

# Edward Ajayi

+250795008889 | [eaajayi@andrew.cmu.edu](mailto:eaajayi@andrew.cmu.edu)  
<https://edwardajayi.github.io/>

## EDUCATION

### Carnegie Mellon University

*Master of Science in Engineering Artificial Intelligence*

*Aug. 2024 – Present*

- **Relevant Courses:** Natural Language Processing, Deep Learning, Question Answering with LLMs
- **Specializations:** Data Science, Machine Learning, NLP
- **GPA:** 3.77/4.0

### Ekiti State University

*Bachelor of Science in Computer Science*

*Oct. 2014 – Nov. 2019*

- **Specializations:** Computer Science
- **GPA:** 4.17/5.0

## RESEARCH INTERESTS

Socially Aware AI, Multimodal Reasoning, Computational Humor, Culturally Grounded NLP, AI for Healthcare

## SELECTED PUBLICATIONS

1. **E. Ajayi**, M. Kachweka, M. Deku, and E. Aiken. *A Machine Learning Approach for Detection of Mental Health Conditions and Cyberbullying from Social Media. Proceedings of Machine Learning Research (PMLR) / AAAI-26 AIMedHealth Bridge (Oral)*. 2025. [\[Paper Link\]](#)
2. **E. Ajayi** and P. Mitra. *Automatic Humor Detection: From Theoretical Foundations to Large Language Models*. Submitted to *ACM Computing Surveys*. 2025. [\[Manuscript Link\]](#)
3. **E. Ajayi**, B. Tadele, E. Umwari, M. Deku, P. Singadi, C. Edeh, and J. Udahemuka. *Language Diversity: Evaluating AI Performance on African Languages*. arXiv Preprint. 2025. [\[arXiv Preprint\]](#)

## EXPERIENCE

### Research Assistant

*Spatial and Language Technologies Lab, CMU*

*Aug. 2025 – Dec. 2025*

- Conducting research on NLP for automatic humour detection and generation, dataset preparation, model development, and evaluation.
- Contributing to projects on low-resource language technologies and advancing cultural understanding in large language models.

### Graduate Researcher

*Carnegie Mellon University*

*Jan. 2025 – Present*

- Researched machine learning methods for detecting mental health conditions and cyberbullying from social media, resulting in a paper accepted at AAAI-26.
- Conducting two ongoing research projects in Question Answering with Large Language Models, focusing on reasoning, evaluation, and robustness.

### Research Intern - Business Automation

*Carnegie Mellon University*

*Jun. 2025 – Aug. 2025*

- Developing and prototyping an agentic AI framework to automate complex business workflows.
- Researching and implementing AI safety protocols and robust LLM reasoning for ethical alignment and deployment.
- Analyzing agent performance to establish benchmarks for human-in-the-loop oversight and develop explainability metrics to support transparent corporate accountability.

### Client Service Officer

*Stanbic IBTC Bank*

*Dec. 2021 – Jul. 2024*

- Leveraged data-driven insights to cross-sell over N400M in assets, enhancing client trust and digital adoption by 25%.
- Managed client relationships, identifying service gaps to improve operational efficiency.

## TECHNICAL SKILLS

**Languages:** Python, SQL, Bash

**Generative AI & LLMs:** LangGraph, OpenAI Agents SDK, RAG, LLM Fine-Tuning, Prompt Engineering, DPO

**Deep Learning & ML:** PyTorch, Hugging Face Transformers, Scikit-Learn, NumPy, Pandas, Matplotlib, Seaborn

**Natural Language Processing:** spaCy, NLTK, Sentiment Analysis, Text Processing

**Data Engineering & Ops:** Docker, AWS, FastAPI, Neo4j, BeautifulSoup, Jupyter

PROJECTS

---

- Multilabel Machine Learning System for Mental Health and Cyberbullying Detection**
- Built a full ML pipeline for multilabel detection of mental health conditions, and cyberbullying using classical models and transformer-based embeddings.
  - Produced results leading to an *Oral* paper acceptance at AAAI-26 AIMedHealth. [\[arXiv\]](#)
- AfriEcon-QA: Hybrid RAG Benchmark for Economic QA** | *Python, LangChain, RRF*
- Developed **AfriEcon-QA**, a closed-domain QA benchmark for economic reports, validating the necessity of a **Hybrid Reciprocal Rank Fusion (RRF)** strategy for precision.
  - Analyzed LLM scaling limits, identifying context instability in open-weight models (Qwen-2.5) under deep retrieval, informing robust RAG deployment.
- HumorGen: Cognitive Synergy for Constrained Text Generation (Work in Progress)** | *Qwen-7B, DPO, Distillation*
- Designing a multi-agent framework that merges divergent reasoning chains to address semantic rigidity in constrained creative writing.
  - Prototyping a distillation and alignment pipeline for Qwen-7B using a custom reasoning bridge and Direct Preference Optimization (DPO) to better handle lexical constraints.
- MyTorch – A Minimal Deep Learning Framework Built from Scratch** | *Python*
- Implemented core tensor ops, autograd, activation layers, and SGD without deep learning libraries.
  - Designed a PyTorch-style API enabling end-to-end training and illustrating neural network internals.
- AI Workflow Automation Agent** | *Python, LangChain, FastAPI, Google Sheets API, SMTP*
- Built an autonomous agent that processes Google Form submissions, categorizes requests, and triggers approval workflows.
  - Automated notifications and integrated a QA agent that validates updates and writes results in real time.

TRAINING & CONFERENCES

---

- Participant, Deep Learning Indaba 2025** Rwanda  
*Deep Learning Indaba* Aug. 2025
- Attended workshops on deep learning, AI for social good, and research collaboration across African universities.
- Participant, Digital Humanities Summer School** Rwanda  
*DIGIHUM/CMU-Africa* Jul. 2025
- Engaged in computational methods for humanities research, including NLP applications.

VOLUNTEERING/LEADERSHIP

---

- President, CMU-Africa Research Club** Jan. 2025 – Dec. 2025  
*Carnegie Mellon University*
- Led 12 major events in 2025 supporting student research.
  - Launched website with research guides, conference updates, and collaboration hub.
  - Organized first Student Research Showcase with 20+ posters and workshops.
  - Hosted three-part PhD Application Series, faculty sessions, and alumni panels supporting 40+ students.
  - Collaborated with ACM SIGCOMM and Upanzi Network for remote conference participation.
  - Built an active research ecosystem that provided critical peer support, contributing to over 20 student acceptances to top-tier venues including NeurIPS and AAAI in 2025.
- Reviewer, AAAI AIMedHealth Bridge 2026** Nov. 2025 – Nov 2025  
*AI for Medicine and Healthcare*
- Reviewed submissions in applied machine learning and AI for healthcare under the AAAI AIMedHealth Bridge 2026 program.
- IEEE Student Member, CMU-Africa** Feb. 2025 – Present  
*Institute of Electrical and Electronics Engineers*
- Collaborating with IEEE members to advance research initiatives among club members.

CERTIFICATIONS

---

- Microsoft Certified Azure Data Scientist Associate - [View](#)
- DataCamp Python Data Associate - [View](#)

HONORS AND AWARDS

---

- Mastercard Foundation Scholarship, Carnegie Mellon University Africa
- Federal Scholarship Board Award for Undergraduates, Ekiti State University