

Samuel MATIA KANGONI

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Education

University of Kinshasa

Aug 2021 – Aug 2025

Polytechnic Faculty, Bachelor in Electrical and Computer Engineering

Institut Cardinal Malula – Kinshasa

Completed in 2020

Secondary School, Biochemistry Section

Ranked **1st school-wide (Valedictorian)**, with a score of **79%** at the National Exam

Publications

- **Samuel Matia Kangoni**, Obed Tshimanga Tshipata, Pierre Sedi Nzakuna, Vincenzo Paciello, Jean Gilbert Mbula Mboma, Jean Robert Makulo, Kyandoghere Kyamakya.
Enhancing Sentiment-driven Recommender Systems with LLM-Based Feature Engineering: A Case Study in Drug Review Analysis.
IEEE Access, 2025. DOI: 10.1109/ACCESS.2025.3590326
- **Samuel Matia Kangoni**.
Machine Learning in Malware Analysis.
Book chapter submitted for publication in **Mastering Malware Development and Analysis: A Comprehensive Guide to Hybrid Malware Analysis and Virtual Sandboxing**,
Edited by Dr. Bishwajeet Pandey, Dr. Deepak Bhaskar Acharya, and Ms. Divya B., **Apple Academic Press**, 2025.

Research Interests

- AI for Healthcare
- Natural Language Processing (NLP), with a focus on developing efficient architectures and evaluation methods for large-scale language models.
- Large Language Models (LLMs), including optimization for low-resource settings and domain adaptation.
- Low-Resource Automatic Speech Recognition (ASR) and cross-lingual transfer learning.
- Differentiable Programming and integration of domain-specific constraints into neural architectures.
- Reinforcement Learning for decision-making and adaptive model behavior.
- Recommender Systems, with emphasis on explainability and personalization through multimodal and contextual signals.

Skills

- **Concepts** : Machine Learning, Deep Learning, Natural Language Processing, Recommender Systems, Differentiable Programming, Computer Vision, Reinforcement Learning, Physics-Informed Neural Networks, Web Development.
- **Frameworks** : PyTorch, TensorFlow, Numpy, LangChain, HuggingFace, Scikit-learn, OpenCV, ZenML, Pandas, Matplotlib, Streamlit, Django.
- **Programming & Development** : Python, Java, MATLAB, Git, Docker, HTML & CSS.
- **Research** : Research & Problem-Solving Skills, LaTeX.
- **Cloud** : AWS (basics), GCP (basics)

Experience

CongoExcelTechnologies

Jul 2024 – Mar 2025

AI engineer

- Designed and implemented end-to-end Generative AI solutions using Retrieval-Augmented Generation (RAG), integrating vector databases and web scraping pipelines to build custom knowledge systems.
- Developed robust connectors and automation scripts to integrate AI solutions with third-party APIs and internal databases, enabling real-time data retrieval and processing.
- Continuously evaluated and benchmarked new AI models, tools, and frameworks (LLMs, embeddings, fine-tuning strategies), integrating the most effective ones to enhance solution performance and relevance.

PathOr Platforms (remote – India)

Sep 2024 – Nov 2024

AI engineer intern

- Built and deployed task-specific LLM agents for shopping assistance, data analysis, and workflow automation, using modular programming and prompt chaining strategies.
- Scraped and structured large-scale datasets from e-commerce platforms and analytics dashboards to feed agent decision-making processes.
- Designed and fine-tuned custom language models and embedding pipelines to align agent behavior with specific user intents and domain knowledge.

Huawei (remote – Morocco)

Jul 2024 – Jul 2024

Seeds for the future intern

- Initiated and led a Tech4Good project for the DRC team, proposing innovative technologies to support global sustainability and digital inclusion efforts.
- Gained foundational knowledge in ICT infrastructure, including 5G networks, cloud computing, and digital power systems, through training sessions and hands-on activities.

Mentorness (remote – India)

May 2024 – Jun 2024

AI/Machine learning intern

- Developed a YouTube Script Generator that transforms multiple video transcripts into cohesive scripts using the YouTube Transcript API, Google Gemini API, Langchain, and Streamlit for a seamless user interface.
- Designed and deployed machine learning models for time series forecasting and multi-class classification, focusing on real-world datasets and model interpretability.
- Built a voice-enabled chatbot by integrating HuggingFace transformers with OpenAI Whisper API, enabling real-time speech-to-text and conversational AI interactions.

IA Flex Start (remote – France)

Dec 2023 – Mar 2024

AI consultant

- Integrated LLMs into production-ready applications via custom APIs, enabling seamless interaction with external tools.
- Performed end-to-end data preprocessing, including data cleaning, integration, and transformation.

Orange (Summer challenge 2023)

Jul 2023 – Oct 2023

AI/Machine Learning Intern

- Developed the Utulivu system for autism screening, combining a surveillance robot, smart bracelet, and mobile app to enable two-phase behavioral diagnosis using AI.
- Deployed an object detection model on Raspberry Pi using TensorFlow for real-time visual analysis.
- Built a hybrid recommendation system integrating collaborative and content-based filtering for personalized media content and trained and validated a high-accuracy machine learning model for early autism detection.

Leadership and Community Engagement

Zindi Africa

Oct 2024 – Sept 2025

Country ambassador (Democratic Republic of Congo)

- Built and led a dynamic community of 200+ members to promote data science and AI in the DRC, actively preparing future leaders to sustain Zindi's presence with Country and University Ambassadors.
- Organized workshops, hackathons, and competitions to engage local talent, collaborated with organizations on social-impact projects, and hosted events to showcase Zindi's resources and opportunities.

Polytechnic Faculty, University of Kinshasa

Jul 2025 – Jul 2026

Project Coordinator and Informatic & AI Lab Manager

- Managed the Faculty's Informatic & AI lab and server infrastructure, partnering with faculty and external stakeholders on projects.
- Mentored and coordinated student research initiatives, fostering innovation in AI and computer science.

IngenieuxSud

Dec 2023 – Jul 2024

Challenge of feeding goats with silage (FARRE Farm/Kinshasa Kimwenza) in collaboration with students from UC Louvain

- Evaluated silage feasibility for goat feeding at FARRE Farm, estimated the quantity needed for the herd's nutritional needs, and assessed goats' acceptance of different silage samples.

Google Developer Students Club

Jul 2023 – Jul 2024

Co-lead of the University of Kinshasa's chapter

- Co-led the University of Kinshasa chapter, coordinating technical events and workshops.
- Mentored students to develop their skills in software development and AI.
- Facilitated collaboration between members and external partners to boost community engagement.

Awards and distinctions

Hackathon TechPoly 2024

First prize

- **Mat.IA (Multilingual Augmented Tutor.IA)** – Solo project: Developed a real-time web application for language learning, integrating object detection (computer vision), LLM-based dialogue (NLP), and text-to-speech (audio processing).

Orange Summer Challenge 2023

Second prize for the Utulivu Project. See Experience section

Languages

French (Native), **English** (Professional), **Kikongo** (Professional), **Lingala** (Professional)