

Caleb G. Strout

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EDUCATION

Vanderbilt University

Nashville, TN

Bachelor of Engineering in Mechanical Engineering, Minor in Data Science

May 2027

- **Relevant Coursework:** Thermodynamics, Mechanical Design, Dynamics, Statics, Instrumentation, Circuit Analysis, System Dynamics, Fluid Mechanics, Machine Analysis and Design, Python and R Programming
- **GPA:** 3.98, Dean's List (all semesters)

EXPERIENCE

Vanderbilt Aerospace Design Laboratory

Nashville, TN

Summer Research Intern

Jun 2025 – Present

- Designed gear system to deploy fins simultaneously with one servo motor, inducing different drag forces, dependent on the fins' angular positions
- Integrated a VN-100 IMU with a Raspberry Pi 4 using Python to collect apogee related data to determine when fins should be deployed, with 95% accuracy
- Introduced an induced drag simulation functionality to an existing rocket simulation software using MATLAB, including an increased drag force when fins are deployed at a specific altitude, velocity, and time based on a predicted apogee, with 95% accuracy
- Launched 4 subscale rockets with target apogees of 750 feet that successfully deployed fins and recorded apogees within 20 feet of the target

NASA Johnson Space Center

Houston, TX

Hardware Simulator and Researcher

Oct 2023 – May 2024

- Developed unique methods to implement radiation detection in a spacesuit and how they could be interfaced with programmable hardware such as Arduino and Raspberry PI
- Prototyped various wearable technology designs to accommodate astronaut simulation testing using SolidWorks
- Communicated with collaborators at a different university on team plans, helping lead operations of a sub team within the hardware team of the project

PROJECTS

Autonomous Lunar Robot | SOLIDWORKS, R&D

Aug 2024 – Present

- Designed and machined u-channel and tension system in SOLIDWORKS to improve the performance of a functional lunar robot designed to dig and transport regolith
- Researched, designed, and programmed encoder models to be able to detect the weight of sand picked up from movement of the wheels within the robot model
- Provisioned an enhanced drivetrain system of the robot in preparation to fully autonomize the robot's operations

Intercollegiate Rocket Competition (IREC) | SOLIDWORKS, Onshape, Arduino, C++

Aug 2023 – Jun 2024

- Designed components of a 3-D printed rocket to ensure design was modular and effective using SolidWorks
- Spearhead hardware implementation and the modular security of a camera payload system for the rocket once it reached its altitude of 7000 feet using Onshape and C++

ACTIVITIES AND LEADERSHIP

American Society of Mechanical Engineers at Baylor University

Waco, TX

Freshman Ambassador

Aug 2023 – May 2024

- Communicated with university alumni about possibilities to present companies to the chapter or sponsor events and challenges the chapter aspired to be involved in
- Assisted in social media engagement and advertising within the primary residential college for engineering students to encourage freshman to attend club events and become a member of the chapter

CERTIFICATIONS

SOLIDWORKS CAD Design Associate, Dassault Systèmes – November 2024

SKILLS

Programming Languages: Python, MATLAB, LabVIEW, R, C++

Tools: SOLIDWORKS CAD/CAM, Onshape, AutoCAD, Ansys, Arduino, 3-D Printing, Raspberry PI, Windows OS, CNC, Milling