Kelsey Horace-Herron

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Citizenship: U.S. | Security Clearance: Secret

Professional Summary

Computer Engineer specializing in IoT, signal processing, and secure aerospace systems. Experience planning, testing, and evaluating complex systems; coordinating hardware/software upgrades; and preparing technical reports and briefings. Proven impact across AFRL, NRL, and NSF-funded work. Secret clearance; NSF SBIR Phase I awardee.

Core Competencies

Computer System Management • Hardware/Software Upgrades • Signal Processing (NQR/NMR) • IoT Hardware Integration • Machine Learning • FPGA Development • Test & Evaluation • Technical Reports & Briefings • Cybersecurity for Space Systems

Experience

AFRL Scholar – Assured Spacecraft Autonomy Project

Air Force Research Laboratory, Albuquerque, NM
May 2025 – Aug 2025 | 40 hrs/week

- Developed a cybersecurity simulation app in NASA's NOS3/cFS for spacecraft thermal monitoring, modeling spoofing and DoS scenarios.
- Engineered telemetry/command extensions enabling real-time spoof detection, quarantine response, and safe-mode escalation with auto-recovery.
- Integrated ground system workflows (OpenC3 COSMOS) to visualize anomalies and support operator decision-making.
- Prepared technical documentation and formal briefings informing cyber-resilience strategies.
- Coordinated a cross-disciplinary intern team across autonomy, cybersecurity, and UI.

Graduate Research Assistant

University of Florida – Rising Lab, Gainesville, FL
Aug 2020 – Present | 40 hrs/week

- Designed signal processing algorithms for NQR/NMR to improve detection clarity in low-concentration samples.
- Built portable spectrometers with IoT integration for real-time data acquisition and remote analysis.
- Developed EM field models and PCB designs, validated with network analyzers and FPGA-based processing.
- Pioneered low-power, compact detection platforms for authentication in pharma and food safety.

- Authored peer-reviewed work including IEEE Access (2024) and Scientific Reports (2023); contributed to lab reports and research briefings.

AFRL Scholar – Space Domain Awareness Research

Air Force Research Laboratory, Albuquerque, NM
May 2022 – Aug 2022 | 40 hrs/week

- Planned, tested, and evaluated ML algorithms for deep-space observation (beyond GEO).
- Built and optimized data pipelines to reduce noise and improve real-time tracking reliability.
- Integrated prototype solutions into a ground-based telescope system and documented performance.
- Conducted live trials at Starfire Optical Range; prepared written technical reports and briefings with engineering recommendations.

Graduate Research Intern – Telemetry Systems

Naval Research Laboratory (Virtual)
May 2020 – Nov 2020 | 40 hrs/week

- Authored a telemetry analysis handbook for the PRAM FX mission (data acquisition, processing, evaluation workflows).
- Applied MATLAB/ML to automate trend detection across large telemetry sets.
- Developed protocols for solar array metrics, RF power, sun angle, and thermal readings; streamlined data handling for mission analytics.

Research Intern – Spectroscopy & Safety

University of Florida (SURF), Gainesville, FL
May 2019 – Aug 2019 | 40 hrs/week

- Operated TI NIR Nano to detect harmful compounds; applied preprocessing to isolate target signatures.
- Optimized non-destructive detection protocols for rapid product safety assessment.

Education

- Ph.D. Computer & Electrical Engineering, University of Florida (in progress, GPA 3.5)
- M.S. Computer & Electrical Engineering, University of Florida (2021, GPA 3.6)
- B.S. Computer Engineering, Jackson State University (2020, GPA 3.5)

Achievements & Clearances

- NSF SBIR Phase I Awardee (2024) — Resonance Signatures LLC
- Engineering Graduate Certificate – Engineering Leadership
- Security Clearance: Secret

Selected Publications

- Horace-Herron, K. et al., Nuclear Quadrupole Resonance for Substance Detection, IEEE Access, 2024.
- Horace-Herron, K. et al., Non-invasive Authentication of Mail Packages Using NQR, Scientific Reports, 2023.