SARAH FOBI MENSAH

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RESEARCH INTERESTS

High dimensional data analysis (particularly in health-related applications), functional data analysis, dimensionality reduction techniques, regression modeling and machine learning.

EDUCATION

Ph.D. Statistics, GPA: 3.91 — Expected: 12/ 2027
Montana State University, Bozeman, MT

M.S. Statistics, GPA: 3.89 — 05/2024
Montana State University, Bozeman, MT

B.S. Actuarial Science, GPA: 3.89 — 09/ 2021
Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

PROFESSIONAL EXPERIENCE

Institute for Mathematical and Statistical Innovation (IMSI), Chicago, Illinois
Data Science Bootcamp Participant — 06/2024

Montana State University, Bozeman, Montana
Graduate Researcher — 08/2024 - present
Graduate Research Assistant — 12/2023 – 05/2024
Statistical Consultant — 1/2024 – 05/2024

Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana
Research Assistant — 08/2021 – 07/2022

KPMG, Australia (Virtual)
Data Analytics Intern — 7/2020 – 8/2020

TEACHING

Montana State University, Bozeman (MSU), MT

Graduate Teaching Assistant — 08/2022 - present

Course Assistant
Spring 2025 – STAT 337 (Intermediate Statistics with Computing)
Fall 2024 – STAT 337 (Intermediate Statistics with Computing)
Fall 2023 – STAT 337 (Intermediate Statistics with Computing)
Spring 2023 – STAT 216 (Introduction to Statistics)
Fall 2022 – STAT 216 (Introduction to Statistics)

Instructor
Summer 2025 – STAT 216 (Introduction to Statistics)
Summer 2024 – STAT 216 (Introduction to Statistics)

Tutor
Fall 2022 – Math and Stat learning center (MSC)

Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana

Undergraduate Teaching Assistant — 10/2021 – 07/2022

Spring 2022 – STAT 371 (Regression Analysis)
Fall 2021 – STAT 153 (Statistical Methods I)

AWARDS AND SCHOLARSHIPS

Summer Travel Award, Department of Mathematical Sciences, MSU 02/2025
Full PhD assistantship award, Department of Mathematical Sciences, MSU 08/2024
Master of Science in Statistics, Montana State University 05/2024
Fee waiver scholarship, Department of Mathematical Sciences, MSU 02/2024
Full MS assistantship award, Department of Mathematical Sciences, MSU 08/2022
Academic excellence scholarship recipient, Ghana Scholarship Secretariat 05/2021

VOLUNTEERING & LEADERSHIP

Volunteer, Human Resource Development Council (HRDC), Bozeman, MT 02/2025 - present
Student mentor, Actuarial Science Student Association, KNUST chapter 09/2019 – 05/2021
Judicial Committee Chair, Actuarial Science Student Association, KNUST chapter 09/2020 – 08/2021
Deputy Finance Chair, Actuarial Science Student Association of Ghana 09/2019 – 05/2020

PUBLICATIONS

Accepted and published

Chondrocytes Embedded in Agarose Generate Distinct Metabolic Heat Profiles Based on Media Carbon Sources. *Annals of Biomedical Engineering, 1-9* (2025).

- Determined if three-dimensionally encapsulated chondrocytes are capable of heat production toward improving knowledge of chondrocytes central metabolism.

Modeling of the Daily Dynamics in Bike Rental System Using Weather and Calendar Conditions: A Semi-Parametric Approach. *Scientific African* (2024): e02211.

- Proposed a robust method using penalized splines quasi-Poisson regression to model bike rentals, revealing hidden relationships not identified by traditional parametric models which informed future transportation strategies.

Predictive Analysis of Misuse of Alcohol and Drugs using Machine Learning Algorithms: The Case of using an Imbalanced Dataset from South Africa. *Appl. Math* 17, no. 2 (2023): 261-271.

- Compared six supervised machine learning algorithms to predict alcohol and drug abuse across South Africa's nine provinces and proposed an optimal predictive model.

In preparation

Metabolic Heat Profiles in Chondrocytes: A Comparison of Functional and Integrated Data Approaches.

- Compared a functional approach that analyses heat curves over time to an integrated approach that aggregates instantaneous heat measurements over time.

CERTIFICATIONS

Biomedical Responsible Conduct of Research Course, CITI Program 01/2024
IRB Social and Behavioral Research, CITI Program 01/2024
Git, Simplilearn 11/2023
Data Visualization in R with ggplot2, LinkedIn 11/2021
The Data Scientist’s Toolbox, Coursera 03/2021
SQL for Data Science, Coursera 12/2020
Excel/VBA for Creative Problem Solving, Part 1, Coursera 11/2020
Python Data Structures, Coursera 11/2020
Programming for Everybody, Getting Started with Python, Coursera 10/2020

TECHNICAL SKILLS

Programming Languages: R (Markdown, Quarto, Stan, JAGS, Shiny), Python (Pandas, NumPy), SAS
Database: SQL
Project Management Tool: Git/GitHub
Statistical Methods: Functional data analysis, Bayesian data analysis, regression modeling, spatial data analysis, experimental design

PROFESSIONAL AFFILIATIONS & HONOR SOCIETY

American Statistical Association
Member 03/2024
Participant, JSM Diversity Mentoring Program 08/2024

Royal Statistical Society
Student member 01/2024

The Honor Society of Phi Kappa Phi
Member, Montana State University 01/2024