SIDDHARTH GOEL

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EDUCATION

Purdue University, West Lafayette, IN

Bachelors of Science in Aeronautical and Astronautical Engineering — August 2021 - December 2025
Masters of Science in Aeronautical and Astronautical Engineering — January 2025 - December 2025
Minor: Computer Science
GPA: 3.83/4.00
Technical Skills**:** MATLAB, Simulink, Java, C, C++, Python, NX, Ansys, XFLR5, Jira, Confluence
Relevant Coursework**:**
AAE 567 - Intro to Kalman Filtering and state estimation ; AAE 568 - Applied optimal control and estimation

DESIGN EXPERIENCE

Engineering Intern, Reworld Waste, Morristown, New Jersey — June 2024 - August 2024
- Initialized scope, requirements, and concept of operations of drone based inspections of Reworld's energy generation facilities.
- Developed a phased roll out plan to accommodate operational infrastructure.
- Organized drone demonstrations with vendors and manufacturers to provide proof of concept.
- Conducted an internal analysis to validate economic feasibility, technical capability, and operational requirements.

AAE 568 Project - Optimal Control of a Quadcopter with a slung load, Purdue University — January 2024 - May 2024
- Worked in a team of 3 to design a control law for a nonlinear Quadcopter with a slung payload system.
- Utilized optimal control theory to maximize payload capacity for a given trajectory, while satisfying oscillation constraints.
- Used MATLAB's optimal control toolset along with the bvp4c solver to numerically generate a control history.
- Explored and implemented Model Predictive Control, Gauss Newton LQR, and other optimal control solutions.

Purdue Space Program (PSP), Purdue University

Active Controls – Avionics Software Lead — August 2023 - January 2024
- Wrote testing and control scripts for various components and actuators in C++ for conducting system identification.
- Encoded state estimation algorithms using Encoders, IMU, GPS, and force transducers.
- Modelled Vehicle dynamics into Simulink to simulate various control architectures.
- Implemented and tuned PID control for flutter removal of gimbal actuation via servos.

Active Controls- Structures Lead — August 2022 - August 2023
- Developed the structural architecture of an electric powered lander vehicle.
- Designed and manufactured a 3-D printed gimbal with 2 degrees of freedom for thrust vectoring.
- Optimized air intake design for the vehicle to improve thrust output via surrogate modelling.

Drone Design Intern at Redon Systems, Hyderabad, India — May 2023 - August 2023
- Wrote iterative sizing code for electric UAV's using MATLAB.
- Worked on the preliminary design of a barrel launched electrically powered UAV using NX and XFLR-5.
- Conducted design optimizations using CFD and MATLAB.
- Modelled dynamics of a UAV with roll and pitch control surfaces only using Simulink and MATLAB.

RESEARCH EXPERIENCE

Research Assistant, VRSS labs, Purdue University — August 2023 - Present
- Developed an accident analysis framework for establishing safety standards in construction in space.
- Analyzed disasters using FLAPP framework to capture inter-player interactions, pathogen propagation, and system failure.
- Designed an app to autonomously create the analysis graphics using analysis tables and user provided data.
- Set up file input output to communicate between different tools used by different parties and automate data transfer between them.

LEADERSHIP EXPERIENCE

Purdue Space Program, Active Controls – Avionics Lead/ Structures Lead/Systems Lead — August 2022 –Jan 2024, April 2024 - Present
- Directed teams of 10 members spread across 2 projects building autonomous lander vehicles.
- Coordinated with leadership and technical teams to set project requirements, goals, and team culture.
- Worked with project management tools such as git hub, JIRA, and confluence to handle task allocation and documentation.
- Utilized guided analysis formats such as Root Cause and Correction analysis to troubleshoot problems and inspect accidents.

AWARDS AND HONORS
- Honors: Dean's List and Semester Honors- All semesters (Fall 2021 – Spring 2024)
- AAE Undergraduate General Scholarship Recipient (Fall 2024)
- Pillars of Excellence 2024 Nominee

AFFILIATIONS - Honors Society for Aeronautical and Astronautical Engineers – Sigma Gamma Tau (SGT) — August 2022 - Present