ALBERT OLAFARE
Embedded Systems Engineer | Electronics Designer

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PROFESSIONAL SUMMARY

Embedded systems engineer with 3+ years of practical experience designing complete IoT devices from circuit design through firmware deployment. Specialized in building production-ready hardware combining custom PCB design, embedded C/C++ firmware, and mechanical integration. Developed 10+ deployed systems including WiFi-enabled controllers, safety-critical detection devices, and battery-powered IoT sensors. Strong track record of taking concepts to working prototypes with focus on manufacturability, reliability, and real-world performance.

TECHNICAL SKILLS

Embedded Development

- Programming: C/C++, Python
- Microcontrollers: ESP32/ESP8266, STM32 ARM Cortex-M, Atmega Series
- Real-time Systems: FreeRTOS, interrupt-driven architectures, state machines
- Protocols: I^2C, SPI, UART, MQTT, HTTP/HTTPS, WiFi, Bluetooth/BLE

Hardware Design

- PCB Design: KiCad (schematic capture, layout, DRC, manufacturing output)
- Circuit Design: Analog/digital circuits, power management, sensor interfaces
- Manufacturing: JLCPCB-ready files (Gerbers, BOM, CPL), DFM considerations
- Power Electronics: AC load control (220V), relay switching, battery management

Mechanical & Visualization

- CAD Design: SolidWorks (3D modeling, assemblies, technical drawings)
- 3D Tools: Blender (photorealistic rendering, animation), Tinkercad
- Prototyping: 3D printing (FDM), rapid iteration, functional testing

Development Tools

- IDEs: VS Code, Arduino IDE, ESP-IDF, STM32CubeIDE
- Version Control: Git, GitHub
- Testing: Oscilloscope, multimeter, logic analyzer debugging
- Documentation: Technical writing, schematic documentation, assembly guides

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PROFESSIONAL EXPERIENCE

Embedded Systems Engineer & Hardware Designer

Independent Developer | *January 2022 – Present*

Abuja, Nigeria (Remote)

Designing complete embedded systems for IoT, automation, and safety applications with focus on manufacturability and real-world deployment.

Hardware Development:

- Designed 10+ custom PCBs for IoT and automation using KiCad, managing full development cycle from requirements through prototype validation
- Created JLCPCB-ready manufacturing packages including Gerbers, BOMs with LCSC part numbers, and pick-and-place files
- Implemented power management systems for battery-operated devices with optimized energy consumption
- Designed high-voltage switching circuits (220V AC) with proper isolation, safety features, and EMI considerations

Firmware Development:

- Developed embedded C/C++ firmware for ESP32, STM32, and Atmega microcontrollers with focus on stability and performance
- Implemented sensor integration via I^2C, SPI, UART with proper error handling and data validation
- Built WiFi connectivity features including MQTT communication, OTA updates, and cloud integration
- Created real-time control systems with interrupt-driven architectures and state machine logic

Mechanical Design:

- Created 3D enclosures in SolidWorks for electronics housing with proper component clearances
- Designed for thermal management, EMI shielding, and ease of assembly
- Produced photorealistic product visualizations using Blender for client presentations
- Iterated designs based on 3D printing prototypes and functional testing

Hardware Engineering Intern

TD4PAI Hardtech Hub | *June 2025 – December 2025* (6 months)

FCT, Abuja, Nigeria

Responsibilities & Achievements:

- Assisted in PCB design and prototype assembly for IoT sensor devices
- Learned 3D printing workflow optimization including material selection (ABS, PLA, nylon), temperature tuning, and post-processing techniques
- Discovered and implemented Creality Print software for wireless 3D printer control, eliminating USB drive workflow and enabling real-time print monitoring
- Designed and printed mechanical enclosures for Hub projects with iterative improvements based on functional testing
- Collaborated with multidisciplinary team on product development from concept through working prototype
- Gained exposure to design-for-manufacturing principles and production considerations

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EDUCATION

Bachelor of Technology in Physics Electronics
Federal University of Technology Akure | Akure, Ondo State, Nigeria
September 2020 – Expected August 2026

Relevant Coursework:
Digital Electronics | Microprocessor Systems | Embedded Systems Design | Power Electronics | Control Systems | Analog Circuit Design | Sensor Physics | Communication Systems

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PROFESSIONAL CERTIFICATIONS

Introduction to Electronics Simulation | Alison | May 2023 – June 2023

Introduction to the ESP32 Web Server | Alison | February 2023 – March 2023

Introduction to Arduino Programming | Temosan Technology | February 2021 – April 2022

Elementary Electronics | Temosan Technology | October 2020 – April 2021

AREAS OF INTEREST

Current Focus: IoT Device Development | Audio/Sensor Systems | Battery-Powered Electronics | Wireless Communication

Research Interests: Embedded AI | Edge Computing | Safety-Critical Systems | Renewable Energy Integration | Industrial Automation | Smart Agriculture

Future Directions: Advanced embedded systems, real-time operating systems, embedded Linux, machine learning on microcontrollers