Luke W. Pritchard

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EDUCATION

University of Virginia Dec. 2025 (Expected)
Bachelor of Science, Aerospace Engineering GPA: 3.63

- **Relevant Coursework:** Propulsion, Flight Vehicle Dynamics, Computational Methods, Astronautics

EXPERIENCE

NASA Pathways Internship Aug. 2024 – Dec. 2024
Propulsion & Power Branch Houston, TX

- Developed and tested Johnson Space Center's first hybrid rocket engine using nitrous oxide (N_2O) and 3D-printed ABS fuel, achieving 330 lbf of thrust and 150 seconds of specific impulse.
- Designed and built a test stand from 80/20 extrusion to measure and withstand 1000 lbf of thrust with a 3.0 factor of safety (FOS); performed in-place calibration of the load cell while pressurized.
- Integrated an upper fluid system with nitrogen pressurization of the N_2O run tank, a dedicated purge line, and relief valves to prevent liquid lock; enabled successful pressure system checkout.
- Collected and analyzed hot fire data during on-site testing at Intuitive Machines to validate modal propellant gauging under extreme acoustic noise; achieved 2–3% error from true fuel levels.

NASA Internship *June 2023 – Aug. 2023*
Configuration Aerodynamics Branch *Hampton, VA*

- Achieved $50,000 in annual cost savings for NASA by building an in-house calibration setup with precision Stratford Nozzles under known sonic flow conditions.
- Compared nozzle-based mass flow data against multiple critical venturi (MCV) readings to eliminate external calibration services.

RESEARCH

UVA Bio-Inspired Engineering Research (BIER) Group *Jan. 2025 – Present*
Undergraduate Researcher *Charlottesville, VA*

- Conducted computational fluid dynamics (CFD) studies on schooling tuna with varied spacing/phasing; found 10% higher efficiency in loose groups and 10% more power in tight ones.
- Designed and built the first tendon-driven soft robotic leech using Bowden cables and 4 servo actuators; tuned to 2 Hz to match physical/simulated undulation frequencies for model validation.
- Produced a detailed 1/25 scale model of UVA's upcoming water channel for institutional display.

UVA Rocket Engine Development *Aug. 2023 – Present*
Capstone Design and Rocketry Club *Charlottesville, VA*

- Led propulsion integration for UVA's first successful sounding rocket launch, reaching 4,000 ft.
- Conducted structural analysis on engine mounting; ensured FOS > 3.0 under dynamic launch loads.

SKILLS

CAD & Analysis	SolidWorks, Creo, Inventor, ANSYS, MATLAB, Tecplot360, Python, LabVIEW
Manufacturing	3D Printing, CNC Machining, Laser Cutting, Lathe, GD&T (ASME Y14.5)