

# Kwabena Duffuor Asante

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## CAREER OBJECTIVE

Aspiring computer scientist with expertise in data analytics, machine learning, and software development, seeking to pursue advanced research in Computer Science. Proficient in R, Python, statistical modeling, and deep learning techniques, with demonstrated ability to design and implement predictive models and intelligent data-driven systems for healthcare and educational applications.

## RESEARCH INTEREST

My research interests center on applying machine learning and deep learning techniques to healthcare informatics and computer vision applications. I am particularly interested in developing explainable CNN and transformer-based models for medical imaging, with a focus on ultrasound diagnostics in maternal healthcare. Inspired by the shortage of specialists in rural Ghana, I aim to advance lightweight, interpretable AI systems that enhance diagnostic accuracy and support equitable access to quality healthcare.

## EDUCATION

### MPS. INFORMATICS – Northeastern University, Toronto, ON, Canada

Expected: June 2026

**Concentration:** Analytics, Cloud Computing, IT Strategies, and Governance.

### MPHIL. COMPUTER SCIENCE – University of Energy and Natural Resources, Sunyani, Ghana

December 2023

**Focus:** Machine learning, Software Engineering, and Advanced Operations Research.

### BSC. INFORMATION TECHNOLOGY EDUCATION – University of Education, Winneba, Ghana

July 2020

**Relevant courses:** Calculus, Data Structures, Systems Analysis and Design.

### DIPLOMA IN BASIC EDUCATION (SCIENCE & MATH) – Kibi Presbyterian College, Kibi, Ghana

August 2013

**Relevant courses:** Educational Psychology, Principles and Methods of Teaching, Curriculum Design.

## RESEARCH WORK & PROJECTS

### Design and Development of Church Management System (*Undergraduate Project*)

- Developed a web-based church management system using WordPress to streamline membership and administrative tasks.

### Using Multimedia Tools to Teach the Concept of Hardware and Software among Senior High School Students (*Undergraduate Project*)

- Investigated the impact of multimedia-based teaching on student engagement and learning outcomes.

### National Project Management in Ghana (*Graduate Project*)

- Conducted an in-depth analysis of existing project management practices and challenges within national development frameworks.

### Search Engine Optimization for Digital Marketing (*Graduate Project*)

- Performed keyword research and competitor analysis to identify optimization opportunities and improve online visibility.

## **Application of Convolutional Neural Networks for predicting Gestational Diabetes in pregnant women (Graduate Project)**

- Designed and implemented a CNN-based model for early detection of gestational diabetes to enhance prenatal care and health outcomes.

### **Personal Featured Learning Projects (GitHub Portfolio)**

- **CardioPredict – Deep Learning with SHAP:** Developed a comprehensive machine learning pipeline for cardiovascular disease prediction using deep neural networks with explainable AI (SHAP) for model interpretability.
- **Brain Tumor Classification using VGG16 (Transfer Learning):** Implemented a fine-tuned VGG16 model, achieving 97.3% accuracy in classifying MRI scans into four categories — glioma, meningioma, pituitary tumor, and no tumor.
- **Fetal Health ML Analysis:** Built and compared multiple machine learning models (XGBoost, Random Forest, MLP, Logistic Regression) for fetal health classification using cardiotocography data.
- **Drowsiness Detection System:** Developed a real-time computer vision-based system using Eye Aspect Ratio (EAR) analysis and facial landmark tracking to detect driver drowsiness, featuring live webcam monitoring, audio alerts, and data logging.

*GitHub: <https://github.com/kduffuor>*

## **WORKING EXPERIENCE**

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### **CUSTOMER EXPERIENCE (PART-TIME) – Freedom Mobile – Albion, Toronto, ON**

August 2024 – Present

- Deliver tailored mobile solutions by analyzing customer usage data and identifying cost-effective plans.
- Build and maintain in-depth knowledge of products and services to educate clients and resolve inquiries.
- Identify and troubleshoot technical issues related to customer devices and company systems.
- Utilize recommendation systems to suggest optimal mobile plans based on usage patterns and customer preferences.
- Assist in optimizing inventory levels by maintaining sales data reports and analyzing stock turnover.

### **RESEARCH & DATA ANALYST – UENR (Computer Science Dept) – Sunyani, GH**

February 2022 - January 2024

- Conducted in-depth statistical analysis using Python (Pandas, NumPy) to support institutional research.
- Developed and deployed machine learning models using TensorFlow, PyTorch, and Keras to predict student enrollment patterns, achieving 87% accuracy and informing strategic planning decisions.
- Designed and implemented convolutional neural networks for gestational diabetes prediction, achieving 83% diagnostic accuracy to support early intervention and maternal healthcare decision-making.
- Applied natural language processing techniques to analyze research publications and identify emerging trends in computer science education.
- Prepared reports and executive summaries to present findings to faculty and research teams.

### **DATA ANALYST – Ghana Statistical Service – Accra, GH (Co-led, Remote)**

June 2021 - September 2023

- Leveraged SQL and Python to identify data patterns and trends to support evidence-based policymaking.

- Applied machine learning algorithms, including random forests and neural networks, to predict infrastructure project outcomes and optimize resource allocation.
- Developed AI-powered anomaly detection systems to identify data quality issues in national surveys, improving data reliability by 25%.
- Created predictive models using ensemble methods to forecast demographic trends for policy planning.
- Created interactive dashboards using Tableau and Power BI to present survey findings for stakeholders.

#### **SCIENCE, MATH & ICT TUTOR – Various Educational Institutions (Ghana Education Service)**

January 2013 – April 2024

- Delivered STEM-focused instruction (Science, Mathematics, ICT) across junior and senior high levels using interactive digital platforms.
- Integrated learning management systems (Google Classroom, Microsoft Teams) to enhance blended learning.
- Applied data analysis tools (Excel, Python basics) to demonstrate real-world problem-solving in math and science.
- Mentored students in practical ICT skills such as MS Office Suite, coding fundamentals, and responsible digital literacy.
- Evaluated learners' performance and provided constructive feedback for continuous improvement.

#### **TECHNICAL SKILLS**

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**Programming:** Python, R, SQL, Java, VB.NET, C++

**Machine Learning/AI Frameworks:** TensorFlow, PyTorch, Keras, Scikit-learn

**AI/ML Techniques:** Deep Learning, Convolutional Neural Networks, Natural Language Processing, Computer Vision, Ensemble Methods, Neural Networks, Anomaly Detection, Recommendation Systems

**Data Analysis Tools:** Pandas, NumPy, SciPy, D-Tale, Matplotlib, Seaborn, Bokeh

**AI/ML Techniques:** Deep Learning, Natural Language Processing, Computer Vision, Ensemble Methods, Neural Networks, Anomaly Detection, Recommendation Systems

**Database Systems:** SQLite, MySQL, PostgreSQL

**Visualization Tools:** Tableau, Power BI

**Statistical Analysis:** Hypothesis Testing, Regression Analysis, Time Series Analysis, Predictive Modeling

#### **ACADEMIC ACHIEVEMENTS & CERTIFICATIONS**

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**Microsoft Certified Power BI Data Analyst Associate** – Microsoft

July 2025

**Certified SQL Specialist** – University of Michigan

February 2025

**Certified Tableau Data Analyst** – University of California

February 2025

#### **REFERENCE**

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**Prof. Patrick Kwabena Mensah**

HOD (Computer Science and Informatics)  
University of Energy and Natural Resources

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**Prof. Behnaz Merikhi**

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Northeastern University

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