Apurva Hanwadikar

Mechanical Engineering Student at Cornell University
Los Altos, CA
(408)583-7537 | apurvahan@gmail.com | https://www.linkedin.com/in/apurva-hanwadikar/

Summary

Cornell mechanical engineering student with hands-on experience in flight hardware design, system integration, and dynamic testing for aerospace applications. Skilled at bridging mechanical and electrical systems and validating models through testing, with a strong interest in applying dynamics and control theory to aerospace systems.

Work Experience

Wisk Aero
Mountain View, CA

Propulsion Testing Intern
Jun. 2025 - Aug. 2025

- Designed and implemented a cooling system for a dynamometer test rig, integrating pitot tube and pressure differential sensors into a LabVIEW DAQ system.
- Modeled static pressure drop analytically and validated results against CFD simulations, achieving close agreement and informing design decisions.
- Designed a flow straightener, diffuser, and shroud geometry using NX, applying nozzle and diffuser theory to achieve smooth airflow transition.
- Presented results to propulsion leadership, leading to adoption of the system for regular testing.

Space Systems Design Studio - Alpha CubeSat Mission
Ithaca, NY

Integration and Testing Lead (2024 -), Integration and Test Member (2023 -)
Jan. 2023 -

- Led final design and prototyping of flight hardware for Cornell's Alpha CubeSat mission, ensuring structural and dynamic compatibility with launch requirements.
- Iterated on parts in SOLIDWORKS for better fit and worked on calculating and validating the spacecraft's Moment of Inertia tensor for attitude control simulations.
- Developed and wrote final assembly procedure for the CubeSat, and executed vibration and thermal vacuum tests to qualify hardware for launch.
- Designed and integrated the mechanical system for a high-altitude balloon launch to support the Alpha CubeSat mission.
- Collaborated with electrical and software teams to ensure system-level functionality of lightsail and payload components. Completed and integrated the design of solar panel PCB boards into the CubeSat High Altitude Balloon chassis

Cornell Mars Rover
Ithaca, NY

Drivetrain Subteam Lead (2025 -), Drivetrain Member (2023 -)
Sept. 2023 -

- Lead a 10-member subteam responsible for rover chassis, suspension, frame, and drivetrain. Oversee cross-subsystem integration and prepare designs for formal reviews.
- Currently designing a two-stage planetary gearbox to improve drivetrain torque output and a radio repeater system to extend rover communication range.
- Completed and implemented the mechanical design for a plug-and-play avionics bay, ensuring robust integration with rover subsystems, machined critical suspension components, and assembled major rover subsystems.
- Designed a deployable mini-rover with Ackermann steering, 4-wheel drive, and wishbone suspension for a scouting system.
- Physically assembled and integrated major rover subsystems, troubleshooting fit and functional issues during builds and field testing.

Space Systems Design Studio
Ithaca, NY

Summer Researcher
May 2024 - Aug. 2024

- Performed impedance matching, Smith Chart analysis, and frequency-domain characterization using a VNA to optimize antenna designs for Alpha CubeSat and DeSCENT missions. Led design on the final configuration of the antennas that flew on the Alpha CubeSat mission.
- Documented results and co-authored two papers on antenna integration and light-sail system design for SmallSat 2025 and the International Symposium on Space Sailing 2025.

Publications & Presentations

July 2025 — **The Path to Flight: Integration & Testing Updates from the Alpha CubeSat Mission**, International Symposium on Space Sailing, 2025 (Hanwadikar et al.) — *TU Delft*

August 2025 — **Gram-Scale ChipSat Spacecraft for Light Sailing in LEO**, Small Satellite Conference, 2025 (Umansky-Castro et al.) — *Salt Lake City, UT*

April 2025 — **Poster: Optimizing Antenna Integration and Deployment for Alpha's ChipSat-Light Sail System**, Cornell Engineering Undergraduate Research Poster Session, 2025 — *Ithaca, NY*

Skills

Modeling & Simulation MATLAB, ANSYS Mechanical
CAD & Design NX, SOLIDWORKS, Autodesk Inventor, Fusion360
Programming Java, Python, C++, ROS
Electronics Altium Designer, PCB Design, VNA Antenna Analysis, Soldering
Prototyping Manual Machining (Lathe, Mill), 3D Printing, Laser Cutting

Education

Cornell University — *Ithaca, NY*

B.S. in Mechanical Engineering — *Aug. 2023 –*

- **GPA:** 3.54
- **Major:** Mechanical Engineering with minors in Physics, Aerospace Engineering, and Robotics
- **Relevant Coursework:** Dynamics, Intro to Controlled Fusion, Finite Element Analysis (ANSYS), Mechanical Design, Mechanics of Materials, Thermodynamics, Quantum Physics, Statics, Lasers & Photonics, Honors Mechanics & Special Relativity, Honors Waves & Thermal Physics, Data Structures, Electricity & Magnetism, Linear Algebra
- **Current Classes:** Intermediate Dynamics, Spaceflight Mechanics, Fluid Mechanics, System Dynamics, Foundations of Robotics

Extracurricular Activity

Cornell WoAA (Women in Aerospace and Aeronautics) — *Ithaca, NY*

Mentorship Coordinator, Cornell WoAA — *Aug. 2023 -*

- Organized and facilitated events connecting undergraduates with aerospace professionals, improving retention and engagement of women in aerospace.
- Coordinated campus-wide outreach events such as ClubFest to grow membership and increase awareness of aerospace opportunities.