Ahmed Tahiru Issah

Contact Information
Email: aissah@andrew.cmu.edu LinkedIn: Profile Link

EDUCATION

Master of Science in Engineering Artificial Intelligence
Carnegie Mellon University
Graduated: May 2025 | *CQPA: 3.64 / 4.00*

Bachelor of Science in Computer Science
University for Development Studies
Graduated: 2021 | *CGPA: 4.43 / 5.00*

RESEARCH INTERESTS

My research interests lie at the intersection of machine learning and medical imaging. I am broadly interested in developing and applying computer vision and deep learning techniques to complex, high-dimensional medical data across diverse imaging modalities, such as MRI, ultrasound, and microscopy, to build robust and interpretable diagnostic and analytical tools. My goal is to contribute to research that bridges the gap between advances in AI and their practical application in clinical settings, with a particular interest in solutions that can scale to low-resource healthcare environments.

PUBLICATIONS

Accepted for Publication:

1) **A. T. Issah**, C. P. Mukamakuza, “Bridging the Gap in Malaria Diagnostics: An Attention-Centric YOLO Framework with Species-Specific Augmentation for Tiny Parasite Detection in Low-Resource Settings”, **AIMedHealth26 Bridge, AAAI 2026 Conference**, Singapore, January 2026.

2) **A. T. Issah**, I. Seidu, E. A. Adjei, M. Aman, A. A. Biyabani, “KG-Rank-Plus: Enhancing LLM-Based Medical Question Answering with Multi-Hop Knowledge Graph Traversal and Ranking Techniques”, **IEEE AFRICON 2025**, Polokwane, South Africa, December 2025.

3) A. L. Bernes, **A. T. Issah**, M. H. A. Baaki, C. Ingabire, T. Olusuyi, M. Adewole, U. C. Anazodo, T. Brown, “Empowering Medical Equipment Sustainability in Low-Resource Settings: An AI-Powered Diagnostic and Support Platform for Biomedical Technicians”, Medical Image Computing in Resource Constrained Settings **(MIRASOL), MICCAI 2025,** Daejeon, South Korea, September 2025.

In Preparation:

4) I. Seidu, A. Destin, C. P. Mukamakuza, K. Harerimana, **A. T. Issah**, H. Usman, A. Apgar, “Web-Based Automated Malaria Diagnosis Using YOLOv10: A Clinical Decision Support System”, **Pathogens**, Parasitic Helminths and Control Strategies.

5) **A. T. Issah**, G. Okeyo, "Knowledge Graph-Constrained LLM for Pest and Disease Advisory"

RESEARCH EXPERIENCE

1. Co-first Author - *Empowering Medical Equipment Sustainability in Low-Resource Settings: An AI-Powered Diagnostic and Support Platform for Biomedical Technicians)*
Carnegie Mellon University

- Developed an AI-powered diagnostic platform to assist biomedical technicians in repairing medical devices in real-time, addressing critical equipment underutilization in LMICs.
- Engineered the core system, integrating a Large Language Model (LLM) with a web interface to provide interactive diagnostic and repair support.
- Co-first-authored paper **accepted** and presented at MIRASOL, at the **MICCAI 2025 conference**.

2. First Author - *KG-Rank-Plus: Enhancing LLM-based Medical Question Answering with Multi-Hop Knowledge Graph Traversal* | *Carnegie Mellon University*

- Developed an enhanced framework, KG-Rank-Plus, to address factual inconsistencies in LLM-based medical question-answering.
- Engineered a novel **multi-hop knowledge traversal** mechanism for medical knowledge graphs, enabling the model to reason over more complex clinical queries than single-hop methods.
- First-authored research paper **accepted** for publication at the **IEEE AFRICON 2025 conference**.

3. Graduate Research Associate (Lead Researcher) - *Malaria Parasite Detection and Classification*
Carnegie Mellon University

- Led an end-to-end computer vision project for the automated diagnosis of four malaria parasite species from a large-scale dataset of over 7,000 blood smear images.
- Trained and benchmarked state-of-the-art object detection models (including YOLOv12, YOLOv8, Mask R-CNN, and Faster R-CNN), achieving a high mean Average Precision (mAP50) of 87.8%.
- First-authored research paper **accepted** for publication at AIMedHealth, **AAAI 2026 Conference**.

4. Natural Language Developer & Knowledge Management Expert (Lead Researcher) - *Knowledge Graph-Driven Advisory Platform for Crop Disease and Pest Management*
Carnegie Mellon University & Kigali Collaborative Research Center (KCRC)

- Co-authoring and developing a multi-agent advisory system for crop pest and disease diagnosis to support smallholder farmers and agricultural service providers in Rwanda.
- Architecting the core of the system, which combines iterative, user-steered Knowledge Graph (KG) refinement with GraphRAG (Retrieval-Augmented Generation) chatbot technologies.

TEACHING EXPERIENCE

Graduate Teaching Assistant | *Carnegie Mellon University*

- *Introduction to Deep Learning (11-785)* | *Jan 2025 - Present*
- *Data Inference and Applied Machine Learning* | *Sep 2024 - Dec 2024*

TECHNICAL SKILLS

Python, PyTorch, LangChain, LlamaIndex, PHP, JavaScript**,** Git, AWS, GCP, PSC, SQL, Flask