Blessing U. Nwala

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Blessing Nwala | nwalablessing | nwalablessing0 | Portfolio Website

Bowling Green, Ohio - 43402, USA

Professional Summary

I am a Machine Learning Engineer specializing in full-stack model development from rigorous data preprocessing and representation learning to scalable cloud deployment and continuous integration. With deep expertise in supervised and unsupervised learning, ensemble methods, and neural architectures, I develop real-time inference systems for decision automation across high-impact domains. My work centers on predictive modeling through multimodal data integration including time-series signals, diagnostic imaging, and structured clinical records using tools like XGBoost, PyTorch, TensorFlow, Scikit-learn, and NumPy. I architect interactive ML pipelines with RESTful APIs and deploy seamlessly across diverse cloud environments including Azure, Render, Streamlit Cloud, and containerized platforms to ensure low-latency performance and production-grade accessibility. Grounded in interpretability, resilience, and scalability, I build machine learning solutions that deliver domain-agnostic value with measurable impact.

Projects

- **Real-Time Sepsis Prediction and Monitoring System** *Apr 2025*
  Tools: Python, XGBoost, Streamlit, Telegram API, Zepp API, Strava API [] []
  - Built a real-time ICU sepsis prediction tool using wearable data, achieving 97.67% accuracy and 0.83 AUC.
  - Integrated Zepp and Strava APIs for live vitals; deployed visualization interface via Streamlit.
  - Connected clinician alerts via Telegram Bot for urgent notification and patient updates.
- **Adaptive Color Quantization for Image Compression** *Dec 2024*
  Tools: Python, NumPy, t-SNE, CIFAR-100 []
  - Developed an autoencoder-based system to compress images by complexity, achieving PSNR 26.09 and SSIM 0.8558.
  - Used t-SNE to visualize compressed latent spaces and enhance fidelity on small devices.
- **Splunk-Based Cybersecurity Lab Simulation** *Mar 2025*
  Tools: Splunk, Kali Linux, Nmap, VirtualBox
  - Simulated cyberattacks in a lab environment and monitored using Splunk dashboards.
  - Built correlation rules and alerts, achieving 95% detection accuracy on test incidents.
- **Volume Ray Casting Visualization Project** *May 2023*
  Tools: JavaScript, WebGL, HTML5, Visual Studio Code, Git, GitHub []
  - Developed a real-time volume rendering engine using WebGL and JavaScript to visualize 3D datasets in the browser.
  - Customized and extended an open-source ray casting engine to simulate CT-like imaging and point cloud rendering.
  - Used Git for version control, SSH for authentication, and browser-based deployment for visualization testing.
- **Wetland Chemical Visualization Platform** *Dec 2023*
  Tools: HTML5, JavaScript, Google Maps API []
  - Built an interactive web tool to visualize 30-month soil and water chemical trends in wetlands.
  - Enabled policy decision-making via map-based dashboards and variable selectors.
- **IoT-Based Smart Livestock Monitoring System** *Dec 2021*
  Tools: Python, MySQL, Fuzzy Logic, IoT Sensors []
  - Developed an IoT health monitoring system with fuzzy logic to flag livestock anomalies.
  - Achieved 89% detection accuracy in predicting abnormal patterns on remote farms.
- **Enhanced Walking Stick for Visually Impaired Patients** *Feb 2017*
  Tools: Arduino, Ultrasonic Sensors, Water Sensor, Vibration Motor []
  - Co-developed a low-cost assistive device that achieved 94% obstacle detection accuracy.
  - Enabled real-time haptic feedback for better safety in navigation for the visually impaired.

Experience

- **Research Machine Learning Assistant** *August 2024 – May 2025*
  Bowling Green State University [🌐] Bowling Green, Ohio, USA
  - Built ensemble models (XGBoost, RF, Logistic Regression) on ICU time-series data, achieving 97.6% accuracy in sepsis prediction.
  - Developed autoencoder on CIFAR-100 for compression (PSNR 26.09, SSIM 0.86) with t-SNE latent analysis.
  - Created a browser-based 3D medical renderer using WebGL for CT-style imaging.
  - Built wetland monitoring dashboard with 98% aggregation accuracy and <2s latency.
  - Integrated live vitals from Zepp/Strava into Streamlit with clinician alerts via Telegram.
  - Automated MLHC 2025 workflows: SHAP, ROC, and cross-validation and also reviewed submissions from other Author's.

- **Machine Learning Engineer** *Oct 2021 – Aug 2023*
  Julius Berger Plc [🌐]
  - Developed ML models on 150K+ logs, achieving 98.2% accuracy and reducing downtime by 70%.
  - Built feature pipelines for time-series classification and fault prediction.
  - Applied clustering (KMeans, PCA) to reduce repeated issues by 65%.
  - Integrated models with KACE via Golang REST APIs, improving triage speed by 60%.
  - Created dashboards in Python + Power BI for SLA and escalation trends.

- **Clinical Machine Learning Engineer** *Sep 2019 – Oct 2021*
  PJ Rapha Care Limited
  - Trained classification models on maternal data, boosting early risk prediction accuracy by 60%.
  - Automated preprocessing of vitals and diagnostic inputs, reducing manual data handling by 90%.
  - Used an LSTM-based autoencoder to learn normal vital patterns and flag anomalies during real-time monitoring.
  - Built Power BI dashboards for frontline staff to track patient risk levels and care priorities.
  - Managed 10K+ MySQL records with backup and model versioning.

Education

- **Bowling Green State University**
  Master of Science in Computer Science, Specialization: Cybersecurity and Digital Forensics Bowling Green, OH, USA
- **University of Port Harcourt**
  Master of Science in Computer Science
- **All Nations University**
  Bachelor of Engineering in Computer Engineering

Skills

- **Programming Languages:** Python, C++, Java, JavaScript, Go (Golang), HTML5, Embedded C, C#
- **Web & Frontend Technologies:** HTML5, CSS3, JavaScript, Fetch API, Chart.js, Streamlit, Flask
- **App Builders & Low-Code Platforms:** FlutterFlow, Streamlit Cloud
- **Web & Backend Frameworks:** ASP.NET Core (C#), Flask
- **Database & Backend:** SQL, MySQL, SQLite, Firebase
- **Machine Learning & Deep Learning:** TensorFlow, PyTorch, Scikit-learn, NumPy, XGBoost, Autoencoders, CNNs, t-SNE, SMOTE, Gradient Boosting
- **Data Science & Visualization:** NumPy, Pandas, Matplotlib, Seaborn, Plotly, Power BI, Tableau, Excel (Pivot Tables, Dashboards), Microsoft Visio
- **Computer Vision & Imaging:** Image Processing, Volume Ray Casting, WebGL, PSNR/SSIM, 3D Visualization, CT/X-ray Simulation
- **Cloud & DevOps:** Google Cloud Platform (GCP), Microsoft Azure, Docker, GitHub, GitLab, GitLab CI/CD
- **Cloud & Hosting Platforms:** Render.com, Streamlit Cloud, Microsoft Azure
- **Security & Forensics:** Wireshark, Snort, Magnet Axiom, Volatility, Autopsy, SleuthKit, File Carving, Windows Registry Inspection
- **Support & Access Tools:** Dameware, KACE Ticketing System, AnyDesk, GlobalProtect, Okta, Oracle VirtualBox
- **Video Conferencing Tools:** Microsoft Teams, Zoom, Google Meet
- **Operating Systems & Tools:** Windows, macOS, Ubuntu, Kali Linux, Visual Studio, VS Code, Jupyter Notebook, Git, Draw.io, Microsoft Visio

- **Soft Skills:** Teamwork, Communication, Problem Solving, Time Management, Research Writing, Critical Thinking, Initiative
- **Research Skills:** Quantitative Analysis, Experimental Design, API Integration (Strava, Telegram), Academic Collaboration

Volunteer Experience

- **Community Health Volunteer** *Sep 2019 – Oct 2021*
  PJ Rapha Care Foundation
  - Delivered clean water, clothing, and medical supplies to 500+ low-income individuals through outreach missions.
  - Supported antenatal care coordination, food distribution, and hygiene education, improving access and nutrition.
  - Collaborated with healthcare teams during fieldwork, enhancing communication and service delivery.

Professional Memberships

- **Women in CyberSecurity (WiCyS)**, Member ID: 90453876 *Jan 2025 – Jan 2026*
- **MLHC 2025**, OpenReview ID: ~Blessing_Uchechi_Nwala1 *2025*
- **ORCID**, ORCID ID: 0009-0001-9697-5480 *2025*

Certifications

- **IBM Cybersecurity Analyst** *Feb 2024*
- **CPR / First Aid Certification** *Jan 2024*
- **Project Management** *Jan 2019*
- **HSE Levels 1, 2, and 3** *Jan 2019*
- **Data Science Tools (IBM)** *Dec 2020*
- **Diploma in Data Services** *Dec 2020*
- **Diploma in Robotic Process Automation** *Dec 2020*
- **IBM Python for Data Science** *Sep 2020*
- **IEEE Robotics and Raspberry Pi Workshop** *Mar 2014*
- **Computer Networking & Digital Network Security** *Apr 2020*
- **COSHH365 Software Certification** *May 2020*
- **Udemy CompTia Security+ Certification** *May 2021*

References

References available upon request.