# Webster Chiedozie Elumelu

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## Education

**Georgia Institute of Technology**, Atlanta, GA, USA — Expected Graduation: December 2026
Masters of Science
Specialization: Machine Learning

**Webster University**, Saint Louis, MO, USA — January 2019 – December 2022
Bachelor of Science — Graduation: December 2022
Specialization: Combined Major of Computer Science and Minor of International Relations
CS GPA: overall 3.55/4.0; CS-only 3.79/4.0

## Publications

A. K. Orojo, **W. Elumelu**, O. O. Orojo, S. Hutton, M. Donahoo. *Predicting Software Vulnerability Trends with Multi-Recurrent Neural Networks: A Time Series Forecasting Approach.* NLPAICS 2024· Jun 10, 2024.

A. Orojo, E. El-Mahmoud, S. Hutton, M. Donahoo, **W. Elumelu**. *A Unified Framework Incorporating AW-TRBAC and Semantic Variational Autoencoders for Dynamic Threat Detection and Access Control.* 1st International Conference on the Design of Cyber-Secure Water Plants (DCS-Water 24)· Apr 1, 2024.

## Presentations

*Predicting Software Vulnerability Trends with Multi-Recurrent Neural Networks: A Time Series Forecasting Approach.* NLPAICS 2024, Jun 10, 2024.

*Challenges Faced and Opportunities Available for African Continental Unification.* [Panelist]. HBCU African Education Coalition (HAEC) Pan-African Student Summit, Webster University Ghana, 2022.

## Research Experience

**Webster University Research Lab** — March 2020 - Present
Undergraduate Researcher

- Compared the performance of content-addressable networks and named data networking with traditional IP-based networks. Set up simulation environments, ran tests, and analyzed data to understand how these different network types work.
- Aided in the development of a new type of neural network model to predict trends in software vulnerabilities. Used time series forecasting techniques and ran many experiments to test how well the model could predict future vulnerability trends.
- Worked on combining two different methods (AW-TRBAC and semantic variational autoencoders) to create a system that could detect threats and control access to networks. Tested the system to see how well it could spot potential security issues.
- Helped develop a neural network model to study cyber attack patterns in Africa. Ran simulations to test if the model could accurately predict how intense future attacks might be, which could help improve cybersecurity in the region.

## Projects

Automatic Leukocoria Detection - API Update to 34 Kotlin
Multi-Recurrent Network (MRN) Interface in Python
Comparative Performance Analysis of Networking Named Content in Different Topologies
Personal Virtual Networks (PVN) API in Java

## Teaching Experience

**MAC Academy, New York (Remote)** — Nov 2022 - Present
Teaching Assistant

- Inspired by the growing demand for engineers, responsible for creating lesson plans, delivering lectures, and grading assignments for future engineers and developers.
- Improved student performance and response by creating innovative teaching materials and assisting in web development classes.
- Developed a model to better serve the students as they forged ahead with their learning.

Relevant Courses

**COSC 3410 Computer Security** Fall 2022

- Implemented various cryptographic algorithms including symmetric and asymmetric encryption, hashing, and digital signatures.
- Conducted vulnerability assessments and penetration testing on sample networks, identifying and documenting security weaknesses.
- Developed a comprehensive security policy for a fictional organization, addressing access control, data protection, and incident response procedures.
- Analyzed real-world case studies of major security breaches, proposing mitigation strategies and lessons learned.
- Designed and implemented a secure communication protocol for IoT devices, considering resource constraints and potential attack vectors.

**COSC 3660 Network Concepts** Summer 2022

- Designed and simulated various network topologies using Cisco Packet Tracer, including LAN, WAN, and hybrid configurations.
- Implemented and analyzed different routing protocols (e.g., OSPF, BGP) in a virtualized network environment.
- Developed a client-server application using socket programming to demonstrate network communication principles.
- Conducted performance analysis of TCP and UDP protocols under various network conditions using Wireshark.
- Created a comprehensive network design proposal for a small business, including hardware specifications, IP addressing scheme, and security considerations.

Industry Experience

**Rove10** January 2025 - Present

Software Engineer

- Designed and implemented secure multi-factor authentication (MFA) processes for the company's Payaza platform, enhancing account protection for users
- Architected responsive UI components for Rove10 back office dashboard using VueJS and TypeScript, incorporating state management and implementing custom hooks for business logic abstraction
- Drove end-to-end user journey ideation and UX design for security infrastructure overhaul, translating complex security requirements into intuitive user flows
- Assisted in internal comprehensive UX research initiatives for EventPorte ticketing platform, implementing user journey mapping and heuristic evaluation to reduce cart abandonment

**Niger Delta Power Holding Company** January 2024 - Present

IT Support

- Assisted on in-house projects concerning malware detection and protection, as well as Content Delivery Networks attacks.
- Assisted in swift repairs and returns of enterprise computers, and printer support around the company.
- Aided in data entry and dispatch around the company from the documentation unit.

**KNG Technologies** November 2022 - August 2024

Front End Developer

- Identified, selected, and recorded necessary points for the improved documentation process of the in-house projects by implementing a standardized format for all technical documents and pulling from a centralized repository for easy access.
- Developed custom solutions for the music project which were used as patch updates for previous projects that predate my joining the company.
- Implemented components using best practices for React Typescript to ensure the speed of loading pages and other tasks would not fall.

**Apex Ezone (Remote)** November 2021 - March 2022

Cybersecurity Intern

- Assisted on projects concerning malware detection and protection, as well as Content Delivery Networks attacks.
- Aided in discovering potential vulnerabilities, threats in the TCR webservers and suggesting upgrades.
- Documented the website's security features providing details of overall security posture.

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| Other Experience | Bare Maximum, *Head Editor (Freelance)* | February 2021 - Present |
| | Energem Group, *Business Development Intern* | May 2019 - August 2019 |

Awards

2021 Dean's List
2022 Departmental Honors
2019 Dean's List
2017 - 2020 Webster University Undergraduate Award (Top 5%) - $7,840

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| Community Involvement | Webster Works, *Student Volunteer* | 2019–2020 |
| | CS Mentoring Program, *Mentor* | August 2021 - 2022 |
| | Student Government Association, *Treasurer* | August 2018 - May 2020 |
| | Webster CS Club, *IT Executive* | January 2020 - May 2020 |
| | Ghana Study Network, *CS Tutor Volunteer* | January 2019 - September 2019 |