# 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.

**Online Learning Management System**

- Developed a robust online learning platform for a Ghanaian institution using React, Next.js, Prisma, PostgreSQL, and Stripe, achieving a **40%** surge in student enrollment by enabling remote course access.
- Implemented secure user authentication, advanced search functionalities, and course categorization, improving platform performance and reducing user support inquiries by **30%**.

**Baseline Network Generation Tools for Civil Engineering OPUS Projects**

- Built a GUI tool with PySide6 for baseline network generation, incorporating RINEX data processing, interactive mapping, and XML configurations, cutting project setup time by 30%.
- Applied geospatial data analysis with Python libraries to calculate inter-station distances and identify optimal hub locations, enhancing project visualization and design efficiency.

**MyPass Password Manager**

- Developed an offline password manager with a focus on security, integrating AES encryption for safe password storage and a search feature that improved retrieval efficiency by 50%.
- Implemented a strong password generator with clipboard functionality, enhancing user experience and security practices.