Cephas Acquah Forson, M.Sc.

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Professional Summary

A highly motivated and detail-oriented researcher with expertise in Data Science, Statistics, and Geographic Information Systems (GIS). Over seven years of professional experience in research, geological database management, and spatial analysis. Demonstrated expertise in Bayesian statistical modeling, machine learning, and predictive modeling techniques, with a focus on inverse materials design and advanced statistical tools. Currently engaged in research on Bayesian Shrinkage Regression Models (BSRM) for optimizing material properties. Passionate about mentoring students and contributing to innovative statistical research.

Education

Master of Data Science (MDSC)
Memorial University of Newfoundland, St. John's, NL
Graduated: 2024

- Self-funded program, showcasing strong commitment and resourcefulness.
- Key coursework: Statistical Inference, Statistical Exploration of Data, Regression Modeling, Computational Statistics, and Experimental Design.

M.Sc. Geographical Information Systems (GIS)
University of Aberdeen, United Kingdom
Graduated: 2015

- Recipient of the Tullow Group Scholarship.
- Awards: Best Graduate Project, Richard Johnson Award for Best Presentation.
- Capstone Project: Developed a cost-efficient web mapping system for Aberdeen City Council.

B.Sc. Geomatic Engineering
University of Mines and Technology (UMaT), Tarkwa, Ghana
Graduated: 2012

Research Experience

Research Student (Capstone Project) – Bayesian Shrinkage Regression Models for HEAs
Memorial University of Newfoundland | March 2024 – September 2024

- Applied Bayesian Shrinkage Regression Models (BSRM) to predict material properties in High-Entropy Alloys (HEAs).
- Developed predictive models to optimize compositions for specific hardness-to-elastic modulus ratios.
- Enhanced the accuracy of inverse materials design through advanced statistical modeling techniques.
- Contributed to a forthcoming peer-reviewed publication.

Geological Data Integration and Visualization
Managem Group Ltd., SMM Tri-K Mine, Guinea | April 2020 – August 2023

- Researched and implemented processes for integrating geological, assay, and survey data into centralized SQL databases.
- Applied GIS methodologies to create geological maps and 3D visualizations for exploration strategies.
- Trained geologists on data management practices, enhancing compliance and consistency.

Web Mapping System for Urban Development
Aberdeen City Council, United Kingdom | June 2015 – September 2015

- Conducted research on urban development and identified digital investment opportunities.
- Designed a cost-efficient web-based mapping system using open-source GIS tools.
- Standardized diverse datasets to improve strategic planning accessibility.

Professional Experience

Database Manager (Geology and GIS)
Managem Group Ltd., West Africa | April 2020 – August 2023

- Managed geological and geochemical databases for exploration projects valued at millions of dollars.
- Automated workflows using Python and SQL to improve data integrity and accessibility.
- Conducted spatial analyses to support mineral targeting and decision-making.

GIS and Database Engineer
Ghana Manganese Company (GMC), Ghana | September 2016 – April 2020

- Designed and implemented survey and geology tasks for daily operations.
- Managed relational databases for exploration and mining-grade control data.
- Applied machine learning techniques to analyze ore body characteristics and enhance resource estimations.

Lecturer Assistant
Sunyani Technical University, Ghana | September 2012 – September 2014

- Delivered lectures in IT and Building and Construction Surveying, achieving significant improvements in student performance.
- Assisted faculty and students with lab work, increasing departmental efficiency.

Technical Skills

- **Programming and Tools:** Python, SQL, R, ArcGIS, QGIS, Surpac.
- **Statistical and Data Science Techniques:** Bayesian Regression Models, Shrinkage Methods, Generative Adversarial Networks (GANs), Predictive Modeling, Visualization (Matplotlib, Seaborn).
- **Database Management:** Relational Databases, Geodatabase Design, Data Integrity Monitoring.

- **Soft Skills:** Excellent presentation and mentoring abilities; effective communication of complex ideas.

Publications and Presentations

Inverse Design of Multi-Principal Element Alloys through Generative Adversarial Networks
Collaborators: Ehsan Gerashi, Armin Hatefi, and Sima A. Alidokht.

- Publication (Forthcoming): Explores machine learning techniques for designing HEAs with desired mechanical properties.

Awards and Recognitions

- **Graduate Research Scholarship:** Tullow Group Scholarship Scheme (2014, Full Scholarship).
- **Best Graduate Project Award:** University of Aberdeen (2015).
- **Richard Johnson Award for Best Presentation:** University of Aberdeen (2015).
- **Outstanding Performance as GIS Manager:** Managem Group (2022).

Volunteer Experience

Mentorship
University of Mines and Technology (UMaT) | 2018 – Present

- Provided academic and career mentorship to students, focusing on career and research development.

GIS Analyst
Community Mapping Project, Aberdeen City Council, UK | 2015

- Created detailed spatial analyses to support urban development initiatives.

References

1. **Armin Hatefi**
   Assistant Professor of Statistics
   Memorial University of Newfoundland

2. **Sima A. Alidokht**
   Assistant Professor
   Memorial University of Newfoundland