Will Covington

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Education

University of Maryland | College Park, Maryland   September 2025 - May 2027
Bachelor of Science, Aerospace Engineering   GPA: 3.99/4.00
Summa Cum Laude, Aerospace Engineering Honors
8 Time Dean's List
Dinah Berman Memorial Award Recipient, Aerospace Engineering Junior Merit Award Recipient

Stanford University | Palo Alto, California   September 2025 - (Expected) May 2027
Masters of Science, Aeronautics and Astronautics

Work Experience

Johns Hopkins University Applied Physics Lab | Laurel, Maryland   May 2024 - Current
Mechanical/Electrical Engineering Intern (Research and Exploratory Development)
- Analyzed models of cantilevered rails within pressure chamber for lithium-ion batteries onboard NASA's Dragonfly octocopter mission, and recommended/implemented changes to design to accommodate the required 240 kg loading
- Designed, prototyped, and installed testing equipment for RF hardware and hardware packaging for military sponsors
- Designed a measuring devices for astronaut use during ISS EVA's with a focus on spacesuit ergonomics, mass minimization, and space-environment survivability

NASA Jet Propulsion Laboratory | Pasadena, California   May 2023 - May 2024
Operations Engineering Intern (Psyche Spacecraft Mission)
- Developed activity editing software in Python for Psyche spacecraft sequence generation to improve user clarity, reduce conflicts with automatically generated activity sequences, and ensure the precision of time-relative events
- Defined constraints in Java for automatically generated activity plans in JPL's Blackbird adaptation to help reduce the likelihood of unwanted activity overlap during operations
- Assisted full-time engineers with reviewing code for both Psyche's Plan Editor tool and JPL's Blackbird adaptation to improve pre-existing architecture, add functionality for both tools, and improve mission-planner and scientist experience

NASA Goddard Space Flight Center | Greenbelt, Maryland   January 2023 - May 2023
NASA Pathways Thermal Engineering Intern (Mars Sample Return Mission)
- Modeled mechanical components in Thermal Desktop for the upcoming Mars Sample Return (MSR) Capture, Containment, and Return System (CCRS) to better understand heat transfer during hot and cold cases of various Martian orbits, as well as operations to during the capture of Martian soil samples in low Martian orbit
- Analyzed simulations for extreme hot and cold expected conditions for the CCRS platform during launch, transfer to Martian orbit, Martian orbit, and return to Earth to identify problem points during each flight scenario
- Conducted thermal analyses on individual avionics boards for onboard flight hardware in ANSYS Workbench, identifying problematic board regions during Hot-Ops and Cold Non-Ops thermal cases

NSROC | NASA Wallops Flight Facility, Virginia   August 2022 - December 2022
Mechanical Engineering Intern (Sounding Rocket Program)
- Designed testing apparatus for IMU slip rings necessary for powering flight hardware with the goal of reducing I&T issues. Engineered with a focus on rotational stability of apparatus, in order to attain minimum 10 Hz rotational speed
- Modeled, designed, and drafted dozens of components for both flight hardware and structural members of various sounding rocket payloads, with an emphasis on designing for manufacturing and assembly
- Conducted FEA on mechanical mounting harnesses to verify adherence to vibrational mode requirements during launch

UMD Aerospace/Keystone Program(s) | College Park, Maryland   August 2021 - May 2025
Introduction to Engineering Design, Aerospace Controls Teaching Fellow
- Helped to introduce hundreds of students to the engineering-design process, from early ideation to final system performance
- Guided first-year students through the troubleshooting process for mechanical, electrical, software, and system integration issues
- Met regularly with Aerospace Controls students to reinforce control theory concepts such as system frequency analysis, controller design, transient performance analysis, and requirements verification

Research and Projects

UMD Space Systems Lab | College Park, Maryland   February 2021 - December 2024
Mechanical Design, Software Engineer
- Developed, assembled and operated a custom linear wheel testing apparatus and soil characterization tool (i.e. bevameter) to analyze rover wheel-lunar regolith interactions, studying sinkage, excavation, drawbar pull, and delivered torque
- Conducted research into the ability to extract "Bekker values" from lunar regolith using cost-and-time effective methods rather than the standard method of developing a lab-specific Bevameter

NASA RASC-AL Challenge | Small Lunar-Servicing Robot (SCORPION)   January 2025 - June 2025
Drive Motor/Locomotion Engineer, Thermal Engineer
- Set thermal requirements for SCORPION's critical subsystems based on mechanical properties of chosen materials, hardware specifications, and an understanding of the lunar environment
- Used first-principles approach to conduct preliminary radiator sizing in South Pole Lunar environment, and verified radiator efficacy using steady state and transient thermal FEA
- Incorporated novel thermal control systems into SCORPION through the use of variable emissivity coatings on SCORPION's fenders, promoting heat dissipation during Hot-Ops conditions (dissipating 100 W per fender) and retaining energy during Cold Non-Ops (i.e. lunar night with a loss of rover power)
- Designed custom drive-motors for a 500 kg lunar rover to be capable of travelling at 1 m/s while carrying 600 kg of additional payload over lunar regolith (also, printed motor model to get a spatial/geometric understanding for how the motor would be assembled)
- Mitigated regolith build-up on SCORPION's undercarriage by analyzing ballistic trajectories of reglith kick-up during travel and incorporating segmented dissipative capacitor blankets on the chassis' underside, reducing effective system mass by 4% and promoting nominal thermal and mechanical performance

Skills

Programming: Python, C++, Java, MATLAB (Simulink)

Software: Solidworks, ANSYS Workbench, Siemens NX, Fusion, Thermal Desktop, AutoCAD, Creo Parametric

Manufacturing: 3D printing, Laser Cutting, CNC Routing, CNC Milling, Water Jetting