Maxwell Heil

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Education

The Ohio State University Master of Science, Aerospace Engineering	May 2026 GPA: 4.0/4.0
The Ohio State University Bachelor of Science, Aerospace Engineering with Honors Research Distinction	May 2025 GPA: 3.6/4.0
• Relevant Coursework: Statics, Circuits, Thermodynamics, Controls, Aerodynamics, Numerical Methods, Sta Dynamics, Heat Transfer, Mechanical Design, Guidance Navigation & Controls, Experimental Fluid Mechanic	ructures, Gas cs
Skills & Certifications	
Technologies: MATLAB, Python, LaTeX, Simulink, Ansys Fluid/STK, SolidWorks, LabVIEW, XFLR5, Altium, RC	S, MS Office
Certifications & Awards: Ansys STK Level 1 Certified (Oct 2024, Ansys), Undergraduate Teaching Assistant A (Aug 2024, Ohio State), Private Pilot Certificate (Jan 2024, FAA), Microsoft Office Specialist (Jan 2018, Micro	ward Finalist soft)
Experience	
 Project Leader, NASA Human Lander Challenge (HuLC) - OSU, Marshall Space Flight Center January 2025 – Present Lead R&D of an autonomous cryogenic propellant transfer system to support on-orbit servicing for long-duration missions Design and implement AI-driven alignment algorithms for autonomous docking in microgravity, enhancing service reliability Conduct fluid testing for cryogenic transfer optimization, creating low-pressure drop systems to minimize boil-off and leakage Perform launch survivability analysis and ensure propellant scalability (LH₂, LOX, CH₄) for future orbital refueling depots Engineer quick-release emergency disconnect mechanism to improve safety and system adaptability in space environments 	
Space Systems Graduate Researcher, LADDCS Laboratory – Columbus, OH Ju	ne 2024 – Present
 Explore intent estimation theory in the Hill frame by analyzing and categorizing unknown spacecraft maneuvers to determine best-fit intent models, leveraging probabilistic methods and game-theory approaches Expand on current work by developing a larger set of basis maneuvers to more accurately predict intents Incorporate Adaptive Monte Carlo (AMC) methods for Bayesian inference to reduce uncertainties in maneuver detection Determine kill chain methods for acquiring, tracking, and asset protection for more robust space domain awareness 	
Automated Manufacturing Engineering Intern, Collins Aerospace – Cedar Rapids, IAMay• Built robust simulations in Visual Components to evaluate bottlenecks in automated manufacturing modules• Presented renderings and results to leadership resulting in \$3M in funding for the automation project• Utilized Markforged Metal X 3D-printers to optimize strength-to-weight ratios and reducing production cost• Oversaw end-to-end validation of RFID system performance to streamline WIP tracking and enhance traceal• Operated Boeing 737 MAX simulators to develop expertise in test bed setup and troubleshooting methodoloAerospace Controls Undergraduate Researcher, SOAR Laboratory – Columbus, OH• Develop data-driven control algorithms for UAVs using dynamic mode decomposition and model predictive of• Investigate the impact of dither quantization on UAV control performance in resource-limited environments• Perform SITL and HITL testing using a PX4-Starling Autonomy drone to analyze real-world UAV dynamics• Design robust methods for experimental testing, including scheme implementation, simulation with ROS, and	2024 – Jan 2025 s by over \$24,000 bility gies pt 2023 – Present control techniques
Projects	
Terrain Electromagnetic Reconnaissance and Regional Analysis Satellite (TERRASat) Analysis Satellite (TERRASat) • Design, build, and launch 12U CubeSat with electric propulsion to measure Mars' magnetic field for signs of	ıg 2024 – Present İlfe
Avionics & Propulsion Engineer, Buckeye Space Launch Initive (BSLI) Dec	2021 – Aug 2022
• Worked with a team of engineers to create and test rocket avionics and solid rocket motors for the Spacepor	t America Cup
Integrated Modeling and Prediction of Atmospheric Reentry Trajectory (Project IMPART)	ıg 2024 – Present

• Develop a physics-based framework to predict reentry and impact footprint using atmospheric and orbital decay models