

Emanuel Lugo Rivera

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Technical Skills

Programming Languages: Java, Python, C/C++, .NET, C#.

Web Development: HTML, CSS, JavaScript, React, Bootstrap, AJAX.

Tools: Git, MySQL, Android Studio, Docker Containers, Power BI, AWS Services, Azure.

Operating Systems: Windows, Linux.

Education

UAGM Gurabo

Bachelor of Engineering - Computer Software Engineering | (*January 2021 - May 2024*)

Cybersecurity Specialization (Graduate Courses):

- Gained hands-on experience with network security attacks including packet sniffing, ARP cache poisoning, ICMP redirects, SYN flooding, and TCP resets.
- Conducted buffer overflow exploits using Docker, developed custom shellcode, and explored symmetric encryption and PKI.
- Studied cloud computing security principles, access control, authentication models, and threat modeling. Explored and configured firewalls, VPNs, IDS/IPS systems, and assessed network vulnerabilities.

UAGM Gurabo

Associate's Degree - Computer Engineering Technology and Networking | (*January 2019 – December 2020*)

Graduated Cum Laude - GPA: 3.6

Experience

Engineering Researcher Internship

Consortium of Resilient Energy Systems – UAGM Gurabo, PR | (*January 2022 – June 2022*)

- Research and analysis of small energy efficient turbines for the charging of batteries using water from rainfall.
- Gathered, parsed and visualized the data gathered 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

Ticketera - San Juan, PR | (*June 2020 – December 2020*)

- Automated reporting and data analysis tasks using Python and SQL, reducing manual work by 41%.
- Improved the administrative dashboard by developing dynamic employee scheduling features using PHP and Node.js, streamlining shift management.
- Conducted testing and documentation for REST APIs and maintained Git-based repositories.

Full-stack web developer

Freelance | (*September 2018 – January 2020*)

- Built and maintained scalable and secure web applications.

- Used React, TypeScript, and Bootstrap to enhance client engagement by 50%.
- Implemented cloud-based debugging solutions to optimize database queries, improving response time by 28%.

Projects

Interactive Web Audio Player | *(March 2025 – April 2025)*

[Live Demo](#)

- Developed a responsive browser-based audio player enabling local file playback with real-time waveform and loudness visualization using Web Audio API.
- Extracted audio metadata client-side with `music-metadata-browser` and rendered dynamic UI elements using React and Tailwind CSS.
- Engineered custom volume control, animation style toggling, and restart functionality for enhanced user experience.
- Deployed to GitHub Pages with Vite, ensuring fast performance and scalable static hosting.

Hurricane Preparedness and Response System - (Capstone) | *(December 2023 – May 2024)*

[GitHub Demo](#)

- Developed a full-stack open-source web app providing real-time updates on resource statuses, shelters, and weather data. Implemented service workers for network outages.
- Designed and implemented scalable backend architecture using Django and HTMX.
- Integrated NOAA, OpenWeatherMap, and Google Maps APIs for interactive data visualization.
- Applied Agile project management methods to improve iteration speed and project success.

Visualizing Puerto Rico's Earthquake Activity | *(February 2020)*

[Live Demo](#)

- Jupyter Notebook refactored into PyScript to visualize Puerto Rico's unusual seismic activity during the start of the year 2020.
- Parsed, plotted and visualized earthquakes with a magnitude greater than 4.5 in the span of January 2020 through the end of February 2020.
- Utilized Pandas for the manipulation of the data and folium to plot said data in a static map.

Licenses and Certifications

Crash Course on Python

Grow with Google on Coursera | Issued: *(August 2022)*

Google | Coursera

Credential ID: B5S5FTX5Y9HM

RCR TRAINING FOR ENGINEERS | *(Expires 2025)*

CITI Program

Credential ID: 42858646

Python Data Structures | Issued: *(July 2019)*

University of Michigan | Coursera

Credential ID: LUJ93XKUJ2ZC

Python Programming: A Concise Introduction | Issued: *(November 2017)*

Wesleyan University | Coursera

Credential ID: ZJ4YUSVM5E2D