Abdurrahman Aliyu Gambo

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EDUCATION

Bachelor of Engineering in Computer Engineering, Nile University of Nigeria — *2024*
First Class Honors (CGPA 4.95/5.00)

RESEARCH EXPERIENCE

Undergraduate Research, Gesture Recognition Wearable Device Mar. *2024 – Aug. 2025*

Advisor: Emmanuel Ali

- Designed and developed a gesture-based wearable device leveraging inertial sensors and Convolutional Neural Networks.
- Engineered hardware and embedded firmware for real-time classification of motion signals.
- Led data acquisition, and signal preprocessing, supported AI model training and deployment for real-time gesture recognition.
- Lead author of a resulting peer-reviewed research manuscript on sensor-driven wearable interfaces and gesture recognition.

Undergraduate Research, Development of Mixed-Signal sEMG Devices Mar. *2024 – Sept. 2024*

Advisor: Emmanuel Ali

- Designed and built discrete analog front-end circuits for surface EMG acquisition, using off-the-shelf instrumentation and general-purpose amplifiers across two topologies with differing IA selection and filter order.
- Designed discrete analog filters to isolate the EMG signal band and reduce noise/artifact content prior to digitization.
- Performed on-board ADC and interfaced the digitized signal to an MCU for downstream analysis; verified both analog-stage and full mixed-signal outputs via oscilloscope.
- Benchmarked front-end performance against a commercial reference sensor (Myoware 2.0) using gel electrodes, evaluating signal cleanliness and digital delineation.
- Identified reproducibility limitations across both custom and reference designs, diagnosing likely 50/60 Hz power-line interference mismatch as a contributing factor in the commercial sensor's degraded performance.

Research Assistant, National Centre for Artificial Intelligence and Robotics (NCAIR), under the National Information Technology Development Agency (NITDA) *Apr. 2023 – Sep. 2023*

Supervisor: National Director, Engr. Yau Garba

- Contributed to the design and development of 6 autonomous rover prototypes, incorporating sensor arrays, wireless communication, computer vision, as well as chassis and PCB design.
- Created custom firmware and drivers for various I2C sensors and embedded systems applications
- Contributed to testing & tuning of BMS and power profiles of low-power embedded devices

- Utilized mobile Neural Accelerators to host Vision and LLM Models on the device edge

INDEPENDENT STUDY

Analog and Mixed-Signal IC Design (Extension from sEMG Research) *Feb. 2026 – Present*

- Working toward an analog onset-detection and feature extraction system for surface electromyographic (sEMG) signals.
- Pursuing self-directed study in analog IC design using open-source EDA tools (Magic, Xschem, Ngspice, Netgen), progressing from device-level fundamentals to circuit design.
- Targeting a SkyWater 130nm PDK portfolio project as a concrete deliverable from this work.

PUBLICATIONS

A. A. Gambo et al., "An End to End Wearable Device and System for Indefinite, Continuous, Real Time Gesture Recognition of Directional and Shape-Based Arm Gestures," in IEEE Access, vol. 13, pp. 153436-153463, 2025, doi: 10.1109/ACCESS.2025.3602871

PRESENTATIONS

"Gyronics Live Inferencing: A Wearable Gesture Recognition Device", HEI Research and Innovation Showcase. 2024

"Keynote Speaker – Wearable Assistive Technology", International Health and Leadership Summit 2024, Nile University of Nigeria.

PROFESSIONAL EXPERIENCE

Co-Founder and CEO, Gyronics Technologies Limited
Startup Founder | Technical Lead *Nov. 2024 – Present*

- Co-founded Gyronics Technologies, a startup focused on AI-powered wearable technologies for assistive and consumer applications.
- Led R&D and strategic direction, managing a cross-disciplinary team to deliver inertial and electromyographic based wearable devices from prototyping to user testing.
- Conducted stakeholder engagement and qualitative research across Nigeria, Japan, Morocco, and France in the assistive technology domain to inform product design and impact strategy.
- Led key feature additions include gesture based swipe-to-text, and multi-device context switching.

SKILLS & TOOLS

Circuit Design & Simulation: LTSpice, Xschem, ngspice, Proteus, KiCad, Magic VLSI
Embedded Systems: ESP32, STM32, AVR, STC, FreeRTOS — C/C++ firmware development
Programming & Analysis: C/C++, Python, MATLAB, Java, Bash, Linux/Unix, PyTorch

TEACHING AND OUTREACH

Instructor, NITDA AI Developer Training (NAIDT) *Jul. 2023 – Aug. 2023*

- Delivered beginner to intermediate training modules in AI and Data Science for Cohorts 8 and 9 of the National Information Technology Development Agency AI Developer Training program (NAIDT).
- Mentored student teams on real-world projects involving data preprocessing, feature engineering, model training, and hyperparameter optimization.

HONORS AND AWARDS

Merit-Based Academic Scholarship (Undergraduate) — 40% Tuition award (5 years)

NITDA DEVELOPER GROUP (NDG) AI/ML Competition 2023 – Winner

Huawei ICT Competition (Cloud Track) 2022 – National Finalist

Boys Quarter Africa Audacity Award, Moruf Oseni Prize for Stem - Winner