Eden Gilbert Kiseka

Embedded Systems Developer & Technical Educator

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📍 Kampala, Uganda

SUMMARY

Embedded Systems Developer and Technical Educator with 3 years of professional experience in microcontroller programming, circuit design, and engineering education. Strong foundation in C/C++ programming for Arduino and AVR microcontrollers. Proven ability to design educational curriculum and mentor students through hardware-software integration challenges. Background in mobile development and data analysis provides unique perspective on IoT and connected systems. Currently expanding expertise in computer architecture and digital design.

EXPERIENCE

Technical Instructor - Embedded Systems

Neriko Electronics

Oct 2024 – Sep 2025
Kampala, Uganda

- Taught embedded systems programming to students using C, C++, and Arduino platform.
- Developed comprehensive curriculum covering microcontroller fundamentals through advanced IoT applications.
- Designed hands-on laboratory exercises demonstrating real-world embedded applications.
- Covered topics: GPIO programming, UART/SPI/I2C communication, ADC/DAC interfacing, PWM control, interrupt handling, timer programming.
- Instructed students in industry tools: PlatformIO (embedded development), TinkerCAD (circuit simulation), Fritzing (PCB design), Proteus (circuit simulation), AutoCAD Electrical (professional schematics).
- Created educational materials: lecture notes, circuit diagrams, code examples, project specifications.
- Mentored students individually through debugging hardware-software integration challenges.
- Taught systematic troubleshooting using multimeters, oscilloscopes, and logic analyzers.

Software Developer

Carthigan Inc.

Nov 2025 – Present
Kampala, Uganda

- Develop mobile applications with focus on African markets using Kotlin and modern Android architecture.
- Built production app serving 500+ users demonstrating complete software development lifecycle expertise.
- Apply systems thinking to complex technical challenges.
- Maintain focus on writing clean, maintainable code following industry best practices.

Lead Backend Engineer

Googah Goats Limited

Oct 2025 – Present
Kampala, Uganda

- Architect backend infrastructure using Google AppScript and JavaScript.
- Design automation systems and data workflows managing business operations.
- Build custom APIs and integration scripts connecting various services.
- Develop understanding of distributed systems and API design.

Data Analyst

Hammer Uganda Limited

2024 – Dec 2024
Kampala, Uganda

- Analyzed radio frequency signals for telecommunications network expansion (Huawei and Lyca Mobile contracts).
- Developed Python scripts for RF data processing and signal analysis.
- Created visualizations showing signal strength patterns, coverage gaps, optimization opportunities.
- Collaborated with RF engineers translating analytical insights into network planning recommendations.
- Gained exposure to wireless communication systems and signal propagation principles.

Software Developer
Freelance

2023 – 2024
Remote

- Developed mobile applications for clients using Kotlin, Swift, and React Native.
- Implemented backend systems and RESTful APIs.
- Managed complete project lifecycles: requirements, architecture, implementation, testing, deployment.

Software Developer
CoinPay

Aug 2023 – Dec 2023
Costa Rica (Remote)

- Developed components for fintech payment processing platform.
- Implemented secure payment workflows using React Native and native Android.
- Worked with distributed team using Agile methodologies and version control best practices.

EMBEDDED SYSTEMS PROJECTS

IoT Learning Projects
Arduino, C/C++, Sensors, Communication Protocols

Educational
Neriko Electronics

- **Environmental Monitoring System:** Temperature, humidity, air quality sensors with LCD display, SD card data logging. Demonstrated sensor integration and data persistence.
- **Home Automation Prototype:** Relay control for lights/appliances, Bluetooth smartphone integration, web-based control interface. Showed IoT connectivity and remote control.
- **Robotics Projects:** Line-following robots using IR sensors, obstacle avoidance with ultrasonic sensors. Taught motor control and sensor fusion.
- **Communication Systems:** UART between microcontrollers, I2C sensor networks, SPI display interfacing.
- **Tools:** Arduino IDE, PlatformIO, TinkerCAD (simulation), Fritzing (documentation), Proteus (advanced simulation).

Embedded Linux Development
C, Linux, Cross-Compilation, Raspberry Pi

Self-Study
Personal Learning

- Independent study of embedded Linux development and system programming.
- Cross-compilation for ARM architecture, device driver fundamentals exploration.
- GPIO programming on Raspberry Pi and single-board computers.
- Study of real-time operating systems and embedded Linux distributions (Yocto, Buildroot).

Microcontroller Programming
C, Microchip Studio, AVR, Bare-Metal

Learning
Personal Projects

- Developing proficiency with Microchip Studio for AVR and ARM microcontroller programming.
- Writing bare-metal firmware without Arduino abstractions, working directly with hardware registers.

- Implementing interrupt service routines, timer configuration for precise timing.
- Code optimization for resource-constrained environments.

Digital Design Fundamentals

Academic Study
Self-Directed

Verilog, FPGA, RISC-V Architecture

- Studying computer architecture and digital design independently.
- Learning Verilog/SystemVerilog for hardware description.
- Exploring RISC-V ISA and processor design concepts.
- FPGA development using Xilinx tools (foundational learning).

TECHNICAL SKILLS

Embedded Programming   C, C++, Arduino
Microcontroller Tools   Microchip Studio, PlatformIO, Arduino IDE
Communication Protocols   UART, SPI, I2C, GPIO, PWM
Peripherals   ADC/DAC, Timers, Interrupts, Sensors
Circuit Design   TinkerCAD, Fritzing, Proteus, AutoCAD Electrical
Debug Tools   Multimeter, Oscilloscope, Logic Analyzer
Platforms   Arduino (Uno, Mega, Nano), ESP32/ESP8266, STM32
Embedded Linux   Raspberry Pi, Cross-Compilation, Device Drivers

Software Development   Python, Kotlin, Java, JavaScript, Swift
Digital Design   Logisim, FPGA (learning), RISC-V, Logic Simulation
Hardware Description   Verilog/SystemVerilog (learning)
Version Control   Git, GitHub, GitLab
Development IDEs   VS Code, PlatformIO, Microchip Studio, Arduino IDE
Operating Systems   Linux, Windows
Build Systems   Makefiles, CMake, PlatformIO
Languages   English, Luganda, French

EDUCATION

Associate Degree in Electrical Engineering & Computer Science

2024 – 2027
United States

University of the People

Diploma in Electronics and Electrical Engineering

2024 – 2027
Uganda

Uganda Institute of ICT