Glen Muthoka Mutinda

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Profile

Final-year Electrical & Electronics Engineering student with hands-on embedded systems, digital design and low-level software experience. Strong foundation in C/C++, SystemVerilog and real-time systems developed through space-grade CubeSat firmware, FPGA designs and IC tape-out projects. Currently researching AI-driven optical authentication using GPU-accelerated Python. Comfortable working across hardware and software boundaries to deliver reliable, testable firmware for complex platforms.

Education

University of Southampton **Southampton, UK**
BEng Electrical & Electronics Engineering (Expected First Class) *2023–2026*
Key modules: Embedded Systems, Integrated Circuit Design, Digital Systems, Control Systems.
Second Year Project: TSMC 65nm IC Design & Fabrication (Team Lead).
Final Year Project: AI-Driven Optical Authentication Framework using Optical PUFs (Lead Researcher).

Selected Experience

ARTEMIS Small Sat-1 Lunar CubeSat Project **University of Southampton**
Junior Software Engineer *Sep 2023–Jun 2025*

- Developed flight firmware in C/C++ for a lunar CubeSat; reduced system latency by 6% via algorithmic optimisation and refactoring.
- Implemented unit testing frameworks and automated debugging procedures, increasing system reliability by 20%.
- Designed and validated real-time telemetry processing and ground-station interfaces; practiced disciplined code reviews using MISRA-like guidelines.

TSMC 65nm CPU Design: Led a 6-member IC design project from RTL through physical verification to GDSII submission for fabrication. Verified timing and power constraints using SPICE simulations and performed DRC/LVS checks. Demonstrated cross-disciplinary hardware/software integration awareness.

WattsApp (ESP32) — Embedded Firmware: Implemented embedded C firmware for an ESP32-based energy management system. Managed sensor integration (I2C/SPI/ADC), MQTT/Modbus communications, and reliable power measurement routines.

WinStream — Kernel / Driver Development: Developed a Windows virtual audio device and low-level components for system-wide audio capture; experience navigating kernel-mode development challenges and low-latency requirements.

FPGA Real-Time DSP: Designed SystemVerilog FIR notch filter on Altera Cyclone platform with deterministic latency (real-time audio processing). Familiar with timing closure, synthesis and simulation flows.

Relevant Projects

Galaxy Book Enabler: System-level tooling (PowerShell) that manipulates hardware profile and OS configuration; demonstrates deep OS/firmware interaction knowledge and careful packaging/auto-update behaviour.

eGPU Auto-Enabler: Background Windows service for PnP device monitoring and power management; highlights reliability engineering and device lifecycle handling.

Technical Skills

Languages: C (embedded), C++, SystemVerilog, Python, PowerShell

Embedded / Firmware: RTOS concepts, real-time telemetry, MCU (ESP32/STM32 basics), low-level peripherals (I2C, SPI, UART, ADC), unit testing for firmware

Hardware / Tools: FPGA flows (Quartus/Vivado), IC design flow concepts (Cadence/Calibre familiarity), LTSpice/ModelSim

Software Practices: Continuous Integration, Git, automated testing, build systems (Make/CMake), code reviews, MISRA-aware C practices

OS / Drivers: Experience with kernel-mode concepts and device driver interactions; system-level troubleshooting on Windows and Linux

Awards & Memberships

Member, IEEE; Active open-source contributor with multiple projects demonstrating system-level and embedded expertise.

Other

Right to Work: UK student visa (valid until 2026) — eligible for Graduate Route visa.