KABIR HAMZAH MUHAMMAD

Machine Learning Engineer | Graduate Student

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EDUCATION

MSc. Medical Imaging and Applications (Joint Master's)

University of Burgundy *[Sep 2023 – Feb 2024]* LeCreusot, France
University of Cassino *[Feb 2024 - July 2024]* Cassino, Italy
University of Girona *[Sep 2024 - Jan 2025]* Girona, Spain
The Hong Kong University of Science and Technology *[Feb 2025 - Present]* Hong Kong
Thesis: ***Autoregressive Models for Medical Image Generation and Reconstruction*** **(Ongoing)**

- *Researching leveraging autoregressive models for improved medical image synthesis and reconstruction.*

Current Grade: *9.05/10*

B.Eng. Biomedical Engineering

University of Ilorin *[Nov 2016 – Dec 2022]* Ilorin, Nigeria
GPA: *4.72/5.0 (First class): Top 1% of over 9000 graduating students of class 2021*

Mediterranean Machine Learning Summer School *[Sept. 2024]* Milan, Italy
Hosted by Google DeepMind. Acceptance rate: ~20%

EXPERIENCE

Machine Learning Intern | *SURGAR* Jul 2024 – Sep 2024

- Annotation of surgical videos and deployment of optimized deep learning models for surgical video classification on a C++ platform.

Machine Learning Intern | *TechPet Global* Jul 2022 – Nov 2022

- Implemented and evaluated machine learning algorithms to solve diverse petrochemical industrial problems and developed customized applications for critical predictions.
- Led a team of 5 to participate in the 2022 Shell EV Hackathon, achieving a top 85 percentile globally.

Student Intern | *Harmony Advanced Diagnostic Centre* Mar 2020 – Sep 2020 & Aug 2019 – Oct 2019

- Collaborated with maintenance engineers to diagnose, repair, and maintain various medical imaging machines, including MRI, CT, XRAY, FLUOROSCOPY, and MAMMOGRAPHY.
- Operated biomedical equipment in the medical imaging unit and processed patient data to support clinical operations.

PUBLICATIONS

Latent Vision-Language Models for Multi-Modal Report Generation in Multi-Phase Pelvic-Abdominal CT
Kabir Muhammad, Marawan Elbatel, Xiaomeng Li

- MICCAI 2025 (under review)

PROJECTS

Chest Insight: Smart Chest Xray Analysis and Report Generation

- Led a team of six to develop "Chest Insight," a pioneering application that anonymizes DICOM images, enhances and annotates chest X-rays, and generates automated diagnostic reports using NLP and deep learning, inspired by IERRG.

AidGenie

- Created AidGenie, a web-based application enabling DICOM image visualization, anonymization, tagging, segmentation, medical image conversion, compression, and research support for medical imaging.

Covid Detection in X-ray Images with Grad-CAM Explainer

- Developed a deep learning pipeline and web app for detecting Covid in X-ray images, incorporating a Grad-CAM explainer to highlight prediction regions, achieving over 85% precision and recall.

Implementation of a Deep Learning-enabled Brain Tumor Detection and Segmentation Device

- Deployed an ensemble of CNN and Res-Unet models on a Raspberry Pi with a DASH web app to detect, classify, and segment brain tumors in MRI scans, achieving 96% classification accuracy and 98.58% segmentation accuracy.

Fetal Health Classifier Pipeline

- Built an ML model pipeline to demonstrate a complete end-end MLOps pipeline using git, dvc, dagshub, mlflow, FastAPI and Docker. The trained model achieved a 93% f1-score.

PROFESSIONAL DEVELOPMENT AND CERTIFICATION

AI for Medicine Specialization

Through these courses, I gained practical experience applying machine learning techniques to medical diagnosis, prognosis, and treatment. The specialization focuses on applications of convolutional neural networks for building image classification and segmentation models to make diagnoses **of lung and brain disorders**. And demonstrates working with both 2D and 3D medical data. As well as predicting patient outcomes using decision trees for non-linear relationships and estimate treatment effects using randomized control trial data. Additionally, I explored machine learning interpretation methods and natural language processing for automating medical data labeling and improving decision-making transparency.

Machine Learning in Production Specialization

The courses in this specialization focus on ML production system end-to-end. From project scoping, down to data needs, modeling strategies, and deployment requirements.

HONORS AND AWARDS

- Erasmus Mundus Scholar, Medical Imaging and Applications (2023-2025 Cohort).
- Senate Annual Prize for First Class Honors Graduating Students, 2020/2021 Academic Session.
- Best Graduating Student, Biomedical Engineering, 2020/2021 Academic Session.
- Selected as one of 20 Engineering Students to receive the 2018 National Society of Black Engineers Award for Academic Excellence.
- Awarded 4 times in 4 consecutive years as the best student in the Biomedical Engineering department to receive the University scholarship award.
- Selected as one of 50+ students nationwide to receive the 2020/2021 Federal Scholarship Award based on Academic excellence.
- Received the 2018/2019 Scholar of the year award presented by National association of biomedical engineering students Unilorin.

ACTIVITIES AND LEADERSHIP

Pioneer Vice president for the American Society for Quality (University of Ilorin branch).

- Organizer of association events; managed budget and communications.

Vice president, National Society of Black Engineers (Unilorin chapter).

- Organizer of seminars and workshops; managed certifications.

Technical Director, Dare Word Students Association.

- Led technical preparations for association programs.
- Coordinated mentorship for over 300 students; provided academic tutorials and direct mentorship.

SKILLS

Programming: SQL, Python
Tools: TensorFlow, Keras, PyTorch, Monai, ScikitLearn, OpenCV, Git, DVC, Docker, Kubernetes, Mlflow, FastAPI

MEMBERSHIPS

Collegiate Member, National Society of Black Engineers UniIlorin Chapter. [2019 – 2022]
Member, Data Science Nigeria, Unilorin Chapter. [2019 – Current]

You are welcome to check out all documents of proof of my portfolio here.