Emanuel Lugo Rivera

Linkedin | Portfolio | GitHub

Education

Bachelor of Science - Computer Engineering – UAGM Gurabo *January 2021 - May 2024*

- Cybersecurity Specialization (Graduate Courses**)**

Associate's degree - Computer Engineering Technology and Networking – UAGM Gurabo
January 2019 – December 2020

- Graduated Cum Laude **-** GPA: 3.6

Experience

Independent Software Engineer / Personal Projects *June 2024 – Present*
Orlando, FL – *(Relocated from Puerto Rico in late 2024)*

- Continued software and embedded systems development during relocation, focusing on backend and full-stack applications.
- Built and deployed React + Django REST projects with real-time visualization and data management.
- Maintained a growing technical portfolio (nettenz.github.io) emphasizing C++, system design, and cybersecurity practices.

Engineering Researcher Internship *January 2022 – June 2022*
Consortium of Resilient Energy Systems – UAGM Gurabo, PR

- Researched and prototyped energy-efficient microturbines for sustainable battery charging using rainfall capture.
- Used Arduino microcontrollers to collect sensor data and Python scripts to parse and visualize performance metrics from water sensors to design energy efficient turbines.
- Collaborated with other Engineering fields using Agile practices to ensure project delivery on time.

Backend Engineer Internship *June 2020 – March 2021*
Ticketera - San Juan, PR

- Automated reporting pipelines and SQL-driven data workflows using Python, cutting manual labor by 41% and increasing operational efficiency.
- Enhanced administrative dashboard with real-time scheduling features via PHP and Node.js, streamlining shift management.
- Executed functional testing and documented RESTful APIs, contributing to system reliability and streamlined DevOps with Git version control.

Full-Stack Web Developer *September 2018 – January 2020*
Freelance

- Designed and deployed secure, scalable web applications for small businesses and nonprofits, tailored to diverse user needs.
- Increased user engagement by 50% through front-end enhancements using React, TypeScript, and Bootstrap.
- Implemented cloud-based debugging solutions to optimize database queries, improving response time by 28%.

Projects

Halo Infinite Veto System *June 2025 – Present*
Live Demo

- Engineered a Django REST API with a custom finite state machine (TSDMachine) enforcing HCS-style map/mode veto rules.
- Built RESTful endpoints for series setup, bans, and picks, with strict backend validation and automated test coverage.
- Developed a React + Tailwind frontend to guide teams through interactive veto sequences and preview finalized match layouts.
- Added export functionality to generate downloadable PDF series layouts and CSV game data, deployed API on Render for live use.

Interactive Web Audio Player *March 2025 – April 2025*
Live Demo

- Built a dynamic, browser-based audio player with real-time waveform and volume visualization using the Web Audio API.
- Implemented audio metadata extraction with music-metadata-browser and designed responsive UI components in React and Tailwind CSS.
- Added interactive features including custom volume control, playback animation toggling, and restart functionality to improve usability.
- Deployed the app using Vite on GitHub Pages for optimized performance and static hosting scalability.

Hurricane Preparedness and Response System - (Capstone) *August 2023 – May 2024*
GitHub Demo

- Engineered a full-stack emergency response web application to track shelter status, weather conditions, and resource availability in real time.
- Built a resilient Django + HTMX backend with service workers for offline functionality during disaster scenarios.
- Integrated live data feeds from NOAA, OpenWeatherMap, and Google Maps APIs for geo-targeted visualization.
- Led Agile sprints and user story mapping to accelerate development cycles and align with real-world emergency planning needs.

Visualizing Puerto Rico's Earthquake Activity *February 2025*
Live Demo

- Refactored a Jupyter Notebook into a browser-executable PyScript dashboard to visualize seismic activity across Puerto Rico during early 2020.
- Processed and filtered USGS earthquake data using Pandas, highlighting magnitudes above 4.5.
- Plotted geospatial trends on an interactive Folium map to provide contextual insights into regional tectonic behavior.

Licenses and Certifications

Crash Course on Python
Grow with Google on Coursera | Credential ID: B5S5FTX5Y9HM
Google | Coursera
Speaking Confidently and Effectively
LinkedIn
Python Data Structures | Credential ID: LUJ93XKUJ2ZC
University of Michigan | Coursera
Python Programming: A Concise Introduction | Credential ID: ZJ4YUSVM5E2D
Wesleyan University | Coursera