MARK PARAL

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PERSONAL STATEMENT:
Aeronautical and Astronautical Engineer always seeking exciting opportunities in the aerospace sector!

EDUCATION:

Stanford University – Stanford, CA   Graduated: April 2025
Master of Science in Aeronautics and Astronautics   GPA: 3.94/4.00

Purdue University – West Lafayette, IN   Graduated with Distinction: May 2023
Bachelor of Science in Aeronautical and Astronautical Engineering   GPA: 3.90/4.00
Certificate in Entrepreneurship and Innovation

Relevant Coursework:
  - Learning Based and Optimal Control – Convex Optimization – Decision Making Under Uncertainty – Spacecraft Attitude Dynamics – Trajectory Optimization – Robot Autonomy – Kalman Filtering

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EXPERIENCE:

Space Systems Engineer – Lynk Global – Falls Church, VA   July 2025 – Present
  - More details to come

Course Assistant – Stanford University – Stanford, CA   Jan 2025 – Mar 2025
  - Course Assistant (CA) for AA240: Analysis of Aerospace Structures, a graduate level structures course
  - Developed and administered assignments and examinations to promote and assess understanding of solid mechanics, energy methods, and failure analysis concepts amongst students
  - Held weekly office hours and problem sessions to support student learning

Graduate Researcher – Stanford Intelligent Systems Laboratory – Stanford, CA   Sept 2024 – Mar 2025
  - Developed a custom 3D quadrotor simulation environment in python to experimentally evaluate a variety of control frameworks
  - Created a Signed Distance Function (SDF) algorithm to characterize operating environments
  - Implemented Augmented Lagrangian Iterative Linear Quadratic Regulator (AL-iLQR) and Sequential Convex Programming (SCP) trajectory generation and tracking frameworks

Flight Dynamics Intern – Lynk Global – Falls Church, VA   June 2024 – Sept 2024
  - Led development of a new state estimation architecture, applicable to both on-ground and in-orbit operations
  - Implemented a high-fidelity propagator to improve state estimation accuracy and prediction of future trajectories
  - Engineered post processing algorithms for precise state estimation and orbit determination

Engineering Intern – Lynk Global – Falls Church, VA   May 2023 – Aug 2023
  - Assembled hardware-in-the-loop (HWIL) setup for novel direct-to-phone satellites
  - Developed software for handling CAN network interfaces between sensors, actuators, and dynamics simulator in C
  - Built sensor simulators using microcontrollers
  - Automated reaction wheel qualification testing

Undergraduate Research Assistant – Dr. Steven Son's Group – Zucrow Laboratories, IN   Aug 2022 – May 2023
  - Operated test setups experimentally measuring the flexoelectric coefficient of a variety of materials
  - Fabricated 3D-printed energetic test samples
  - Reviewed published literature on flexoelectricity and its applications to energetic materials
  - Performed t-test analytics on resulting data to determine the significance of results

Avionics Hardware Intern – <u>Blue Origin</u> – Seattle, WA   May 2022 – Aug 2022
  - Developed novel solution to enhance and expand sensor infrastructure on the New Shepard Propulsion Module
  - Designed custom PCBs for signal conditioning and power distribution on the New Shepard launch vehicle
  - Performed audit of New Shepard crew capsule sensors
  - Wrote engineering work orders to resolve non-conformance reports

Avionics Intern – <u>Firefly Aerospace</u> – Austin, TX   Jan 2022 – May 2022
  - Developed custom hardware and software solution to automate qualification process for harnessing on all vehicles
  - Constructed payload wiring diagrams for the Alpha launch vehicle in Siemens Capital software
  - Created and led a test campaign to qualify securing devices used on multiple spacecraft
  - Built custom Python executables to allow for quick updates to components in Siemens Capital software

Undergraduate Research Assistant – <u>Dr. Steven Son's Group</u> – Zucrow Laboratories, IN   May 2021 – Dec 2021
  - Participant in Advancing Army Modernization Priorities Undergraduate Program May 2021 – Aug 2021
  - Fabricated test setups to examine the properties and limitations of piezoelectric energetic gauges
  - Designed and performed tests to determine the potential applications of shape memory alloys in the energetics field
  - Reviewed published literature on topics such as the impact sensitivity of piezoelectric energetic materials

Avionics Lead – <u>Purdue Space Program</u> – West Lafayette, IN   Dec 2020 – Oct 2021
  - Team member since August 2019, Avionics Lead for Solids team December 2020 – August 2021, Avionics Lead for High Altitude team May 2021 – October 2021
  - Investigated avionics solutions for a two-stage separation and ignition system to fly within a rocket designed to reach the Kármán line
  - Designed, routed, and manufactured custom flight computers to control staging, ignition, and recovery operations
  - Developed data acquisition and storage software for a custom flight computer
  - Mixed propellant grains with the propulsion team for a custom class O rocket motor

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TECHNICAL SKILLS:
  - MATLAB – Python – C/C++ – CATIA – EAGLE – SolidWorks – PCB Design – Altium – Simulink – Capital – NX – OrCAD – Level 2 High Powered Rocketry – Linux – Amateur Radio Technician – Soldering – ROS2 – Julia

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ACTIVITIES AND ACHIEVEMENTS:
  - 2023 Matthew Isakowitz Fellow
  - Recipient of the Joe Melroy Umbreit Scholarship 2020 – 2021
  - Recipient of a Purdue AAE Undergraduate General Scholarship 2022 – 2023
  - Winner of the 2021 Purdue AAE 251 Northrop Grumman Rocket Design Contest