

Brendan Rodriguez

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EDUC

University of Central Florida | May 2026

B.S. Computer Engineering - | **Hispanic Heritage Foundation Scholar**

Coursework: IoT Systems Design (RTOS-based firmware, BLE, Wi-Fi, cloud storage)

TECHNICAL SKILLS

Embedded Systems: FreeRTOS, BLE (GATT, pairing, bonding), Wi-Fi (HTTP, MQTT), MCU interfaces (SPI, I2C, UART), Silicon Labs EFR32xG

Languages: C, C++, Python, Java, JavaScript, Assembler concepts

Protocols/Networking: TCP/IP, UDP, MQTT, HTTP/HTTPS, MAVLink, BLE, Wi-Fi, NFC concepts

Tools/Platforms: Simplicity Studio IDE, Git, GitLab, Jira, Linux (Ubuntu), Docker, GCC, oscilloscope/logic analyzer debugging

Cloud/Data: AWS (Lambda, S3), Terraform, SQL, NumPy, Pandas

OT/Industrial: Building Management Systems (BMS), INNCOM sensors, HVAC controls, physical network integration

PROJECTS

IoT Systems Design – Bluetooth Mesh-to-Cloud IoT Pipeline

Spring 2026

- Architected an end-to-end IoT pipeline: BT Mesh sensors, BLE bridge, Wi-Fi gateway, cloud, web app.
- Created React Native (Expo) app with real-time Firebase telemetry dashboards and LED controls.
- Programmed FreeRTOS BLE mesh node firmware in C for the Silicon Labs EFR32xG24.
- Implemented SiW917 Wi-Fi/BLE gateway with TLS 1.2 Firebase uploads and mirrored MQTT publishing.

ChipWhisperer Nano – AES-128 Side-Channel Security Assessment

Summer 2026

- Performed hands-on hardware exploitation using ChipWhisperer to extract cryptographic keys from embedded targets.
- Captured power traces from a hardware AES-128 target via the ChipWhisperer Python API and SimpleSerial.
- Built Jupyter notebooks for trace capture, preprocessing, and NumPy/Matplotlib waveform analysis.
- Applied Sum of Absolute Differences and Dynamic Time Warping methods to resynchronize traces under timing jitter.
- Performed correlation power analysis (CPA) attacks, ranking key-byte hypotheses from measured leakage.

EXPERIENCE

Senior Design SAR Project Team Lead – Lockheed Martin, Orlando, FL

Aug 2025 – May 2026

- Integrated telemetry-radio hardware and firmware with flight controllers for a multi-drone Search and Rescue (SAR) system.
- Resolved RFD900+ and RFD900x interoperability issues by standardizing telemetry firmware and cabling for Pixhawk 2.4.8 controllers.
- Built Python MAVLink UDP/TCP tooling linking Unmanned Ariel Vehicles, VITALS Ground Control Software, and an NVIDIA Jetson Nano.
- Performed hardware-in-the-loop drone testing with Jetson Nano to validate end-to-end telemetry and command-and-control behavior.
- Coordinated a six-person engineering team using Jira sprint planning and backlog management.

Systems Engineering Administrator – PGA National Resort & Spa, Palm Beach Gardens, FL

Jan 2017 – Dec 2021

- Monitored Windows servers, Active Directory, VOIP, and endpoint log, resolving hardware, software, and network incidents.
- Managed user accounts, security groups, and permission, enforcing role-based access control across critical resort systems.
- Troubleshoot and reintegrated field sensors, controllers, and physical network-connected devices.
- Diagnosed HVAC controls, electrical systems, guest-room devices resolve field failures.

Undergraduate Research – Optics/Photonics & DRACO Lab – UCF, Orlando, FL

Jan 2023 – May 2026

- Detected workload anomalies across compute architectures using power and timing signals.
- Utilized automated pipelines (perf, NumPy, Pandas) for feature extraction, anomaly detection, and integrating benchmark results.
- Applied ML/AI techniques (HuggingFace models) to classify security-relevant behavioral signals from hardware performance counters.

Software Engineer Intern – Duke Energy, Charlotte, NC

May 2023 – Aug 2023

- Developed internal-facing web application using Infrastructure-as-Code (IaC) to manage AWS resources that support production.
- Supported RESTful API integrations for internal application, improving data flow reliability and reducing manual process friction.
- Performed CI/CD workflows using Git-based tooling, enforcing coding standards, automated testing, and repeatable deployments.
- Upheld the Agile delivery processes to implement, test, and maintain application changes in collaboration with cross-functional team.

Cybersecurity Architect Intern – Duke Energy, Charlotte, NC

May 2024 – Aug 2024

- Evaluated on-prem, AWS and Azure environments to map data flows and security controls across a hybrid cloud landscape.
- Analyzed cross-business-unit workflows and identified a 32.6% process bottleneck to reduce backlog review pipelines.
- Demonstrated forward-thinking PQC initiative and emerging cryptographic threat implications to executive stakeholders.
- Coordinated cross-site tours of on-prem data centers and critical infrastructure facilities to support security architecture review efforts.

CERTIFICATIONS

Terraform on AWS (2023) · Hacking for Defense (2023) · Principal Investigators & Research (2022) · AWS Skill Builder (2026)

U.S. Citizen · Eligible for Secret Clearance · Embedded / Firmware / OT roles · 2026