Augustine Ofobi Aborah

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Professional Summary

Geospatial scientist and researcher with 4 years of experience in Remote Sensing, GIS, GeoAI, Machine Learning, Spatial Modelling, and Spatio-Temporal Analysis. Strong academic background, extensive field and research experience. Skilled in developing geospatial analytical models, deep learning pipelines, and environmental monitoring frameworks.

Research Interest

Remote Sensing · GIS · Geospatial Analysis · Land Use/Cover Change · Climate & Environmental Modelling · Numerical Modelling · Spatio-Temporal and Time Series Analysis · Extreme Events · ML & Deep Learning · Computer Vision · Satellite Image Analysis · GeoAI.

Education

Erasmus Mundus Joint Master's Degree (MSc) in Geospatial Technologies | 2024 – Present
Universität Münster (Germany) – Institute for Geoinformatics
NOVA Information Management School (Portugal)
Master Thesis: Segmentation-Based Deep Learning and Transfer Learning for Artisanal Small-Scale Mining Detection Using Sentinel-2 Imagery in Madre de Dios, Peru

BSc. Geomatic Engineering
Kwame Nkrumah University of Science and Technology (KNUST), Ghana | 2018 – 2022
Undergraduate Thesis: An Interactive Web Map of KNUST Campus.

Research Experience

Research Assistant (Volunteer) – Universität Münster
PROJECT PEAT – Biosphere-Atmosphere Interaction Research Group | 09/2025 – 02/2026

- Assisted with eddy covariance field observations and CO_2 flux data collection.
- Supported the dismantling and relocation of an Eddy Covariance tower from a peatland ecosystem.
- Participated in research group meetings and collaborative scientific discussions.

Teaching & Research Assistant (Volunteer) – KNUST | 01/2024 – 08/2024

- Supported in the establishment of GNSS Lab and GNSS CORS Station for academic research.
- Reviewed papers, reproduced findings, and contributed to methodological improvements.
- Applied ML methods in spatial and temporal data analysis.
- Taught students field survey techniques and use of GNSS/survey equipment.
- Assisted in grading assignments and guiding semester projects.
- Project Supervision: *Comparative Analysis of Unmanned Aerial Vehicle surveys and Ground Survey Techniques for Road Corridor Surveys*

Teaching & Research Assistant – KNUST (National Service) | 11/2022 – 10/2023

- Led 200+ students in practical sessions in GIS, Remote Sensing, Geodesy, and Satellite Image Processing.
- Managed departmental geospatial data archives, improving accessibility for researchers and students.
- Developed ML models for environmental and spatio-temporal analysis (floods, land cover change) .
- Assisted in grading assignments, semester projects, and supervised 4+ student research works.
- Assisted in organizing field trips for students' experience at Research Labs and Industries.
- Project Supervision: *Using GIS to map out noise levels in the traditional halls of Kwame Nkrumah University of Science and Technology (KNUST) Campus*

Student Supervisor – Geospatial Summer Camp, KNUST | 09/2023 – 10/2023

- Supervised student teams developing a Geoid Undulation Determination Model using GNSS and drone-derived DTM data.
- Led field data collection for forest and environmental monitoring exercises.

Selected Projects

[1] Segmentation-Based Deep Learning for Artisanal Mining Detection (Ongoing)

- Developed a segmentation workflow for detecting illegal mining sites using U-Net, DeepLabv3+, and Fully Convolutional Networks (FCNs) on Sentinel-2 imagery
- Improved segmentation accuracy by applying transfer learning and hyper-parameters fine-tuning.

[2] Geostatistical Assessment of NO2, PM10 and PM2.5 Pollutants on Air Quality: A Case of study in California

- Modelled NO_2, $PM_{2.5}$, PM_{10} using Kriging and IDW ; built exposure risk maps.

[3] Generalizable Road Segmentation in High-Resolution Satellite Images Using Deep Learning.

- Designed a robust pipeline for road detection across different geographical areas.

[4] Performance Comparison of Machine Learning (ML) Algorithms for Land Cover classification, Butler, Ohio.

- Compared (ML) Algorithms (RF, SVM, kNN, GTB, CART and NB); optimized spectral indices for accuracy improvement using Sentinel 2 data on Google Earth Engine.

[5] Urban Growth Analysis – Houston, Texas

- Assessed urban expansion using remote sensing over 20years using RF algorithm.

[6] Vulnerability Assessment of Flood Risk in Greater Accra Using GIS-Based Multicriteria Decision Analysis

- Applied AHP, weighted overlay and hydrological variables to map flood vulnerability.

[7] Geoid Undulation Modelling Using GPS/GNSS and Drone-Derived DTM

- Modelled local geoid variations using GNSS observations and UAV datasets.

Publication

- Christopher, A. A., Prince, O., Clifford, B., Augustine, O. A., Thomas, W., & Kwame, O. (n.d.). Performance comparison of machine learning algorithms for land cover classification. Geo-spatial Information Science. (Manuscript under review)

Conferences & Workshops

Geomundus 2025: *Geospatial Data for Disaster Management and Climate Resilience.*

Geomundus 2024: *Air Quality Prediction Using Sentinel-5P and Machine Learning.*

Awards & Honors

Erasmus Mundus Joint Masters Scholarship, MSc Geospatial Technologies (2024–2026)

Provost's Excellent Students Award – KNUST (2020, 2021, 2022)

Ghana Cocoa Board Scholarship (2014–2017)

Skills

Programming & Modelling
Python · R · JavaScript · NumPy · Scikit-Learn · TensorFlow · PyTorch · Keras · GeoAI · Spatial Data Mining

GIS & Remote Sensing Tools
ArcGIS Pro · QGIS · ERDAS Imagine · Google Earth Engine · ArcGIS Online · AutoCAD

Geospatial Competencies
Satellite Image Processing · Deep Learning for EO · ML Classification · Geostatistics · Time-Series Analysis · Spatial Modelling · Environmental Monitoring · HPC Environment (PALMA II)

Soft Skills
Scientific Writing · Public Speaking · Analytical Thinking · Teamwork · Problem Solving · Attention to Detail

Languages
English (Native) · German (A1) · Portuguese (A1) · French (A1)

Certification

- Spatial Data Science – Esri
- Transform AEC Projects with GIS & BIM – Esri
- G.R.O.W Training (Goals, Requisites, Opportunities, Win)