Carnegie Mellon University

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SUMMARY

I am a graduate research assistant and a final year Masters student in Engineering Artificial Intelligence under the College of Engineering at Carnegie Mellon University, where I focus on machine learning and computer vision. My research focus is on Deep Learning for computer vision and its applications in medical image analysis, healthcare and autonomous systems.

EDUCATION

M.Sc. in Engineering Artificial Intelligence — August 2024-Present
Carnegie Mellon University
Specialization: Machine learning & Applied Computer Vision

B.Sc. (Hons) Software Engineering — October 2022-May 2024
ICT University
CGPA: 3.65 / 4, ranked 1st in department

HND in Computer Engineering — September 2020- July 2022
Siantou University Institute
Specialization: Software Engineering
Grade: Distinction

PROFESSIONAL EXPERIENCE

AI Research Intern — July 2025 – Present
Autonomous Intelligence Lab, Westlake University
Zhejiang, China
- Developing a framework that leverages pathology vision-language models (VLMs) for zero-shot cancer diagnosis. Introduced an entropy-based confidence measure to trigger multi-run inference, improving classification robustness for rare tumours.

Graduate Research Assistant — June 2025 – Present
Carnegie Mellon University – Makerere University CHS (Joint Research)
Rwanda, Uganda, Hybrid
- Conducting research on low-cost, non-invasive tuberculosis screening using deep learning models trained on solicited cough sounds. This work aims to enable early Tuberculosis (TB) detection in low-resource settings through audio-based classification.

Graduate IT Associate - Full Stack developer — August 2024 – May 2025
Carnegie Mellon University
Rwanda, USA
- Leveraged the MERN stack to develop, manage and enhance the performance and scalability of Carnegie Mellon University Africa's job board, migrating existing Java backend infrastructures to Node/Express.JS
- Working with a hybrid team, integrated data visualization and actionable insights into the CMU-Africa opportunities job board to enhance decision-making and user engagement

Systems Automation Engineer Intern — October 2023 – February 2024
ORION Inter-African Insurance and Reinsurance LTD
Cameroon
- Designed and implemented desktop software in Visual Basic to streamline insurance data workflows, optimize document retrieval, and embed data visualization for insight-driven operations.
- Enabled efficient data access and improved decision support through automated processing and visual analytics.

Founder — December 2022 – June 2024
ESchools LMS
Cameroon
- Led the development of ESchools LMS, an AI-powered learning management platform integrating AI chatbots and automation to support full online learning for students, teachers, and administrators in Cameroon through a learning management system.

RESEARCH & PROJECTS

Multi-defense framework against adversarial attacks on deep learning medical imaging models
Carnegie Mellon University (Summer 2025, Research) *Supervisor: Prof. Prasenjit Mitra*

- Research to propose a multi-defense framework for deep learning medical imaging models (ResNet18 and VGG16) against PGD and DeepFool adversarial attacks, integrating adversarial training, input preprocessing, and model ensembling.
- Evaluating the framework on the Breast Cancer histopathology dataset to enhance the robustness of deep learning usage in medical image analysis and clinically applicable AI diagnostics.

Evaluating Health Facility Distribution and District-Level Disease Prevalence in Rwanda: A Data-driven Approach

Carnegie Mellon University, (Spring 2025, Research) *Supervisor: Prof. Emily Aiken*

Accepted at European Public Health Conference (EPH), 2025

- Analysed healthcare facility distribution in Rwanda, using geospatial analysis and machine learning to address disparities in Malaria, TB, and HIV care.
- Proposed a data-driven model to optimize healthcare resource allocation, enhancing accessibility and health outcomes across sub-Saharan Africa, applicable to other countries.

Real-Time Sign Language Recognition and Speech Transcription using Deep Learning

Carnegie Mellon University, (Spring 2025, Project)

- This project employs a Convolutional Neural Network (CNN) trained on the Sign Language MNIST dataset to classify American Sign Language (ASL) hand signs from live video input via Mediapipe.
- The classified gestures are then converted into spoken words using a text-to-speech engine, enabling real-time audio feedback.

Adaptive Behavioral Planning for Autonomous Vehicles in Unstructured Urban Environments

Carnegie Mellon University, (Spring 2025, Project)

- Developed a vision-based system using computer vision (OpenCV, MMDetection, MMAction2) to estimate pedestrian crossing intent in African cities enhancing Autonomous Vehicle safety.
- Proposed an adaptive framework with a PCB algorithm, leveraging the PIE dataset and real-time probabilistic modelling to improve motion prediction in high-uncertainty settings.

ClimateSmart: Smart agriculture for a greater harvest

ICT University (Spring 2024, Project)

- Developed ClimateSmart, a smart agriculture web application that leverages real-time location and environmental data to recommend optimal farming practices, fertilizer use, and planting seasons.
- Integrates GPT-3.5 pretrained model from OpenAI for AI farm practices and recommendations, tailored guidance to farmers anywhere in the world, based on crop type and farm location, aimed at increasing yields and promote data-driven, climate-resilient agriculture in low-resource settings.

MindArt: AI Image Generator

ICT University (Spring 2024, Project)

- Developed a text-to-image generation application using OpenAI's GPT-3.5 model to convert natural language prompts into AI-generated images.
- Built and deployed a user-friendly web application with a Handlebars.js frontend, integrating privacy safeguards and bias mitigation strategies to promote ethical and inclusive image generation.

Brain Tumor Screening

ICT University, (Fall 2023, Project)

- Detection of brain tumors in MRI images through a deep Convolutional Neural Networks (CNN), implemented in TensorFlow, with datasets from Kaggle.
- Achieved 99.0% model accuracy, surpassing previous benchmarks on kaggle, built a web app which enabled brain tumor detection from uploaded MRI scan images

SKILLS & CERTIFICATIONS

- Skills: Problem solving, collaboration, communication, Software, machine learning, deep learning
- Technologies : Python, C/C++, JavaScript, Java, Git, Jupyter, Matlab, LaTex
- Libraries and frameworks: Pytorch, Tensorflow, NumPy, pandas, Open-CV, CMake, Flask, Scikit-learn, GeoPandas, NodeJS, ExpressJS, ReactJS, React Native, Angular
- Languages: English (Native), French (Advanced)
- Certifications: AWS Cloud foundations, Secure full stack MEAN developer (EC-Council), Project Management (Google), Machine learning Specialization (Stanford)

INTERESTS & ACHIEVEMENTS

- Interest: Deep Learning, Computer vision, LLMs, Medical Image Analysis, Generative AI
- Achievements: CMU Student Induction best project, B.Sc. department Valedictorian, Cameroon national PremierDev tech award winner 2023, ICT University fellowship of excellence award