

Aarush Modali

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EDUCATION

Purdue University, College of Engineering <i>Bachelor of Science, Aeronautical and Astronautical Engineering</i> Dean's List & Semester Honors	West Lafayette, IN Expected May 2028 GPA 3.7/4.0
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EXPERIENCE

Ares Industries <i>Aerospace Engineering Intern</i>	El Segundo, CA May 2026 – June 2026
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- Redesigned 4+ major structural parts and subassemblies, including nose cone (to integrate sensors), wings, avionics bay, and solid rocket booster housing, in Siemens NX under tight airframe packaging constraints.
- Integrated avionics system for the cruise missile using an Orange Cube+ flight controller and Mission Planner, including telemetry data pipelines and tracking sensors.
- Performed static motor testing in support of the solid rocket booster housing design.

Purdue Space Program: International Rocket Engineering Competition <i>Systems Lead Engineer, Recovery Sub-Team Lead, Propulsion and Structures Engineer</i>	West Lafayette, IN Sep 2025 – Present
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- Developing the N-class solid propulsion system, including BATES grain geometry, propellant mixing, and system integration at Purdue's Zucrow Propulsion Laboratories.
- Conducted destructive hydrostatic testing on a prototype Al-7075 motor casing, which held up to 3,800 psi, 3.8x its operating pressure.
- Programmed embedded C++ avionics software, implementing Kalman filters and dynamic noise modulation to reject motor vibration noise, reducing attitude estimation error by 40% in simulation.
- Constructing an aft avionics bay and active control surfaces using a custom ESP32 flight computer to stabilize the rocket's roll for live video payloads.
- Leading a six-member team in the design and assembly of the dual-deployment recovery system.
- Modeled and machined the fins and nose cone while characterizing custom fiberglass and carbon fiber layups to determine their Young's and shear moduli.

High Speed Rocket-boosted Drone <i>Personal Project</i>	South Brunswick, NJ June 2026 – Present
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- Engineering a staged, solid-rocket-boosted drone targeting 200 mph for defense applications, utilizing a booster system to accelerate the drone to 100 mph prior to separation.
- Modeling the airframe around a 230 mm 3D-printed carbon-fiber nylon frame to withstand boost-phase loads and evaluating stability at 200 mph with Ansys CFD.
- Architecting the complete avionics system around a Pixhawk 6C flight controller, including UART GPS, a 4-in-1 ESC, custom wiring, and power distribution.

Solakair <i>Mechanical Engineering Intern</i>	Fremont, CA July 2026 – Sep 2026
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- Prototyped camera mounting hardware for a UAV nosecone assembly in SolidWorks.
- Engineered fastening solutions for thermal and EO camera housings, specifying heat-set inserts and clearance hole tolerances while resolving component interference issues within tight geometric constraints.

LEADERSHIP AND INVOLVEMENT

Scouting America <i>Eagle Scout, Junior Assistant Scoutmaster</i>	Kendall Park, NJ May 2015 – June 2025
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- Organized community cleanups, food donations, and fundraisers for the VFW and American Legion.
- Planned and led an Eagle Scout service project constructing bluebird nesting houses for the Plainsboro Preserve while providing accountable leadership and mentoring to volunteers.

ACHIEVEMENTS, AWARDS AND HONORARY MENTIONS

- American Rocketry Challenge 2-time national finalists, 2024 (64th place) and 2025 (50th place).
- National Honors Society (2024, 2025).

RELEVANT SKILLS AND INTERESTS

- Engineering/Technology Skills:** Proficient in Java, C, C Sharp, C++, XML, HTML & CSS, Android Studio, Unity Engine, Python, SolidWorks, Siemens NX, Autodesk Fusion, Ansys, MATLAB, and Microsoft Excel.
- Aerospace Skills:** Rocket Design using OpenRocket, Solid Fuel Propulsion System design using OpenMotor.