Webster Chiedozie Elumelu

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Education	**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.

A. Orojo, P. Bhagat, M. Donahoo, N. Vishwamitra, J. Wilburn, **W. Elumelu**. *Leveraging Secure Social Media Crowdsourcing for Gathering Firsthand Accounts in Conflict Zones.* ASONAM 2024 · Jul 1, 2024.

Under Review

A. Orojo, **W. Elumelu**. *African Cybersecurity Foresight: Utilizing Multi-Recurrent Neural Networks for Attack Intensity Modeling.* Submitted to Emerging and Resilient Technologies in Building and Securing African Nations (SMARTBLOCK4AFRICA 2024).

Presentations

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.
- Used social media to safely collect firsthand accounts from people in conflict zones. Came up with new ways to gather and analyze this information, which helped create a detailed picture of what was happening in these areas.
- 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.

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

Niger Delta Power Holding Company   January 2024 - Present

IT Support (NYSC)

- 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 - Present

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.

Other
Experience

Bare Maximum, *Content 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

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