Luke J. Waszyn II

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EDUCATION

The Pennsylvania State University — University Park, PA
Bachelor of Science, Engineering Science — May 2027
Minor in Engineering Mechanics — GPA: 3.74/4.00
Certificate in Space Systems Engineering — Dean's List (5/5) Semesters

SKILLS

Systems Engineering: Architecture, requirements, trade-studies, ConOps, integration, debugging, V&V
Software: Python, C++, MATLAB, JavaScript, Linux/Unix, Simulink, LabVIEW, SolidWorks, LTspice
Hardware: SDR systems, RF integration, 3D-printing, circuit design, antenna design, soldering
Data/ML: scikit-learn., pandas, NumPy, SciPy, feature engineering, model training pipelines

EXPERIENCE

Millenium Space Systems, A Boeing Company — Chantilly, VA
Incoming Spacecraft Systems Engineering Intern — Summer 2026

- Supporting systems testing and integration for national security spacecraft payloads

ATI Specialty Rolled Products — Monaca, PA
Mechanical Engineering Intern — Summer 2025

- Project managed the full system overhaul of a planar mill belt grinder under a 3.5-week timeline
- Oversaw installation of new Siemens drives and PLC/HMI controls, ensuring proper system integration
- Directed contractors for mechanical restoration while running plate trials and final system validation
- Coordinated oil level sensor installation including wiring, mounting, and commissioning
- Diagnosed and resolved air compressor faults, performing troubleshooting, setup, and return-to-service
- Built and maintained schedule spreadsheets to track maintenance, contractor timelines, and equipment status
- Performed trade-studies and analysis on competing industrial ultrasonic defect testing systems

PROJECTS

Autonomous Satellite Ground Station — December 2025—Present

- Built 8,500+ line ground station (Python, C++, JS, MATLAB) with L0–L2 architecture and staged V&V
- Wrote NOAA APT decoder: FM demod → AM envelope → sync correlation → image extraction
- Implemented LRPT decoder: OQPSK → Viterbi (rate 1/2, k=7) → CCSDS → Reed-Solomon
- Developed real-time C++ I/Q capture with async ring buffer and configurable Doppler tracking
- Built 3D mission ops HMI (Three.js, WebGL) tracking 11 satellites with prediction and pass control
- Integrated RF chain: antenna → SAWbird LNA (20 dB) → RTL-SDR v4 → decoded imagery
- Built and integrating ML pipeline (scikit-learn) for pass success prediction and schedule optimization
- Building QFH antenna for RHCP hemispherical coverage targeted for 137MHz frequency band

NASA LunaRecycle Challenge—Student Space Programs Lab — January 2026—Present

- Leading systems engineering for challenge final phase, designing a lunar microwave-based recycling system
- Defined 6 subsystem architecture (L0-L1) with traced functional, performance, and interface requirements
- Developed full Concept of Operations including 7 operational modes with transport and life-cycle phases
- Authored and presented SCR covering stakeholder analysis, architecture, requirements, and schedule
- Awarded $50k as a winner of challenge's Phase II for initial prototype proposal and demonstration
- Coordinating cross-subsystem interface definitions and requirements flowdown to PDR (April 2026)

RESEARCH

Systems Design Lab — University Park, PA
Undergraduate Research Assistant — March 2026—Present

- Planning undergraduate thesis research in space communication systems, software-defined radio systems

Heat Exchange and Thermal Energy Research (HEATER) Lab — University Park, PA
Undergraduate Research Assistant — August 2025—Present

- Designed and procured experimental setup for non-invasive frost imaging using thermal and optical sensing
- Developed LabVIEW data acquisition systems for supercritical CO_2 loop instrumentation and analysis
- Staged integration of new accumulators, thermocouples, and sensors into two-phase heat transfer loop
- Performed system-level modeling of Navy chiller systems, collaborating across cross-domain subsystems

INVOLVEMENT

Radio Club of America—Member — March 2026—Present
Society of Engineering Science—Student Relations — August 2025—Present
Alpha Phi Delta Fraternity—Risk Manager — February 2024—Present