Soham Vishwakarma

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EDUCATION

Virginia Polytechnic Institute and State University (Virginia Tech) Expected May 2029
Bachelor of Science in Aerospace Engineering, Minor in Computer Science GPA: 3.78

EXPERIENCE

Boxd LLC - *Developer*; Blacksburg, VA Dec 2025 – Present
- Contributed front-end and back-end development to a React/Next.js platform now used by 4,000+ people nationwide.
- Built Supabase integrations for authentication, session management, and real-time database features with the team.
- Helped build the platform's dynamic pricing algorithm and tiered reputation system.

iCode - *Software Development Intern*; Dallas, TX Jun 2026 – Aug 2026
- Developed and tested C++ and Python code for robotics and script-based game design curricula.
- Developed, tested, and troubleshot a new AI tutoring system to support personalized student learning.
- Developed and tested Python code for machine vision cameras integrated into STEM curriculum modules.

Code Ninjas - *STEM Tutor & Camp Lead*; Frisco, TX Jan 2022 – Mar 2025
- Taught coding (Java, C++, Lua) and robotics to students aged 5-14, fostering early interest in STEM.
- Directed weekly STEM summer camps and adapted curriculum, improving student engagement and retention.

NASA High School Aerospace Scholars (HAS) - *Student Researcher*; Frisco, TX Oct 2023 – Mar 2024
- Completed a 20-week NASA program focused on aircraft design, space systems, and lunar mission planning.
- Utilized CAD software to design lunar base infrastructures, analyzing operational constraints.
- Co-engineered a lunar base schematic within strict power and mass constraints, presenting the final CAD model to NASA engineers for technical review.

EXTRACURRICULARS

AMP Lab Quadcopter Research | *Virginia Tech* Jan 2026 – Present
- Evaluated 3 LiDAR sensors and 2 companion computers, selecting the Benewake TFmini Plus (1000 Hz, 3.6° FoV, UART) and Raspberry Pi 4B for the best latency-weight-power tradeoff.
- Designed a 3-zone distance-threshold avoidance algorithm (5m/2m breakpoints) on a 20 Hz loop, issuing braking and evasion commands to a PX4 flight controller via ROS 2 and uXRCE-DDS.
- Configured a PREEMPT_RT-patched Ubuntu kernel, cutting worst-case latency from ~10 ms to ~80 µs to meet the LiDAR's 1000 Hz polling deadline.

Rocket Engine Nozzle Design Research | *Independent Research* Jul 2024 – May 2025
- Simulated and compared 3 nozzle geometries (conical, bell, aerospike) in HalfCatSim, running repeated trials per design for statistically reliable thrust and efficiency data.
- Determined the conical nozzle to be most efficient at 79% efficiency and 297 lbf of thrust, versus 61%/191 lbf for the bell and 60%/221 lbf for the aerospike design.
- Established an optimal expansion ratio of 8:1–12:1 for small-scale commercial engines through thrust curve and exit velocity analysis across all trials.

Moonshot Project | *Team Lead* Jun 2023 – Jun 2024
- Led a 12-person team within a 200+ member NASA HAS simulation to design a cargo lunar lander for a 2-5 astronaut, 30-45 day surface mission.
- Researched real NASA payload specifications (7-992 lbs across VIPER, MOXIE, and LAFORGE) to size cargo capacity and mass constraints for the lander's Fusion 360 CAD model.
- Applied NASA Terrain Relative Navigation research (0.025-mile landing accuracy from 2.6 miles altitude) to the lander's descent and guidance strategy within the mission's 10-minute powered-descent window.

TECHNICAL SKILLS

Design & Engineering: Fusion 360, SolidWorks, HalfCatSim, Systems Engineering, OpenRocket (Basic), Orbital Mechanics (Basic)
Languages & Tools: C++, Python, Java, MATLAB, Lua, TypeScript, Node.js, React, Next.js, Tailwind CSS, Supabase, Git

AWARDS & DISTINCTIONS

- National Qualifier, Deloitte National Undergraduate Case Competition (top 16 undergraduate teams in the country)