

Bernard Asare Owusu

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Education

- 09/2024—2028 ***Ph.D., University College Dublin***
Seismology
 - *Thesis:* Modeling the structure of geothermal regions using joint inversion.
 - *Committee:* Dr. Emma Chambers (advisor), Prof. Chris Bean, Dr. Aline Melo.
- 01/2022—11/2023 ***M.Phil., Kwame Nkrumah University of Science and Technology***
Geophysics
 - *Thesis:* Seismic facies analysis with machine learning for reservoir characterization.
 - *Supervisor:* Dr. Cyril D. Boateng.
- 09/2016—08/2020 ***B.Sc., Kwame Nkrumah University of Science and Technology***
Physics (with Geophysics)
 - *Thesis:* Depth estimation of underground sewer pipes using ground penetrating radar.

Research Experience

- 09/2024—2028 ***Dublin Institute for Advanced Studies***
PhD Student
 - Applying a new joint geophysical-petrological inversion methodology to the Krafla volcanic system in Iceland to produce new velocity and temperature models.
- 11/2023—05/2024 ***Kwame Nkrumah University of Science and Technology***
Research Assistant, Geophysics Research Group
 - Reprocessed petrophysical data using machine learning-based methods.
 - Conducted petrophysical property prediction from well data.
- 01/2023—09/2023 ***Kwame Nkrumah University of Science and Technology***
Graduate Research Assistant
 - Developed a seismic facies analysis workflow for lithology prediction using multi-attribute analysis, unsupervised machine learning, and spectral decomposition.
 - Conducted research on the identification of channels using unsupervised waveform clustering and spectral decomposition.
 - Assisted in machine learning-based fault prediction in the Tano basin using CNN.

Awards

- 2024—2028 ***Scholarship***, Full PhD Scholarship under the Science Foundation Ireland-Irish Research Council Pathway Programme at the Dublin Institute for Advanced Studies.
- 2023 ***Graduate Assistant Award***, Graduate Assistantship award of \$700.00 at KNUST, Ghana.

Teaching Experience

01/2023—09/2023 *Kwame Nkrumah University of Science and Technology*

Graduate Teaching Assistant

- Assisted students in geophysical data processing, analysis, and interpretation.
- Instructed undergraduate students on the use of geophysical software packages.
- Supervised undergraduate students in their final-year dissertations.

Professional Experience

09/2023—10/2023 *Ghana National Petroleum Corporation*

Geophysicist (Internship)

- Picked faults in 3D seismic volumes using manual fault tracking and ML-assisted fault prediction.
- Identified channels, fairways, and deepwater fans in seismic data.
- Generated structural and attribute maps to identify leads.

09/2020—08/2021 *Ghana Atomic Energy Commission*

Laboratory Assistant

- Assisted in environmental monitoring using XRF method.

Publications

Peer-reviewed journal

[1] **Owusu, B. A.**, Boateng, C. D., Asare, V. S., Danuor, S. K., Adenutsi, C. D., and Quaye, J. A. (2024). Seismic Facies Analysis using Machine Learning Techniques: A Review and Case Study. *Earth Science Informatics*. [Accepted for Publication]

Affiliations and Memberships

Student Member Ghana Institution of Geoscientists.

Student Member Society of Exploration Geophysicists.

Technical Skills

Word Processing

Microsoft Office Suite and L^AT_EX.

Operating System

Windows OS and Linux.

Programming

MATLAB, Shell Scripting, and Python.

Geophysical Data Processing

ReflexWin and CREWES MATLAB Toolbox.

Geophysical Data Interpretation

HampsonRussell, OpendTect, Petrel, and IHS Kingdom Suite.