SALONI MALVIYA

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EDUCATION

University of Michigan - Ann Arbor, MI   Aug 2024 - May 2026
Master of Science in Aerospace Engineering   *GPA: 3.92/4.0*
Coursework: Spacecraft Technology, Linear Systems Theory, Navigation and Guidance of Aerospace Vehicle

Vellore Institute of Technology - Bhopal, India   Sep 2020 - Aug 2024
B. Tech Aerospace Engineering

SKILLS

Coding and Simulation: C++, Java, MySQL, MATLAB, Simulink, Simscape
CAD and Analysis: Ansys Fluent, CREO, AutoCAD, SolidWorks, Catia, Inventor, MSC Adams, XFoil, QBlade

WORK EXPERIENCE

Indian Space Research Organisation (ISRO) - Ahmedabad, India   Jul 2023 - May 2024
Intern at Space Applications Centre
- Engineered a **compliant monolithic gripper** for space applications to reduce manufacturing cost and overall weight while withstanding launch loads.
- Employed topology optimization and compliant mechanism design; established kinematic feasibility with **MSC ADAMS** and conducted static and modal (achieving a natural frequency of **174 Hz**) analysis using **Ansys** and **CREO**.
- Achieved **20% reduction** in **weight** and manufacturing **cost** and validated its feasibility through **2D drawings** and a **3D-printed physical prototype**.

Defence Research and Development Organisation (DRDO) - Jodhpur, India   Jun 2023 - Jul 2023
Intern at Defence Laboratory Jodhpur
- Inspected a high-voltage module for internal defects using non-destructive technique.
- Conducted **CT scans** and analyzed images using **VGStudio MAX** and **GE Phoenix CT** software
- Provided comprehensive internal visualization that enabled precise defect identification and identified critical defects that led to a **25% enhancement** in **module reliability**.

Space Technology and Aeronautical Rocketry (STAR) Lab - Surat, India   Jan 2023 - Feb 2023
System Engineering Intern
- Designed and modeled a triangular **Static Test Pad** in **Fusion 360** to securely mount solid rocket motors.
- Validated **structural integrity** through static simulations, achieving **safety factors >3.3**, and optimized the design for manufacturability and sensor integration.
- Built a custom **Data Acquisition System**, integrating load cells, amplifiers, and A/D converters using **Arduino**, **Proteus**, and **Eagle**, enabling real-time thrust measurement and sensor data analysis via a custom PCB.

PROJECT EXPERIENCE

Identification & Characterization Expedition for Debris Tracking - Ann Arbor, MI   Sep 2024 - Apr 2025
- Developed a **space-based SAR system** capable of detecting and characterizing over 200 unique RSOs per day.
- Led communication trade studies and prepared the mission's communication architecture using STK analysis and detailed link budget calculations. Achieved a **50% reduction** in downlink access times and a **30% improvement** in link budget margin.

Model Reference Adaptive Control for Spacecraft Attitude Tracking – Ann Arbor, MI   Jan 2025 - Apr 2025
- Designed and simulated an MRAC system in **MATLAB** for spacecraft attitude control, outperforming PID and LQR under inertia uncertainties.
- Improved performance with **60% faster settling time** and **>95% reduction** in steady-state error, demonstrating robustness and stability.

RESEARCH EXPERIENCE

- *Malviya, S., Sharma, A., Arora, H. and Gk, P., 2024, July. Design and Development of Underactuated Soft Robotic Gripper for Space Applications. In 2024 IEEE Space, Aerospace and Defence Conference (SPACE) (pp. 700-704). IEEE.*
- *MALVIYA, S. and SAH, S.K., A refined shear deformation theory for natural frequency analysis of power law based functionally graded sandwich plate. Materials Research Proceedings, 49.*