

MUIZ ABIOLA AMINU

Mechatronics & Embedded Systems Engineer | Abuja, Nigeria (Willing to relocate)

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SUMMARY

Mechatronics & Embedded Systems Engineer with hands-on experience developing C/C++ firmware for AVR, ESP, ARM Cortex, and Raspberry Pi microcontrollers. Proficient in MATLAB/Simulink for system modeling and control design, and Python for embedded applications. Experienced building IoT systems with real-time capabilities, sensor integration, and cloud connectivity (Firebase). Also develop cross-platform mobile interfaces using Flutter. Focused on creating practical, user-centered embedded solutions that solve real-world problems.

TECHNICAL SKILLS

- **Microcontrollers:** ESP32, ESP8266, AVR (Arduino), ARM Cortex, and Raspberry Pi.
 - **Languages:** C, C++, Python, Dart (Flutter), Embedded C.
 - **IoT & Connectivity:** Firebase, MQTT, IoT System Design, Real-time Cloud Databases.
 - **Hardware & Protocols:** PCB Design, UART, I2C, SPI, Motor Control (Stepper, Servo, PWM, DC/H-Bridge), Power Electronics.
 - **Tools & Simulation:** MATLAB/Simulink, VS Code, PlatformIO, Git/GitHub.
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FEATURED PROJECTS

Autonomous Vehicle Navigation System | MATLAB, Control, Servo

- Designed a navigation system featuring obstacle detection, speed-bump deceleration, and pothole avoidance logic.
- Implemented control algorithms for servo-based steering and H-Bridge DC motor propulsion to enable safety interventions.

Smart Pill Dispenser | ESP32, Stepper, Flutter, Firebase

- Developed an automated dispenser using stepper motors for precision pill titration and servos for secure compartment locking.
- Built a Flutter app with WhatsApp API integration to alert caregivers of missed doses and trigger real-time patient alarms.

Pipeline Monitoring Robot | Raspberry Pi, Python, CAM

- Built a semi-autonomous robot for pipeline inspection featuring high-torque DC motor control.
 - Developed embedded control firmware to enable both autonomous navigation and teleoperated maneuvers for anomaly logging.
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PROFESSIONAL EXPERIENCE

Embedded Systems & IoT Engineer | ACAIR

Abuja | Jan 2026 – Present

- Leading the development and prototyping of commercial-grade IoT solutions and smart hardware for institutional projects.
- Facilitating technical training for students in embedded systems, microcontroller programming, and IoT system architecture.

Research Assistant | Advanced Engineering Innovation Research Group

Minna | Jul 2021 – Present

- Contribute to R&D in IoT, embedded systems, and robotics.

Engineer Intern | Artificial Intelligence for Clean Energy (AI4CE) Limited Minna | Jun 2024 – Nov 2024

- Collaborated with other engineers to develop embedded IoT solutions specifically for clean energy applications, including smart energy monitoring and sharing systems.

Embedded Systems Developer | E-lord Technology Ogbomoso | Aug 2019 – Present

- Engage in foundational research and development for embedded systems and IoT applications.
 - Execute early-stage PCB design concepts and hardware testing for consumer electronics.
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LEADERSHIP & TRAINING EXPERIENCE

STEM Club Instructor | Himma College Minna | Nov 2024 – May 2025

- Instructed secondary school students in robotics and electronics, conducting practical hands-on workshops to foster interest in mechatronics engineering.

Embedded Systems & IoT Facilitator | Ideal Intelligent Innovation Research Group Minna | May 2022 – Present

- Deliver hands-on training in IoT and embedded systems, guiding participants through hardware prototyping, firmware development, and system integration.

Lead Trainer | Build-a-thon Holiday Camp & Summer with DOME Minna | Aug 2024 & Aug 2025

- Led intensive technical training sessions for over 250 students, teaching the fundamentals of embedded systems, IoT, and Scratch programming.
 - Guided participants through hands-on hardware prototyping, fostering the next generation of Nigerian engineers.
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EDUCATION

B.Eng. Mechatronics Engineering | Federal University of Technology, Minna, Nigeria (**Grade: 87%**)

CERTIFICATIONS & AWARDS

- Control Design Onramp with Simulink – MathWorks (Feb 2025)
- Simulink Fundamentals – MathWorks (Jul 2023)
- Career Essentials in Sustainable Tech – Microsoft & LinkedIn (Oct 2024)
- NNPC/Seplat JV National Undergraduate Scholarship (2024)
- Abdulkabir Aliu Foundation Scholarship (2023)
- Vice Chancellor's Certificate of Excellence – FUTMinna (2022)