

PRINCE MIREKU

Student Researcher @ Google | MSc Student @ Ashesi
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RESEARCH INTEREST

Biomedical NLP, ML for Social Good, Interpretability, Machine Learning Applications in Healthcare and Medicine, Multilingual NLP

EDUCATION

Ashesi University 2025 - 2027 (*expected*)
MSc. Intelligent Computing Systems

Stanford Precision Medicine Certification Program May 2025 - Jul. 2025
Stanford x ALx

University for Development Studies 2019 - 2023
B.Sc. Computer Science
CGPA: 4.54/ 5.0 (First Class) | **Rank:** 1/127

RESEARCH EXPERIENCE

ML Collective Mar. 2024 - present
Independent Researcher Remote, USA
– Led initiative that leveraged a cascade of machine translators to develop a Multimodal African dataset & an Image Captioning model.
– Lead the Self-Supervised Learning (SSL) for small datasets in healthcare focus group, working on bias in medical SSL models.

North Dakota State University - SMART Lab Jul. 2024 - Dec. 2024
Research Intern | Advised by Dr. Armstrong Aboah Remote, USA.
– Implemented an object tracking and geo-localization architecture in PyTorch, fusing a feature pyramid network with ResNet50, while analyzing component-level trade-offs.

C.K. Tedom University of Technology and Applied Sciences Nov. 2023 - Jul. 2024
Research Assistant | Advised by Dr. Mohammed Daabo Navrongo, Ghana.
– Conducted literature review on generative AI in multimodal medical diagnosis.
– Assisted in thesis and research review of Master's and PhD students prior to oral presentation and submission.

PUBLICATIONS & ONGOING RESEARCH

(*) denotes equal contribution

Preprints/Ongoing Works

1. Mardiyah Oduwale*, [Prince Mireku*](#), Oluwatosin Olajide, Fatimo Adebajo, Mahi Aminu Aliyu and Jekaterina Novikova. **AfriCaption: Establishing a New Paradigm for Image Captioning in African Languages** [\[ArXiv\]](#)
2. Jackline Mireku*, [Prince Mireku*](#). **From Limited Contexts to Rich Data: Elevating Twi NLP through Diverse and Verified Datasets.** *ACCEPTED - Spotlight & Poster @ Ghana Data Science Summit, 2025* [\[Project Page\]](#) [\[Abstract\]](#)

Non-Peer Reviewed Publications

1. [Prince Mireku*](#) and Mohammed Ibrahim Daabo. **Fault-Tolerant Techniques in Residue Number System for Reliable Arithmetic Operations** 2023 [\[Report\]](#)

2. Prince Mireku* and Edward Opare Yeboa. **Comparative Analysis of Visual Basic and QBasic: A Comprehensive Study**
2023 [\[Report\]](#)

SPOTLIGHT PROJECTS

AutoPFTReport

Building an AI-augmented platform that ingests raw pulmonary function test data and generates a standardized preliminary diagnostic report for the physiology department of Korle-Bu Teaching Hospital.

PalmMed

Developed an app using SVC as model architecture, few-shot learning, and prompt engineering to adapt an LLM for heart disease prediction and report generation. [\[GitHub\]](#) [\[Demo\]](#)

AfriCaption

Devised a reliable pipeline and leveraged state-of-the-art machine translators to build a multilingual African dataset, verified with cosine similarity scores between 0.53 and 0.98. [\[Huggingface\]](#)

CampusMedic

Developed a mobile app that helped students manage their well-being and also has a built-in feature that facilitates campus clinic appointments [\[GitHub\]](#)

AscoLab

Fine-tuned an encoder-decoder model architecture for table structure recognition and integrated it into an automated handwritten pumping test data extractor software. [\[Github\]](#)

"Earned commendation from the Ghana Water and Sanitation Agency, Koforidua, after an initial review"

WORK EXPERIENCE

Full-Stack Engineer

ReallyGreatTech

2023 - 2025

Accra, Ghana.

- Collaborated with Machine Learning Developers and LLM Engineers to design and implement seamless end-to-end applications for medical contexts.
- Develop interactive interfaces that ensure accessibility, user-first experience, and smooth navigation across domains such as healthcare, education, and cryptocurrency.

Co-Founder/Solutions Architect

VimTech Smart Solutions

2023 - 2024

Navrongo, Ghana

- Led a team of developers in building six end-to-end web and mobile applications, earning A+ grades, using Python, React, PHP, and Java.
- Mentored a team of AI enthusiasts by organizing weekly meet-ups and occasional workshops.
- Utilized linear regression via Python's scikit-learn on a client's financial service platform, achieving a 93% accuracy rate in predictive tasks.

Software Developer Intern

Falcon Systems

Oct. 2022 - Dec. 2022

Koforidua, Ghana

- Conducted systematic maintenance and debugging of existing software applications, enhancing system stability and operational functionality.
- Optimized and restructured existing application codebase, achieving significant reductions in load times and enhancements in computational efficiency and performance metrics.

Project Manager

FencyWeb

2020 - 2021

Remote, India

- Orchestrated the entire project lifecycle, ensuring seamless integration of planning and execution.
- Facilitated bi-weekly team meetings to recognize achievements, cultivate a collaborative atmosphere, and promote ongoing enhancements in project outcomes.

Web Developer

Founder: DevFreak

2020 - 2022

- Designed and shared free web development kits Online.
- Gave lessons on web design and development to over 270 subscribers on YouTube [\[Link\]](#)

PRESENTATIONS

- **22nd ML Collective Research Jam**

Presented a project proposal on multilingual multimodal datasets and models in the African Context. [\[Recording ↗\]](#)

- **26th ML Collective Research Jam**

Presented our final work on AfriCaption: A New Paradigm for Image Captioning in African Languages. [\[wiki ↗\]](#)

HONORS AND AWARDS

- **Ashesi Comprehensive Funding**

Awarded a full financial aid to pursue a master's degree at Ashesi University.

- **Stanford x ALX Scholarship**

Awarded a competitive scholarship by Stanford and ALx to study the Precision Medicine Certificate program.

- **Cohere for AI Aya Expedition**

Won the most promising project award with my team on the multimodal Aya project, which achieves LaVa-standard performance, enhanced with multilingual capabilities. [\[Award ↗\]](#)

- **Honorable Mention** (4th Place)

Developed and submitted 'One-Don,' a mobile donation app, within one month after learning a new tech stack, for the 2022/2023 New Mexico Annual App Contest. **rank:** 4 / 10 teams. [\[News ↗\]](#)

- **Dean's Award**

Achieved the highest academic distinction in Computer Science: first-class honors with the department's top CGPA.

- **GetFund Scholarship**

Awarded full tuition scholarship for the 2022/2023 academic year

TECHNICAL SKILLS

Languages: Python, Java, Typescript, JavaScript

Libraries: PyTorch, NumPy, Pandas, Matplotlib, BeautifulSoup

Dev Experience: Flask, Django, React, SQL, FastAPI, UI/UX, Git

Documentation: L^AT_EX

ACADEMIC SERVICES

Paper Reviewer, Ghana Data Science Summit, IndabaXGhana 2025

Paper Reviewer, Machine Learning for Health (ML4H) Symposium 2024

Paper Reviewer, Women in Machine Learning Workshop, co-located with NeurIPS 2024

Paper Reviewer, LatinX in AI Research Workshop, co-located with NeurIPS 2024

Applications Reviewer, Deep Learning Indaba Conference (DLI) 2024

AFFILIATIONS

- ML Collective
- Black in AI (BAI)
- Black in AI - ELAI Scholars