terpmail.umd.edu | linkedin.com/in/nkjeyadave

Education

University of Maryland — College Park, MD
Bachelor of Science, Aerospace Engineering with Honors, — Expected May 2025
Minor in Mathematics and Global Engineering Leadership
GPA: 3.804
Honors Thesis: CFD Modeling of the Glenn L. Martin Wind Tunnel
Advisor: Dr. Jewel Barlow

Awards

Iribe Initiative for Inclusion & Diversity in Computing oSTEM Conference Scholarship (2024)
Out for Undergrad Conference Scholarship (2024)
Teach for America Ignite Fellowship (2023, 2024)
Aerospace Engineering Research Opportunity Scholars (2023)
University of Maryland President's Scholarship (2021-2025)

Research

Undergraduate Researcher: — College Park, MD
Alfred Gessow Rotorcraft Center — June 2024 - Present
CFD-based Surrogate Model for Predicting Aerodynamics of ROBIN Fuselages
Advisor: Dr. James Baeder
I am researching the use of a lower fidelity CFD method for obtaining aerodynamic data for ROBIN and ROBIN-MOD7 helicopter fuselages and development of a machine learning surrogate model for rapid fuselage design. I code a Python script that generates STL representations of 3D helicopter fuselages using the ROBIN parameterization. I use the OpenVSP Python API to automate the geometry generation and execute the VSPAero panel method and parasite drag analyses to obtain lift and drag coefficients. I compare the VSPAero computed data with experimental and in-house RANS computed data to understand the accuracy of the panel method. Latest efforts are in blending the ROBIN parameterization with piecewise splines parameterization. I document all progress in LaTeX and during the summer, I presented progress at weekly meetings and at a VLRCOE teleconference. My work was also presented by my lab colleagues at the 2024 VLRCOE Annual Review.

Undergraduate Researcher — College Park, MD
University of Maryland — January 2024 – Present
Vertically Integrated Project Research Program – Go with the Flow!
Advisor: Dr. Ken Kiger
I am part of a multidisciplinary team of undergraduate engineers researching and developing a take-home wind tunnel kit for engineering education initially evaluated at $150. I'm on the boundary layer sub-team where I help design a module that induces local velocity changes with a variable-angle flap and tasks users with verifying such changes through analyzing pressure tap readings. I was formerly on the fan characteristic sub-team where I helped design a module for measuring the wind tunnel fan's performance characteristic. I create CAD components in SOLIDWORKS that are powder bed printed. I assist in developing and executing lab experiments for testing and design validation and presented progress at the APS DFD Annual Meeting 2024. I presented the research at APS DFD 2024 and am currently drafting a paper for the 2025 ASEE Annual Conference.

Undergraduate Researcher — College Park, MD
Glenn L. Martin Wind Tunnel — June 2023 – Present
Advisor: Dr. Jewel Barlow
I research the use of CFD simulations for modeling the Glenn L. Martin Wind Tunnel internal circuit. Presently the wind tunnel suffers from flow separation in the first diffuser section, which increases fan power requirements and reduces flow uniformity in the test section. The goal is to obtain a validated CFD model for informing the iterative vortex generator design for mitigating flow separation in the diffuser. With the wind tunnel geometry created by a colleague based on wind

tunnel blueprints, I use STAR-CCM+ to prepare and mesh the geometry, set up and run the solver. I integrate the CFD workflow with my university's HPC cluster by writing Shell scripts for submitting parallel jobs, Java macros for automating STAR-CCM+ processes, and a Python script for recording job statistics. I examine the CFD model validity by comparing computed and measured test section velocities for a range of fan pressure differentials. I presented my progress to faculty and scholars in July 2023 as part of the AEROS (2023) award program. I am currently drafting a manuscript to present my thesis at the AIAA Region III Conference in April 2025.

Portable Wind Tunnel Project College Park, MD
University of Maryland October 2021 – November 2021
Advisor: Jerry Liu
I collaborated with a group of 3 other students to design and build a portable low-speed open-return wind tunnel on a budget of $100 within two months. I created hand-drawn blueprints for the structure before construction and researched methods for safe and inexpensive flow visualization. I designed electrical components to control fan power for variable test section speeds. I presented our work to judges, faculty, and engineering students at our ENAE100 class research symposium.

Conference Presentations

APS DFD Annual Meeting 2024 Salt Lake City, UT
Salt Palace Convention Center November 2024
"Go with the Flow! Empowering hands-on individual fluid dynamics education"
Presented on Vertically Integrated Projects research in creating modular experiments that permit demonstration and exploration of the principles of fluid mechanics by individual students within their own home.

Academic Projects

AIAA 2024-2025 Design-Build-Fly College Park, MD
University of Maryland August 2024 – Present
Supervisor: Dr. Sung Lee
I am on the aerodynamics sub-team that is contributing to the design of an R/C propeller aircraft that completes three missions specified by the 2024-2025 AIAA Design-Build-Fly Competition. I research gurney flaps for increasing lift and methods for determining control surface size and position. I am conducting CFD analysis of simplified aircraft geometry using STAR-CCM+ and VSPAero for optimizing aerodynamic surface sizing. I create and teach an aerodynamics and CFD crash course to boost underclassmen efficacy and write LaTeX documentation to help my peers understand and use STAR-CCM+.

ENAE488C CFD Reports College Park, MD
University of Maryland January 2024 – May 2024
Professor: Dr. Ashish Nedungadi
I executed CFD analyses for supersonic flows and created detailed reports explaining the CFD process and subsequent analyses. I used Pointwise to create and refine 2D volume meshes for a supersonic wedge, set up CFD++ for a range of flow conditions involving angle of attack and Mach sweeps, inviscid and turbulent regimes, and various turbulence models. I post-processed the CFD results in Tecplot to present flow contours, compared computed and analytical results in MS Excel, and quantified errors through various plots. In MS PowerPoint, I presented results and drew conclusions about errors, solver inputs, and mesh sizes from the data.

On-Terrain Vehicle Project College Park, MD
University of Maryland February 2022 – May 2022
I collaborated with a group of 6 other students to design and build an on-terrain vehicle that samples a cup of water and navigates an obstacle course with a budget of $320 within 3 months. As the design lead, I used Fusion360 to create and assemble CAD vehicle components before construction and created technical drawings for 3D-printed parts. As the electronics and coding lead, I used CircuitLab to design the electronic circuitry and wrote code in Arduino IDE to control the vehicle and execute the project mission.

Teaching Experience

ENAE414 Course Preparation Program Tutor College Park, MD
University of Maryland August 2024
Technical Supervisor: Dr. Benjamin Silbaugh
I designed a curriculum for a lecture session on prerequisite single variable and multivariable calculus and linear algebra for incoming juniors registered for ENAE414 (Incompressible Aerodynamics). Relying on various textbooks, and my class notes, I prepared a handout which explains prerequisite material and provides tips for success in the course. I incorporated feedback from my technical supervisor on the prepared documents. I conducted a 2-hour lecture through Zoom where I explained concepts, did example problems, and provided advice on effective studying and exam success.

Peer Mentor and Tutor College Park, MD
The Arc Central Chesapeake March 2023 – August 2024
I tutored an undergraduate aerospace engineering student with a learning disability for 10 hours a week in upper-level classes such as compressible aerodynamics, dynamics, aerospace structures, and controls. I mentored them in professional and personal skills development, helped them with writing their resume, and implemented suggestions from a behavioral psychologist to support their performance at school.

Ignite Fellow Virtual
Teach for America September 2023 – May 2024
I taught 8th graders in under-resourced schools Algebra virtually through Zoom for 2 hours a week spread across 3 sessions each week. I was of service to the following schools:
CIS 303: The Leadership and Community Service Academy, Bronx, NY
Seagoville Middle School, Dallas, TX

ENAE311 Teaching Fellow College Park, MD
University of Maryland September 2023 – December 2023
Professor: Dr. Christopher Cadou
I served as a teaching fellow for ENAE311 (Compressible Aerodynamics), where I held 4 weekly office hours and created 2 exam-level practice problems every week to help students master the material. I facilitated a couple test review sessions with two other teaching fellows and a graduate teaching assistant, where I answered student questions and gave test taking advice. After observing students in office hours and review sessions, I provided feedback to the instructor on course content and assignments. I tutored Chemistry for 4 engineering students through weekly 2-hour group sessions as a supplemental service.

Peer Tutor
University of Maryland Academic Success Tutorial Services College Park, MD
Supervisor: Shakeena King August 2022 – September 2023
I tutored students in CHEM135 (General Chemistry for Engineers), ENES102 (Mechanics I), ENES220 (Mechanics II), and MATH140 (Calculus I) through Zoom on an "on-demand" basis. I explained STEM concepts, prepared students for exams, and created a lesson plan for each course prior to the start of sessions each week.

Student Organi-zations

Inventory Manager and Airbrake Sub-team Member College Park, MD
Terrapin Rocket Team February 2023 – August 2024
As airbrake sub-team member I modelled the electronics bay for the rocket's airbrake component in SOLIDWORKS and created detailed engineering drawings for waterjet parts. I assisted in rocket airbrake testing at the Glenn L. Martin Wind Tunnel and compared experimental data with computed data from STAR-CCM+ simulations on simplified rocket geometry. As inventory manager, I created a Google Sheets template for inventory tracking and helped organize the team's working area. I attended rocket test launches and built and painted an L1 rocket as a personal project. Our

competition rocket achieved first place in the 2024 Spaceport America Cup's 10K Student Researched and Developed (SRAD) category.

Aerocorps College Park, MD
University of Maryland August 2022 – December 2022
As a member of the Mentoring Committee of Aerocorps, I mentored a group of three incoming aerospace engineering freshmen during monthly check-ins throughout the semester. I fostered their belonging to the Engineering department by providing personalized tips for academic success, giving advice about undergraduate research and student organizations, and helping them network with other aerospace engineering students.

Professional Affiliations

Out in Science, Technology, Engineering, and Mathematics (oSTEM)
American Institute of Aeronautics and Astronautics (AIAA)

Professional Development

2024 Out for Undergrad Engineering Conference Twin Cities, MN
InterContinental Saint Paul Riverfront September 2024
I was selected to attend the Out for Undergrad (O4U) Engineering Conference which is the largest and fully funded undergraduate LGBTQ+ conference in the United States. I networked with other career-focused LGBTQ+ students, attended inspiring keynote speeches from senior LGBTQ+ executives, and participated in intimate mentorship discussions with supportive peers and professionals.

2024 oSTEM Conference Portland, OR
Oregon Convention Center October 2024
I was selected and fully funded by the Iribe Initiative for Inclusion and Diversity in Computing (I4C) at the University of Maryland to attend oSTEM's 14th annual conference. The conference brings together over 1,000 LGBTQ+ students, professionals, and recruiters in STEM fields from across the country. I networked with other LGBTQ+ individuals and engaged with queer issues and career development through professional workshops and keynote speeches.

Certifications

IRB Members - Basic/Refresher April 2024
CITI Program

Family Educational Rights and Privacy Act (FERPA) Certification August 2023
University of Maryland

International Tutor Training Program Certification (ITTPC) – Level 1 May 2023
College Reading & Learning Association (CRLA)

CPR / AED / First-aid Certification February 2023
National CPR Foundation

Certificate of Completion November 2022
Northrop Grumman Machine Learning Seminar Series