SHRUTI JADHAV

shrutisjadhav27@gmail.com | +1 803 629 6644 | Columbia, SC USA

CORE SKILLS & ACHIEVEMENTS

Technical Skills: Finite Element Analysis (FEA), Computational Fluid Dynamics (CFD), UAV Autonomy, MATLAB, Python, CAD Modeling (CATIA, Creo, AutoCAD), ANSYS Fluent

Key Achievements:

- DAAD RISE Professional Inten at German Aerospace Center (DLR), Germany
- Designed USC's first CubeSat including power, orientation, and communication systems
- 2nd Place, AIAA Region II Student Conference (Master's Category, 2024)

EDUCATION

University of South Carolina, Molinaroli College of Engineering and Computing — *Columbia, SC*

Master of Science in Aerospace Engineering — **Graduation: Dec 2025**

Graduate Research Assistant — **GPA: 4.0**

Bachelor of Science in Aerospace Engineering — **Graduation: Dec 2023**

South Carolina Honors College, Minor: Computer Science — **GPA: 4.0**

INTERNSHIPS

German Aerospace Center (DLR) — *Göttingen, Germany*

Analysis of Temperature-Sensitive Paint Images from Wind Tunnel Experiments — **May 2025-Jul 2025**

- Transferred and optimized image post-processing code from MATLAB to Python for high-speed TSP data, to analyze boundary-layer transitions over a forward-swept wing
- Applied Proper Orthogonal Decomposition (POD) to extract dominant flow structures from time-resolved surface temperature images, to enhance insights into laminar-to-turbulent transition dynamics.
- Demonstrated independent research skills and effective collaboration in an international aerospace research environment as a DAAD RISE Professional intern at DLR Göttingen.

Technische Universität Dresden — *Dresden, Germany*

Parametrized 3-Point Bending Modeling using FEM — **June 2022-Aug 2022**

- Created efficient way of modelling in LS-PrePost, bypassing manual geometry creation & meshing.
- Created a script that generates 3-point bending model for all standards ASTM, ISO, with various composite parameters such as thickness, orientation, and material like carbon fiber or fiberglass.

RESEARCH

University of South Carolina — *Columbia, SC*

Multi-Layer Decision Making for Long-Term Autonomous Missions — **May 2023-Present**

- Design and simulation of a multi-layer UAV decision-making framework in MATLAB, inspired by Dual Process Theory, to manage energy, exploration, and event response.
- Developed a cost-function-based control policy with arctangent-based weighting to blend real-time priorities, outperforming static baselines in simulation.
- Extending the framework with a learning-based system to enable UAVs to adapt to evolving spatiotemporal patterns of field events.

Georgia Tech ULI — **Feb 2022-May 2022**

- Assisted in defining the setup for part of the project called 'Compression after Impact testing.'
- Wrote methodologies for the compression testing process.

NASA ULI: ***Atoms to Aircraft to Spacecraft (A2A)*** — **Jan 2021-May 2021**

- Served as a member of the literature review team to address discussions on UAM Vehicles
- Analyzed UAM by dissecting the market review, route planning and infrastructure.

PROJECTS

University of South Carolina *Columbia, SC*
Aerospace Engineering Design of a CubeSat **Jan 2023-May 2023**

- Designed USC's first CubeSat per mission requirements to take pictures, store and transfer data.
- Developed a solar based power system and manufactured flywheels for orientation control.
- Tested the CubeSat features using radio interface for communication.

Nonlinear Filtering for Autonomous Vehicle Localization **Aug 2024-Dec 2024**

- Implemented Extended and Unscented Kalman Filters (EKF & UKF) in MATLAB with both rectangular and Runge-Kutta integration to estimate states from nonlinear, noisy sensor data.
- Applied measurement gating and analyzed trade-offs in filter accuracy, error covariance, and runtime performance.

Aerodynamic Optimization of a Convertible EV **Jan 2024-May 2024**

- Proposed and simulated novel drag-reduction modifications for a convertible Porsche Taycan using 2D and 3D CFD models in ANSYS Fluent.
- Developed and tested design features such as extended windshields, airflow channels, and mid-roof flow attachment structures.
- Validated scaled models through wind tunnel testing, achieving up to 31% drag reduction in simulations.

Aircraft Design **Aug 2022-Dec 2022**

- Designed a conceptual aircraft, complete with all required calculations, given a set of requirements
- Performed wing design, weight estimation, engine selection, performance analysis among other tasks while documenting and presenting the design process.

Thrust and Performance Analysis of Propulsive Mechanisms **Aug 2022-Dec 2022**

- Designed and analyzed 3 propulsive mechanisms (ramjet, rocket booster, resistojet) using ANSYS
- Modeled fluid flow and investigated numerically to find the most optimal design for each case.

SKILLS

Tools: ANSYS - Static Structural, Fluent | CAD – AutoCAD, Creo, CATIA | LS-PrePost | MS-Office |Git
Programming: MATLAB | Python | Java ***Languages:*** English | Hindi | German | Marathi

ACTIVITIES

American Institute of Aeronautics and Astronautics, Vice President **Jan 2021-Present**
Institute of Electrical and Electronics Engineers **Aug 2023-Present**
Rocketry Club **Aug 2022-Aug 2023**
Society for Women Engineers **Jan 2021- Apr 2022**

PROFESSIONAL DEVELOPMENT

AIAA Region II Student Conferences
Cape Canaveral, FL- *Presenter, 2nd Place Master's Category* Apr 2024
Atlanta, GA- *Presenter* Apr 2022
SmallSat Education Conference: Cape Canaveral, FL- *Presenter* Oct 2023
ICUAS'25: International Conference on Unmanned Aircraft Systems: Charlotte, NC May 2025
Discover USC- University of South Carolina Research Symposium- *Presentation Reviewer* May 2025
SC Junior Science and Humanities Symposium 2024-25- *Judge* Jan 2025