

PATIENCE NJERI MAINA

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SUMMARY

EDUCATION

Jomo Kenyatta University of Agriculture and Technology (JKUAT)

Bachelor of Science in Electronic and Computer Engineering | Expected Graduation: 2029

- **Relevant Coursework:** Object-Oriented Programming (C++), Data Structures & Algorithms, Computer-Aided Design (AutoCAD, SOLIDWORKS), Circuit Analysis, Electrical Machines.

TECHNICAL SKILLS

- **Languages:** C++, Python, C
- **AI & LLM Frameworks:** LangChain, Retrieval-Augmented Generation (RAG), ChromaDB, Gemini APIs, Vector Embeddings
- **Developer Tools & Environments:** Git, GitHub, VS Code, Code::Blocks, Linux/Bash, Streamlit, Pydantic, Google Colab
- **Engineering Tools:** SOLIDWORKS, AutoCAD

PROJECTS

RestoGuide AI — Domain-Specific RAG Knowledge Assistant | *Python, LangChain, ChromaDB, Streamlit, Gemini API*

- Architected and implemented a decoupled, record-based Retrieval-Augmented Generation (RAG) assistant delivering sub-3s query responses for restaurant standard operating procedures (SOPs).
- Engineered an isolated vector pipeline pairing gemini-embedding-001 with ChromaDB, achieving **100% Hit Rate @ k=3** across a 30-query ground-truth benchmark.
- Implemented strict system guardrails and deterministic relevance filtering (relative floor at 0.75 gate / 0.10 margin), reaching a **100% refusal rate** on out-of-domain queries with zero hallucinations.
- Deployed a responsive Streamlit interface featuring role-based quick-action workflows for front-of-house and kitchen operations.

Personal Finance Management System | *C++, Code::Blocks, File I/O*

- Developed a modular, console-based personal finance management application applying core OOP principles (encapsulation, inheritance, polymorphism, abstraction).
- Implemented custom data structures: dynamic `std::vector` for record tracking, `std::stack` for multi-level transaction undo operations, and `std::queue` for pending bill pipelines.

- Integrated persistent flat-file storage, PIN-based user authentication, automated budget-limit alerts, and an algorithmic loan eligibility/interest calculator.

Single-Phase Transformer Parameter & Regulation Analysis | *Electrical Engineering Lab*

- Evaluated single-phase transformer performance parameters using open-circuit (OC) and short-circuit (SC) test empirical datasets.
- Derived equivalent circuit parameters, operational efficiency metrics, and voltage regulation across varying inductive and resistive load profiles.

CERTIFICATIONS & BOOTCAMPS

- **AI Career Essentials (8-Week Program)** – ALX Africa (Completed July 2024)
- **Software Development & AI Attachment Bootcamp** – Wecancode (2026)

LEADERSHIP & COMMUNITY

Deputy Outreach Lead – High School Community Service Initiative (Eldoret, Kenya)

- Organized volunteer logistics and coordinated hands-on support, meal preparation, and interactive activities for students at an Eldoret school for children with special needs.