Prince Mensah

M.S STUDENT IN MACHINE LEARNING · AIMS - AMMI

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Education

African Institute for Mathematical Sciences (AIMS)   *Mbour, Senegal*

M.S IN MACHINE LEARNING   *Feb. 2024 - Present*

- **Relevant Coursework:** Fundamentals of Machine Learning, Computer Vision, Natural Language Processing, Reinforcement Learning.

African Institute for Mathematical Sciences (AIMS)   *Accra, Ghana*

M.S IN MATHEMATICAL SCIENCES   *Nov. 2022 - Aug. 2023*

- **Relevant Coursework:** Machine Learning, Data Science, Complex Networks, Information Theory, Differential Equations, Quantum Mechanics, Dynamical Systems, Markov Chains

Kwame Nkrumah University of Science and Technology (KNUST)   *Kumasi, Ghana*

B.S IN MATHEMATICS   *Oct. 2017 - Nov. 2021*

- **Relevant Coursework:** Scientific Computing, Numerical Analysis, Calculus I-II, Linear Algebra, Probability & Statistics, Optimization, Scientific Research.

Skills

Languages	Python, C/C++, LaTeX, R, SQL.
Technologies	Git, Docker, GitHub, Streamlit
Libraries	Pytorch, TensorFlow, Scikit-Learn, Numpy, Scipy
Others	End-to-end deployment, Innovation and Leadership

Experience

Industry Immersion Africa   *Accra, Ghana*

TUTOR, DATA ANALYTICS   *Sep. 2023 - Nov. 2023*

- Tutored students interested in pursuing careers in industry.
- Covered topics such as Advanced Data Analytics, Power BI, General Management, Data & Decisions, and Agile Leadership.

iAnalyze Mentorship Program   *Accra, Ghana*

DATA SCIENCE INSTRUCTOR   *Feb. 2023 - Aug. 2023*

- Taught data science concepts including; predictive analytics, basic machine learning concepts, and programming in Python and R.
- Collaborated on curriculum design and addressed student concerns to ensure the program's success.

Kwame Nkrumah University of Science and Technology   *Accra, Ghana*

TEACHING ASSISTANT   *Oct. 2021 - Nov. 2022*

- Tutored undergraduates in Differential Equations, Numerical Methods, Linear Algebra, and helped with grading.
- Collaborated with faculty in research activities.

Research Projects

MS Thesis   *AIMS Ghana*

DARK-SOLITON QUANTUM BITS FROM THE COHERENT DYNAMICS OF BOSE-EINSTEIN CONDENSATES WITH SELF-DEFOCUSING NONLINEARITY   *June, 2023*

- Studied how Bose-Einstein condensates (BECs) with self-defocusing effects can create quantum bits using dark solitons in a dilute gas.
- Developed a mathematical model for BECs and examined the quantum states they produce.
- This research helps explore new ways to encode and control quantum information with BECs.

B.S Thesis   *Kumasi, KNUST*

PREDICTING THE SEVERITY OF ROAD TRAFFIC ACCIDENTS IN GHANA USING MACHINE LEARNING ALGORITHMS   *May, 2021*

- Used machine learning models such as Random Forest, Logistic Regression, and Neural Networks to predict crash injury severity.
- Compared their performance based on accuracy and other metrics, and used feature selection to find important factors.

Updates on Meningitis Surveillance in the Upper West region of Ghana (2012-2020)   *Kumasi, KNUST*

COLLABORATIVE PROJECT   *July, 2021*

- Analyzed Meningitis data from the Upper West region in Ghana, focusing on cases from 2012 to 2020.
- Using QGIS software, we studied the spread of cases and deaths across the 11 districts in the region.

Selected ML Competitions and Projects

Cassava Leaf Disease Classification (1st Place) *Kaggle Link*
MODEL ACC: 91.7% - IDENTIFIED CASSAVA LEAF DISEASES USING DEEP LEARNING (RESNET 50) *Web App*
- Utilised the ResNet50 model for cassava leaf disease classification
- Built a web app using the model to classify cassava leaf images into one of several categories to help identify common diseases.

Image Classification with the AlexNet architecture *GitHub*
MODEL ACC: 84.85% - IMPLEMENTED THE ALEXNET ARCHITECTURE FROM SCRATCH AND TRAINED IT ON CIFAR10 AND CIFAR100 *Kaggle Link*
- Trained an AlexNet-based Convolutional Neural Network on the CIFAR-10 and CIFAR-100 dataset using PyTorch
- Applied several augmentation techniques including; mixup, cutout and cutmix to avoid overfitting

Object Detection using FasterRCNN *GitHub*
BACKBONE NETWORK: RESNET50 *Web App*
- Built a real-time object detection model using FasterRCNN.
- Deployed the model on streamlit where users can upload images or use their webcam to detect and visualize objects live.

Question Answering System using Transformer *GitHub*
UTILIZED SENTENCETRANSFORMERS FOR GENERATING EMBEDDINGS
- Developed a QA system that answers user questions by finding relevant text from a database.
- It uses advanced machine learning and data retrieval for accuracy.

Awards& Achievements

2024	**Master's in Machine Intelligence Scholarship,** for M.S in Machine Learning.	*AMMI, Senegal*
2022	**Master's in Mathematical Sciences Scholarship,** for M.S in Mathematical Sciences.	*AIMS, Ghana*
2017	**Ghana National Petroleum Corporation (GNPC) Scholarship Award,** for B.S in Mathematics.	*KNUST, Ghana*