Henry C. Onyeka

615-728-0992 | onyeka.henry@outlook.com | linkedin.com/in/henry-onyeka-c

Skills

Research Interests: Network Security, Artificial Intelligence (AI) and Machine Learning (ML) in Cybersecurity, Cyber Threat Intelligence (CTI), Large Language Models (LLMs), Retrival-Augmented Generation (RAG), GANs (cGAN, WGAN, SD-CGAN), Sinkhorn Divergence, Time-Series Anomaly Detection, NIDS, LLMs for Document-Aware AI.

Programming & Development: Python, PyTorch, TensorFlow, Scikit-learn, Matplotlib, OpenCV, PyTorch Lightning, Prompt Engineering, MATLAB, Simulink, HTML, CSS, C, PowerShell, Docker, Git, WordPress, Flask, Visual Studio, Gradio, LlamaIndex.

Cybersecurity & IT: Microsoft 365 Admin Center, Active Directory, Azure AD, Intune, SCCM, Windows Server, Linux (Ubuntu), macOS, VMware, Hyper-V, Cisco IOS (exposure), Juniper (exposure), ServiceNow, Jira, Firewalls, Endpoint Security, Network Diagnostics, Device Imaging & Deployment, A/V & Conferencing (Zoom, Teams, Webex), Backup & Recovery, Hardware Troubleshooting, Software/Firmware Installation, Incident Response, PowerShell Automation, Python, Documentation

Operating Systems and Tools: Linux, Windows, Bash, Wireshark, Microsoft Office.

Network Simulation and Tools: TCP/IP, Routing & Switching (L2/L3), DHCP/DNS, VPN, VLANs, HTTP, Network Monitoring, OPAL-RT Simulator, Exata CPS, OAI, NIDS, gNB Sim, Subnetting and IP addressing

Education

Tennessee State University **January 2024 - Present**
MSc in Computer and Information Systems Engineering, GPA: 4.00 *Nashville, TN*

Afe Babalola University-Ado EKiti **September 2016 - August 2021**
BEng in Electrical and Electronics Engineering, GPA: 3.54 *Ekiti, Nigeria*

certifications

CompTIA Security+ (Expected 2025)
CompTIA Network+ (Expected 2025)

Relevant Coursework

Graduate Courses: Intelligent Systems and Machine Learning, Computer Communication and Networks, Intro to Systems Modelling and Simulation; Computer Architecture and Operating Systems; Software Systems Design; Probability, Statistics and Risk Analysis.
Undergraduate Courses: Digital Communications; Computer Programming; Microwave and Satellite Communication.

Professional Experience

Information Technology and Security Intern **May 2025 - August 2025**
Gideons International *Nashville, TN*

- Administered Microsoft 365, Azure Active Directory, and on-prem AD for 150+ users, ensuring secure access control, lifecycle management, and enforcement of least-privilege policies.
- Reduced malware incident resolution time by 40% through threat investigation and remediation using Microsoft Defender, Malwarebytes, PowerShell, and improved incident response documentation.
- Strengthened endpoint security via Group Policy, audit reviews, and patch automation, significantly decreasing vulnerability exposure.
- Resolved 50+ Tier 1/Tier 2 support tickets with a 95% satisfaction rate; improved user awareness by delivering phishing simulations and training, leading to a 30% drop in reported suspicious emails.
- Led development of a local LLM-based assistant using Mistral, LlamaIndex, and Gradio to increase staff productivity by 25%. Integrated session persistence, collapsible sidebar, chat history, prompt buttons, and organizational branding for real-world deployment.
- Designed and implemented a subnetting strategy for a 4-floor office with 150+ staff and over 300 connected devices, optimizing IP allocation efficiency by 60% and enhancing internal network segmentation to isolate traffic by department, thereby reducing lateral movement risk in the event of an attack.

Network Intern **February 2020 - July 2020**
Meed Networks Limited *Abuja, Nigeria*

- Installed and configured 30+ routers, network switches, and CCTV systems across 20+ enterprise sites, improving LAN/WAN reliability and reducing reported connectivity downtime by 35%.

- Fabricated, labeled, and tested 15+ Ethernet ports for end-user devices (workstations, printers, wireless APs), enabling seamless physical-layer setup and reducing cable misconfiguration incidents.
- Resolved performance issues across 10+ client networks by conducting end-to-end testing of routing infrastructure, identifying signal loss, cross-talk, and throughput bottlenecks.
- Enabled seamless connectivity for 100+ devices by configuring DHCP services and static IP assignments, minimizing IP conflicts during network expansion projects.
- Reduced troubleshooting time by 40% through meticulous documentation of IP schemas, MAC addresses, and device roles using Excel and network mapping tools.
- Supported senior network engineers in diagnosing latency and connectivity issues, utilizing tools such as ping, tracert, ipconfig, and Wireshark packet captures to isolate root causes across 8+ incident cases.

Electrical Engineer **December 2021 - November 2022**

Jubaili Bros Engineering Limited *Rivers, Nigeria*

- Collected and analyzed usage data from 40+ generators by leveraging data retrieval techniques to identify service and repair needs.
- Executed preventative maintenance on 60+ diesel generators, focusing on early detection of component failures, leading to a 98% success rate in preventing major equipment malfunctions.
- Transported and delivered over 100 generator sets, transformers, diesel tanks, and other equipment at different locations across Rivers state, Nigeria.

Network Intern **February 2020 - July 2020**

Meed Networks Limited *Abuja, Nigeria*

- Installed 30+ Closed Circuit Television Cameras, Routers, and Network devices for over 20 clients, increasing network and data availability in the metropolitan area of Abuja, Nigeria.
- Fabricated over 15 Local Area Network ports for network devices to support data flow and network performance.
- Examined network usage and performance metrics, retrieving and processing critical data to optimize over 10 network setups.
- Performed functionality tests on hundreds of network devices, maintaining detailed records for efficient data storage and retrieval.

Research and Academic Experience

Graduate Research Assistant **May 2024 – Present**

Tennessee State University *Nashville TN, USA*

- Researched, and deployed a simulated 5G Core Network using Next Generation Node B Simulation (gNB Sim) and Open-Air Interface (OAI) to optimize 5G resource allocation.
- Explored methods to detect Denial of Service (DoS) attacks in 5G networks using data-driven techniques, contributing to Cyber Threat Intelligence (CTI) initiatives.
- Designed 5G network scenarios using Exata CPS for OPAL-RT simulator for dynamic traffic data collection, storage, and analysis, simulating 3+ real-world cyberattack scenarios.
- Developed a Sinkhorn-Divergence-based Conditional GAN trained solely on benign flows to detect DDoS and zero-day anomalies. Integrated CTGAN for class balancing, achieving 98%+ precision and real-time inference on CIC-DDoS2019 and UNSW-NB15 datasets.

Graduate Teaching Assistant **January 2024 – May 2024**

Tennessee State University *Nashville TN, USA*

- Lectured and supervised 2 undergraduate classes on Programming and MATLAB.
- Mentored 20+ undergraduate students in programming fundamentals during weekly office hours, resolving complex coding roadblocks and enhancing understanding of MATLAB, leading to improved final project grades.

Publications

Published/Accepted

1 E. J. Samson, K. Hasan, L. Hong, S. Shetty, I. Ahmed, **H. Onyeka**. Optimizing 5G Network Slices: LSTM and Game Theory Synergy. (Accepted) IEEE International Conference on Computing, Networking, and Communications (ICNC'25) – AMCN Track, 2025.

Under Review/Preprint

[1] **H. Onyeka**. Conditional Sinkhorn GAN for Zero-Day DDoS Detection in 5G Networks.(Under Review) IEEE Globecom 2025.

[2] **H. Onyeka**. The Future is Now: Envisioning the Transition from 5G to 6G Wireless Networks. (Preprint). Tennessee State University, Nashville, TN, USA.

[3] **H. Onyeka**. A Review on the Security Aspect of 5G Network Slicing. (Preprint). Tennessee State University, Nashville, TN, USA.

Projects

SD-CGAN for DDoS Anomaly Detection in 5G Networks

Tennessee State University

- Designed a conditional GAN with Sinkhorn Divergence to model benign 5G traffic and detect anomalies.
- Trained exclusively on CIC-DDoS2019 and UNSW-NB15 datasets using geometry-aware divergence for stable convergence
- Employed CTGAN to generate synthetic minority samples and address class imbalance
- Enhanced precision/recall for detecting zero-day and exploitative DDoS attacks with sub-second inference

Quantum GAN inspired Anomaly Detection

Tennessee State University

- Leading the development of a position paper on evolving classical Sinkhorn-GAN frameworks into quantum-classical hybrid models for network anomaly detection, using PennyLane as the target QGAI platform.
- Investigating how quantum latent space sampling, entanglement, and circuit expressivity can overcome classical GAN limitations like mode collapse and training instability
- Preparing and downsampling real-world datasets (e.g., CIC-DDoS2019) for quantum-compatible pipelines and evaluating how Sinkhorn divergence could be adapted to quantum regimes using hybrid loss structures.

AI Assistant

Gideons International

- Developed a secure, document-aware AI assistant using Gradio, LlamaIndex, and a locally hosted Mistral model via Ollama to enable natural language querying of internal documents.
- Implemented persistent session management with UUID-based chat history (stored as JSON), a collapsible sidebar, branded UI, and suggested prompts for easy interaction.
- Designed for private, on-premise deployment with no external APIs, and built for future support of document uploads, SharePoint/NetSuite integration, VPN/SSO access, and internal monitoring tools.

Subnetting & Office Network Planning

Gideons International

- Conducted a full assessment of network requirements for a 4-floor corporate building with 150+ users and 300+ devices, mapping out departmental structure and device types to inform subnet design and segmentation strategy.
- Designed and implemented a Class B subnetting plan using VLSM and CIDR techniques, allocating IP ranges by floor and department while ensuring address scalability, DHCP optimization, and minimal IP waste.
- Improved network security and performance by deploying VLANs per subnet and configuring router ACLs to restrict inter-subnet communication, reducing potential attack surface and lateral movement risk.

Network Security Scenarios Using Exata CPS and OPAL-RT Simulator

Tennessee State University

- Simulate network security scenarios, including DoS and DDoS attacks, using Exata CPS for traffic generation and OPAL-RT for cyber-physical system emulation.
- Develop and test mitigation strategies to improve network security, resilience, and performance in next-generation networks.

Membership and Leadership Roles

Secretary African Students Association, TSU. **August 2024 - Present**

Community Service Chair African Students Association, TSU. **August 2024 - Present**

Member National Society of Black Engineers **May 2024 - Present**

Member Graduate Engineering Student Association. **January 2024 - Present**

Graduate Student Member Institute of Electrical and Electronics Engineers. **December 2024 - Present**

Member National Youth Service Corps, Nigeria **November 2021 - November 2022**

Head Coach The Electrical and Electronics Engineering Team, Afe Babalola University **January 2020 - May 2021**

TALKS/PRESENTATION

- "Comparative Analysis of GAN-Based Anomaly Detection Techniques for 5G Networks," **National Artificial Intelligence Research Resource (NAIRR) Pilot Conference**, February 2025. (Poster Presentation)
- "Comparative Analysis of GAN-Based Anomaly Detection Techniques for 5G Networks," **Tennessee State University Research Symposium**, March 2025. (Poster Presentation)