

Damour Nsanzimfura

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Education

MSc in Engineering AI

Carnegie Mellon University

May 2025

- **Relevant Coursework:** Applied Machine Learning, Deep Learning, Big data, Cloud Computing, AI Systems Design

BSc in Robotics

Vladimir State University

2017 – 2022

- **Relevant Coursework:** Data Structures, C++, lisps, control systems
- Graduated with First Class Honors (3.7/4.0 GPA)

Work Experience

Wekraft Ltd

AI Engineer

Kigali, Rwanda

July 2024 – Present

- Architected and delivered **SkillSeed**, an AI-powered learning platform for students (ages 6–18) that personalizes career exploration through adaptive content and recommendations.
- Implemented a **microservices architecture** with NestJS and MongoDB, incorporating JWT authentication and role-based access for students, mentors, and administrators.
- Integrated **OpenAI APIs** to generate interest-based quizzes and career recommendations, increasing student engagement by 40%.
- Designed data analytics dashboards for schools and parents to monitor progress and allocate learning resources more effectively, reducing admin overhead by 35%.
- **Skills:** NestJS, MongoDB, React, OpenAI API, Docker, AWS.

Upanzi Network, CyLab Africa

Machine Learning Engineer

Kigali, Rwanda

May 2023 – Dec 2023

- Led the **HumekaFL** research project on neonatal asphyxia detection using federated learning, collaborating with patterned hospitals across Africa.
- Designed and implemented an end-to-end data pipeline for processing and augmenting the Baby Chillanto Infant Cry database (1,049 healthy, 879 deaf, and 340 asphyxiated infant recordings). Leveraged Apache Spark and Python for scalable data pre-processing, including noise reduction and feature extraction (MFCCs, spectral centroid, spectral rolloff).
- Utilized PyTorch and ResNet50 to build a CNN classifier, achieving 96% accuracy. Deployed the model using AWS SageMaker, ensuring scalability and reproducibility.
- **Skills:** PyTorch, TensorFlow, Flask, Docker, Secure Aggregation.

UpWork

Full Stack Developer

Kigali, Rwanda

Jan 2023 – Apr 2023

- Developed and delivered a web application for a neonatal birth asphyxia detection bridging the gap between high maternal deaths and shortage of trained medical professionals. Designed a responsive user interface through Figma and implemented it using React, Node.js, ensuring accessibility across all devices.
- Built a secure RESTful APIs with Node.js, Express.js, and MongoDB, integrating authentication methods like JWT and OAuth to protect user data and comply with data protection standards. Streamlined deployment using GitHub Actions, AWS, and Heroku, reducing deployment time by over 2 hours per iteration.
- Achieved a 25 % increase in volunteer sign-ups and reduced administrative workload by 30 %, freeing up 10 hours per week for volunteer administrators to focus on community outreach.
- **Skills:** Data Analysis, AI Education Policy, Curriculum Design, Stakeholder Engagement.

Projects

SkillSeed

github.com/nsarob/

- Developed an **AI-powered platform** that helps learners explore their passions and build future-ready skills through personalized learning paths.
- Implemented recommendation logic powered by OpenAI APIs and a microservices backend using NestJS and MongoDB.
- **Skills:** React, NestJS, MongoDB, OpenAI API, AWS.

Agentic Farm Monitoring System

github.com/nsarob/

- Built an **agentic farm management tool** enabling non-technical users to control and query IoT-based SCADA systems through natural language.
- Achieved **90–100% task completion accuracy** across multiple farm operations, improving reliability and operational efficiency.
- **Skills:** Python, FastAPI, LangChain, MQTT, Edge AI.

Edge LLM Framework for Secure EHR Interaction

github.com/nsarob/pat-ai

- Developed a **privacy-preserving RAG framework** for local, secure interactions with Electronic Health Records (EHR).
- Achieved high alignment between RAG outputs and ground-truth responses, demonstrating strong precision, recall, and F1-scores.
- **Skills:** LangChain, OpenAI, Docker, RAG, Secure Local Inference.

Achievements & Awards

- AWS All Builders Welcome Grant Recipient, 2025 Las Vegas
- 8 + AWS Cloud Badges on Credly (Cloud Practitioner, Architect, AI/ML, ...)
- First Class Honorary Award — Vladimir State University
- 2nd Runner-Up — Rwanda CyberStars CTF, 2020