

DONTAVIOUS ELLIS

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EDUCATION

University of South Florida (USF) – B.S. Electrical Engineering | Tampa, FL | **Expected Graduation:** May 2028

Core Foundations: Electrical Systems I (AC/DC Analysis), Modeling & Analysis (MATLAB/Simulink), Communication for Engineers

TECHNICAL SKILLS

- **Power & Circuitry:** AC/DC Circuit Analysis, 3-Phase Power, Power Factor Correction, Load Flow Analysis, Transformer Theory.
- **Design & Simulation:** MATLAB/Simulink, LTspice, SOLIDWORKS Electrical, AutoCAD (2D/3D), Revit, PSpice, KiCad
- **Hardware & Lab:** Digital Oscilloscopes, Multimeters, Function Generators, Soldering, PWM Control, ESP32/Arduino, Signal Conditioning.
- **Software:** C/C++, Python, Bash Automation, Git/GitHub, Linux.

PROFESSIONAL EXPERIENCE

Research Assistant | USF CIBR Lab | Tampa, FL

Mar 2026 – Present

- Analyzed 500+ human-AI interaction datasets to identify cognitive biases susceptible to social engineering.
- Collaborate with an interdisciplinary team of criminologists and security researchers to improve technical and non-technical capabilities.

Website Specialist – USF Dept. of Mechanical Engineering | Tampa, FL

Sep 2024 – Present

- Manage and audit web content across 15+ departmental pages using Omni CMS for data integrity.
- Serve as primary technical contact for network connectivity, system configuration, and IT maintenance.
- Troubleshoot hardware and software issues during faculty onboarding to sustain high-availability operations.

TECHNICAL PROJECTS

Secure IIO-T Smart Grid Edge Monitor

Aug 2025 – Mar 2026

- Architected a real-time power monitoring node using an ESP32 to calculate RMS Voltage, Current, and Power Factor with <3% error margin.
- Developed a firmware FFT algorithm for Total Harmonic Distortion (THD), detecting grid anomalies in sub-100ms intervals.
- Implemented security using AES-128 and MQTTs (TLS 1.2) to a Proxmox-based "Control Center," for NERC CIP-compliant data handling.

Smart Load-Shedding & Power Distribution Controller

Dec 2026 – Jan 2026

- **Hardware Design:** Engineered an ESP32-based power distribution unit to monitor real-time loads with a +/- 0.5% current sensing accuracy.
- **Control Logic:** Developed PWM-based trip-logic to prevent overcurrent, maintaining system stability within 10% of peak rated capacity.
- **Bench Testing:** Utilized Digital Oscilloscopes to ensure signal integrity, reducing electrical noise (Vpp) by 35% through active RC signal

Electromechanical System (TARS Project)

Mar 2026 – Present

- Architecting a multi-articulated walking robot powered by a Raspberry Pi 3 and an Adafruit 16-Channel PWM Servo Driver.
- Designing a 12V-to-6V DC-DC power regulation system using SOLIDWORKS Electrical to manage 11.1V 1300mAh LiPo discharge rates.
- Developing Python-based automation for bipedal gait functions, utilizing 9 metal-gear servos for high-torque motion.

Enterprise Infrastructure Home Lab | (Dell OptiPlex 5050 + Proxmox VE)

Feb 2026 – Present

- Conducted load-flow simulations in MATLAB to identify service recovery strategies, optimizing simulated grid restoration time by 22%.
- Developed Bash scripts to automate network triage, reducing manual diagnostic time by 40%.
- Developed PulseGrid AI to model cascading failure propagation across 7 infrastructure layers, simulating 500+ unique outage scenarios.

LEADERSHIP & INVOLVEMENT

Technical Development Chair – National Society of Black Engineers (NSBE) – USF Chapter

Apr 2025 – Present

- Direct technical skill-building initiatives and workshops for a chapter of 100+ engineering and technology students.
- Develop curriculum on Arduino fundamentals for community outreach programs targeting K-12 students.
- Manage the chapter Discord and overhauled technical programming as newly appointed Technical Development Chair.

President – USF Society for Critical Operations and Preparedness Engineering (SCOPE)

June 2025 - Dec 2025

- Led a 60+ member organization focused on mission-critical readiness and emergency engineering operations.

CERTIFICATIONS

CompTIA Security+: Infrastructure security, secure protocols, and identity management (Jan 2026).