Emerald Henry

A.I Engineer | MLOps Engineer (LLM)

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Github , Portfolio Page

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RELEVANT WORK EXPERIENCE

LCA | Remote
Data Science & ML Tutor   OCT 2023 - Present

- Creating and executing end-to-end machine learning applications with a specialization in Natural Language Processing (NLP). Proficient in leveraging Language Models (LLMs) from HuggingFace, Google, and OpenAI. Experienced in utilizing frameworks like Langchain and deploying solutions (LLMOps).

- Utilized OpenAI API, Lamini, HuggingFace, and Langchain to run RAG applications, develop chatbots, and fine-tune foundational LLMs. Implemented Kubeflow for automation and employed the Vertex AI SDK for fine-tuning and generating the REST API.

- Developing comprehensive training materials, including notebooks and files, for Data Analysis using R, Database Management (MySQL), and MLOps practices (Docker, FastAPI, CLI scripts, CI/CD, and deployment with Azure and AWS technologies).

Clinton Health | Hybrid
Data Scientist   JAN 2023 - OCT 2023

- Spearheaded the development and management of Healthcare Databases tailored for the Nigerian National Healthcare Sector.

- Conducted exploratory data analysis (EDA) to extract meaningful insights and designed Dashboards to facilitate data-driven decision-making within the Nigerian National Healthcare Sector.

- Innovatively crafted HTML-based tools to streamline the collection of healthcare data from both patients and healthcare facilities.

Covenant University | Onsite
A.I Researcher   AUG 2022 - JAN 2023

- Investigated Fine-tuning Foundation CNN Models for automated diagnosis of lesions and cancer from various

SKILLS & TOOLS

- Python
- C/C++
- R
- SQL
- Pytorch
- Tensorflow
- Langchain
- Lamini
- OpenCV
- Docker
- Linux
- AWS
- Azure
- Vertex AI
- BigQuery
- Kubeflow
- Vector Database
- FastAPI for backend engineering
- HuggingFace
- Deep Learning Research
- Natural Language Processing
- Computer Vision
- LLM Operations
- Github Actions
- HTML/CSS

SOFT SKILLS

- Leadership
- Communication
- Teamwork
- Presentation

medical images (MRI, CT, Ultrasound, WSI).

- Explored the application of State-of-the-Art Hybrid Vision Transformers for efficient classification, segmentation, registration, and reconstruction in medical imaging.

- Implemented additional techniques such as Federated Learning, Contrastive Learning, and Knowledge Distillation, leveraging Vision Transformers, culminating in a published work on their application in Medical Imaging.

TEE Research Group | Onsite
A.I Research Intern   OCT 2021 - AUG 2022

- Conducted Exploratory Data Analysis (EDA) on extensive wind turbine operational data, laying the groundwork for model development.

- Engineered multiple Machine Learning and Deep Learning Models for wind turbines, focusing on energy forecasting, prediction, performance monitoring, and fault detection.

- Innovatively devised a filtering technique based on quantile range to enhance the accuracy of wind turbine data by removing faulty entries.

- Developed a comprehensive statistical technique for detecting faulty wind turbines, integrating Kolmogorov-Smirnov's test with three deep learning models, contributing to improved fault detection accuracy.

EDUCATION

Covenant University, Nigeria
B.S. Mechanical Engineering   2017 - 2022

- For my final year project, I worked on exploring multiple approaches to modeling the power curve of a wind turbine. This work yielded the development of a state-of-the-art deep learning model that achieved remarkable performance and resulted in a published work. (link)

COMPUTATIONAL PROJECTS (more)

Food Classification App (CV)
- Independently constructed a Vision Transformer (ViT) model from scratch for accurate food type classification.

- Deployed the ViT model on Hugging Face via the Gradio web interface to create an efficient and user-friendly food classification application.

Sentiment Analysis App (NLP)
- Engineered a sentiment analysis application using the RoBERTa model and implemented it as an

API with the Flask framework.

SQL FastAPI Integration App
- Developed a data collection application with FastAPI, enabling seamless integration with SQL databases for efficient data storage.

FastAPI-ML microservice
- It involves the containerization of a Machine Learning API and deployment using Amazon Elastic Container Repository (ECR) and Amazon Elastic Container Service (ECS) respectively

RELEVANT PUBLICATIONS

1. Vision Transformers in Medical Imaging: A Review. (link)
2. Conditional Monitoring and Fault Detection of Wind Turbines Based on Kolmogorov-Smirnov's nonparametric test and Machine Learning. (link)
3. A Neural Network-Based Wind Turbine Power Curve Model Using Several Wind Farms' Influencing Parameters and Topography. (link)