Samson Kinyanjui
sammainah.com
github.com/sammainahkinya1404

Email : sammainah98@gmail.com
Mobile : +254 791 848 007

Skills

- **Languages**: Python, JavaScript, SQL
- **Machine Learning & Deep Learning**: TensorFlow, PyTorch, Scikit-learn, Transformers (BERT, sentence-transformers), CNNs (ResNet, VGG), GRAD-CAM
- **Computer Vision**: Image classification, object detection, medical imaging, explainable AI
- **NLP & RAG Systems**: Document embeddings, vector search, retrieval-augmented generation, semantic search
- **Frameworks**: Flask, FastAPI, Django, React, Next.js
- **Databases**: PostgreSQL, MySQL, MongoDB, Vector databases
- **DevOps & Cloud**: Docker, GitHub Actions, AWS (EC2, S3, Lambda)
- **ML Engineering**: Data pipelines, model deployment, hyperparameter tuning, feature engineering

Education

- **Dedan Kimathi University of Technology** — Nyeri, Kenya
  Master of Science in Computer Science; — *Oct. 2023 – May. 2026*
- **Dedan Kimathi University of Technology** — Nyeri, Kenya
  Bachelor of Science in Information Technology — *May 2019 – Apr. 2023*

Experience

- **Freelance Machine Learning Engineer** — Remote
  Jan 2022 - Present
  - **ML Model Development**: Built and deployed production ML models including RAG systems, NLP chatbots, and computer vision applications using TensorFlow and PyTorch.
  - **Deep Learning Pipelines**: Designed end-to-end data pipelines for preprocessing, training, and deploying transformer-based models for document retrieval and semantic search.
  - **API Development**: Developed RESTful APIs using Flask/FastAPI for ML model serving, with comprehensive documentation and authentication flows.
  - **Cloud Deployment**: Deployed containerized ML applications on AWS (EC2, S3, Lambda) with CI/CD pipelines using Docker and GitHub Actions.
- **Graduate Research Assistant** — Dedan Kimathi University of Technology
  Nyeri, Kenya — *Oct 2023 - Present*
  - **Deep Learning Instruction**: Taught and mentored students on CNN, RNN, and Transformer architectures including BERT, GPT, and Vision Transformers for computer vision and NLP applications.
  - **Computer Vision Projects**: Guided students through image classification, object detection, and medical imaging projects using PyTorch and TensorFlow.
  - **Model Optimization**: Reviewed and improved student ML models through hyperparameter tuning, architecture modifications, and transfer learning techniques.
  - **Research Support**: Assisted in computer vision and NLP research projects involving data preprocessing, feature engineering, and experimental design.

Projects

- **CGT Brain - RAG System for Tax Queries**: Built production RAG backend using FastApi with transformer-based document embeddings, vector search, and semantic retrieval. Implemented REST API with comprehensive Swagger documentation. `Live`
- **Kenyan Business Investment Chatbot**: Developed ML-powered chatbot using transformer models (BERT, sentence-transformers) with React frontend and Flask backend, fine-tuned on Kenyan economic datasets for business intelligence. `Live`
- **CORD-19 Topic Clustering & NLP Pipeline**: Built unsupervised NLP pipeline for COVID-19 research articles using LDA, K-means, and transformer-based embeddings for semantic document clustering and topic modeling. `GitHub`

Publications

- **Automatic Detection and Classification of Gastrointestinal Pathological Findings**: **Kinyanjui, S.**, Moso, J., and Gikunda, P. Developed hybrid ResNet50-CNN architecture with GRAD-CAM for explainable medical image classification. *IST-Africa 2025*. DOI: 10.23919/IST-Africa67297.2025.11060502
- **Topic Clustering of COVID-19 Medical Literature Using LDA and K-Means**: **Kinyanjui, S.** and Kituku, B. Implemented unsupervised NLP pipeline for clustering COVID-19 research using LDA and K-means. *IEEE ICT4DA 2025*. DOI: 10.1109/ICT4DA67218.2025.11282626
- **Financial Health Assessment for Households in Kenya**: **Kinyanjui, S.**, et al. *IEEE ICT4DA 2024*, pp. 90-95. DOI: 10.1109/ICT4DA62874.2024.10777274