Prince Agyei Tuffour

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Education

Oregon State University, Corvallis OR December 2023
*Master of Science in Mathematics; Specialize in **Facial Recognition & Optimization***
Kwame Nkrumah University of Science and Technology, Ghana May 2020
Bachelor of Science in Mathematics; GPA: 3.92

Skills

Languages: **Python**, R, Javascript, C++, SQL, MATLAB
Tools & Technologies: Git, **Keras**, Tableau, Pandas, **ScikitLearn**, Matplotlib, Reinforcement Learning, **Linux**, Clustering, PyTorch, **Tensorflow**,Regression, Feature Engineering, **Dimensionality Reduction**, Flask, Django, RESTful APIs, Express, Typescript, PostgreSQL, MongoDB, PowerBI, **React**, SciPy, Streamlit, **YOLO**

Work Experience

Machine Learning Engineer - Intern | ***Cita Marketplace.com*** Summer 2022 & 2023

- Developed and deployed a machine learning recommendation system for the Cita Marketplace platform, enhancing personalized product recommendations and driving a **15%** increase in user engagement and conversion rates.
- Analyzed and optimized customer behavior data to create predictive models that improved the accuracy of search and product relevance by **20%**, resulting in better customer experiences and retention.
- Collaborated cross-functionally with engineering and product teams to integrate ML solutions seamlessly, accelerating development timelines and contributing to a **10%** faster feature rollout.

Graduate Research Assistant | ***Oregon State University*** September 2021 - December 2023

- Developed and fine-tuned machine learning models utilizing support vector machines (SVM) and decision trees for predictive analysis of complex data sets, achieving a **92%** model accuracy in identifying patterns within mathematical simulations.
- Implemented numerical optimization techniques such as **gradient descent** and **stochastic optimization** to solve high-dimensional mathematical problems, leading to a **25%** improvement in computational speed.
- Applied **principal component analysis (PCA)** and **t-SNE** for dimensionality reduction and visualization of multidimensional data, enhancing the interpretability of model outputs and revealing significant clustering in research data.
- Wrote Python scripts leveraging NumPy, **SciPy**, and **TensorFlow** to automate data preprocessing and build machine learning pipelines, which reduced data preparation time by **40%** and streamlined model training.

Projects

Facial Recognition Research Project

- Conducted comprehensive research on Principal Component Analysis (PCA), Karhunen-Loève (KL) Expansion, and Singular Value Decomposition (SVD) for preprocessing facial recognition data, reducing a dataset of **10,000+** images to **150** eigenfaces and boosting recognition accuracy by **80%**.
- Integrated k-Nearest Neighbors (KNN) classification on preprocessed eigenfaces, resulting in a scalable system that enhanced security protocols and user experience through reliable facial identification.

E-commerce Recommendation System

- Engineered a recommendation engine using collaborative filtering techniques, improving user product interactions by **25%** through tailored suggestions.
- Leveraged Apache Spark for handling large-scale user data, reducing query latency by **35%** and enhancing scalability.

AI-Powered Medical Diagnosis Assistant

- Developed a convolutional neural network (CNN) to analyze medical imaging data, achieving a **93%** anomaly detection rate on X-ray datasets.
- Deployed the diagnostic model through a Streamlit interface, providing physicians with user-friendly tools for early disease detection, leading to quicker intervention and better patient outcomes.

Predictive Maintenance for Semiconductor Equipment

- Engineered machine learning algorithms leveraging **Random Forest** and **Gradient Boosting** to predict equipment failures, reducing unplanned downtime by **40%** and extending equipment lifespan by **25%**.
- Enhanced model prediction accuracy by **30%** using **data preprocessing pipelines** and real-time failure detection, significantly boosting cost-efficiency in production.