Christine Muthee, Data Scientist/AI Engineer.

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WEBSITES & PROJECTS

WRI Website, LinkedIn , Github (Projects), Capacity Building Initiatives, Stimsons Center Fellowship , Atlantic Council Fellowship, Dagshub, Kaggle Profile, Tableau BI Dashboard, Medium

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PROFILE

AI engineer with over 3 years of experience, in AI and machine learning applications. I can lead research initiatives and mentor teams, driving advancements in responsible AI practices. I am committed to building AI systems that are robust, explainable and scalable to solve the most pressing global challenges.

EMPLOYMENT HISTORY

Jan 2025 — Present

Graduate Teaching Assistant , Carnegie Mellon University. — Pittsburgh, Pennsylvenia.

As part of the 11-785 Introduction to Deep Learning Course.

- Building and end to end Deep Learning Module (My_torch) for students to use to practice foundational deep learning concepts.
- Hosting competitions on Kaggle for students to work with real life large dataset and work with the the current AI frameworks and architectures.
- Providing mentorship for deep learning projects to turn students' research into publishable papers.

Jun 2024 — Aug 2024

Research Scientist (Machine Learning Optimization), École Polytechnique Fédérale de Lausanne — Lausanne, Switzerland

Worked Under the Laboratory for Intelligent Global Health & Humanitarian Response Technologies .

- Processed and prepared the data used for fine-tuning Llama 3.1, Large language Model for Meditron 70-B (the best performing Open Source Medical Large Language model).
- Developed a full ETL pipeline for auto evaluation of Meditron's inference with a focus on Safety and Bias with Alpaca Eval.
- Coordinated the research team that performed the literature review on Bias and alignment strategies in AI for Health Care.
- Provided the academic material for the developed a pedagogical software for Medical Professionals to perform uncover Bias in AI systems. This material was designed to be used in a curriculum offered at the Yale School of medicine on detecting Bias in AI.

Nov 2023 — Dec 2024

Non Resident Fellow, Atlantic Council GeoTech Center — Washington, District of Columbia

- Offered expertise on the intersection of AI and climate change and the deployment of AI technology in low-resource environments.

Jul 2023 — Nov 2023

Responsible AI Fellow, The Stimson Center — Washington, DC

- In partnership with Microsoft's Office of Responsible AI, I lead a discussion about the challenges and opportunities of developing and deploying AI for sustainable development and achieving the SDGs.

Apr 2022 — Aug 2023

Data Analyst, World Resources Institute (WRI) — Nairobi, Kenya

- Improved the science and delivery of NASA's GEOS-CF air quality forecast to data deprived cities in Africa by scaling down its course resolution using low cost sensors. See https://www.wri.org/initiatives/canairy-alert
- Lead the analysis of air quality through remote sensing tools (eg., TROPOMI,MODIS, GEE) to gain insight on sources of pollution in Sub-Saharan Africa to provide a policy relevant website for air quality managers to utilize to make evidence based decisions.
- Implemented global air quality forecast tools and data products operationally considering local context of application, geographical heterogeneity and legislative frameworks in Nairobi, Kampala, Kigali and Accra.
- Evaluated the performance of global air quality forecasts which were formulated using a bias correction algorithm utilizing machine learning.
- Optimized the algorithm to adjust for common data quality issues, while performing case study analysis to improve individual components of the air quality forecast system.
- Analyzed spatial datasets on areas of concern to understand sources of air pollution and potential impact to advice policy makers on implement data driven mitigation measures.
- Lead the WRI Africa air quality program in air quality monitoring, data validation and evaluation in pilot cities as the baseline for implementing city air quality monitoring and management needs.

- Coordinated the South to South Air Quality Community of practice, a partnership between Latin America and Africa to share experiences, challenges and lessons learnt from implementing air quality management and climate mitigation strategies in the global South. Sessions organized and Moderated can be found in City Fix Learn.

| Jun 2021 — Feb 2022 | **Data Science Research Student, Moringa School** | Nairobi, Kenya. |

- Collaborated in a team of data science developers to build a content based movie recommendation system for My Movies Africa startup with an aim to increase their customer retention by 30%
- Built a web application from research on deep learning to classify patients with Parkinsonism Symptoms to reduce misdiagnosis and create awareness to citizens about neural degenerative disorders.
- Deployed an interactive Map that gives insights on drug abuse in Africa with a statistical experiment to determine correlation with the rate of Mental Disorders over time.
- Built a system to enable hospitals to allocate resources to lung cancer patients by determining duration to be spent in hospital following surgical and Non-surgical procedures. This was prompted by the heavy financial burden on cancer patients without insurance and resource deficient hospitals.
- Lead a data analyst team in research to analyze the state of air quality in Africa and correlate it with mortality rates due to respiratory illnesses in Africa. See results and discussions

| Jan 2020 — May 2021 | **Air Quality Specialist, Polucon Services Limited** | Mombasa, Kenya. |

- Identified a gap in the collection of continuous data on environmental pollutants. This resulted in the development of a continuous ambient air quality monitor which utilized pollutant and environmental parameters Low-Cost Sensors while logging in data in real-time to the laboratory data collection system for analysis.
- Programmed and Configured the sensors and the Arduino microprocessor and built a pipeline to reprocess readable data for analysis.
- Lead the team's development of in-house laboratory calibration standards of the environmental parameter sensors as part of the ISO 17025 QA/QC procedures prior to deployment.
- Evaluated the monitor's outputs and performed exploratory Data Analysis on different pollutants with a comparison with the nationally set limits and the WHO guidelines.
- Designed case studies while using statistical techniques to test for the significance of pollutant levels in locations of concern.
- Communicated the results from the analysis to the national environmental management authority and industry professionals while giving recommendations for setting and implementing pollution reduction targets and continuous assessment of the progress over time.

| May 2019 — Jan 2020 | **Intern: Environmental Physics Laboratory, Polucon Services Limited** | Mombasa, Kenya. |

- Lead and implemented the environmental data collection, monitoring, and evaluation plan for the Ksh. 40 billion Kipevu Oil Terminal (KOT) for the entire phase of the project. The monitoring plan was used to quantify the environmental impacts of the new oil terminal construction.
- Monitored and Evaluated Water Quality in the Kenya Port Authority's TOYO corporation Port Expansion Project. The results of the analysis was used to quantify the impact of the port expansion on the ambient air and marine ecosystem for the entire phase of the project.
- Lead the testing of ocean water samples from the Dongo Kundu Bypass construction. The data fed into the environmental impact assessment report for the entire construction phase.
- Lead and trained the junior physics laboratory analysts to evaluate the Iso-kinetic Particulate Matter Sampler used to monitor sample gaseous and particulate matter emissions, dioxins, and Furans from combustion sources in industries for laboratory analysis.

EDUCATION

| Aug 2023 — May 2025 | **Msc. Artificial Intelligence Engineering, Carnegie Mellon University.** | |

| Jun 2021 — Feb 2022 | **Post Graduate Diploma in Data Science , Moringa School** | Nairobi |

Deployed Predictive analytics models utilizing machine learning for decision making. Graduated with a distinction

| Sep 2015 — Nov 2019 | **Bachelors Degree in Renewable Energy & Environmental Physics , Technical University of Mombasa** | Mombasa |

Majored in Environmental Physics . Graduated with a Second Class honors Upper Division

VOLUNTEERING

Sep 2022 — Present

WiDS Ambassador , Women in Data Science World Wide
<div align="right">Nairobi</div>

- I coordinate with the WiDS ambassadors world wide in conjunction with WiDS Stanford University to organize and fund raise for data science conferences, seminars and datathons to mobilize women to embrace STEM and AI careers.

- Successfully organized the Kenyan Chapter of the WiDS Datathon 2023 with the theme **Adapting to Climate Change by Improving Extreme Weather Forecasts:** *https://www.widsconference.org/datathon.html*

Mar 2022 — Jun 2022

Jr. Machine Learning Engineer, Omdena Local Chapters
<div align="right">Nairobi</div>

- Co-lead the data collection and pre-processing sprint of building regenerative farming solutions with AI project to enable agricultural carbon markets.
- The team developed a data visualization dashboard, which shows and compares regenerative farming practices and their impact on Soil organic carbon (SOC) using historical data. The dashboard functions as a tool to analyze and develop pathways to predict Soil Organic Carbon.
- Managed the project work and tasks via Miro board and Jira softwares.
- This Project is hosted by Azolla Projects: The pioneering carbon farming program in Spain

Apr 2017 — Aug 2017

Environmental Management Assistant, The National Environmental Management Authority
<div align="right">Mombasa</div>

- Reviewed Environmental Impact Assessment,Environmental Audit,effluent water analysis and waste management reports under the supervision of environmental officers to ensure correct licensing procedures in construction and development projects that had potential impact to the environment.
- Inspected the same project to ensure compliance with the national environmental regulations.

Nov 2019 — Present

Youth Worker (Family Resilience against violent extremism), Arigatou International
<div align="right">Mombasa</div>

Convened religious leaders, the Kenya Police, the media, county officials, The Kenya Women Finance Trust, Constituency Development Fund and the community to build the capacity for women,youth and children to promote coexistence and to broaden their understanding of the dangers of radicalization and foster economic support to women building their family resilience against violent extremism.