

Alimatu Agongo

PhD Student in Mathematics (Statistics Concentration)

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Professional Summary

PhD student in Mathematics with a concentration in Statistics and research experience in survival analysis, cure models, machine learning, and statistical simulation. Experienced in developing and evaluating statistical models, conducting simulation studies, analyzing biomedical and survival data, and implementing statistical methods in R. Strong background in research, teaching, quantitative problem solving, and communicating complex statistical concepts.

Education

University of Texas at Arlington

PhD in Mathematics, Statistics Concentration

Arlington, TX

Expected 2029

- Research focus: Survival Analysis, Cure Models, Machine Learning, Interval-Censored Data, and Statistical Methodology.

University of Texas at Arlington

Master of Science in Mathematics

Arlington, TX

Expected Fall 2026

Kwame Nkrumah University of Science and Technology

Bachelor of Science in Statistics, First Class Honors

Kumasi, Ghana

2023

Research Experience

University of Texas at Arlington

Graduate Research Assistant

Arlington, TX

Jan. 2025 – Present

- Conduct research in survival analysis with emphasis on promotion time cure models and the integration of machine learning methods into cure-rate modeling.
- Develop and evaluate statistical methodology for right-censored and interval-censored survival data using expectation-maximization (EM) algorithms and simulation studies.
- Implement and compare statistical and machine learning approaches, including logistic regression, splines, support vector machines, decision trees, random forests, neural networks, and gradient boosting methods.
- Design Monte Carlo simulation studies to evaluate model performance using measures such as bias, mean squared error, survival estimation, and predictive discrimination.
- Apply statistical methods to biomedical data and investigate extensions of cure models to more general censoring mechanisms.
- Develop computational workflows in R and use high-performance computing resources for large-scale simulation studies.

Kwame Nkrumah University of Science and Technology

Undergraduate Research

Kumasi, Ghana

2019 – 2023

- Conducted comparative analysis of Support Vector Machine and Long Short-Term Memory models for forecasting Ghana's exchange rate.
- Applied ARIMA models to time-series forecasting of petroleum prices.
- Used statistical methods to investigate differences in student accommodation prices.

Selected Research Projects

Machine Learning Methods in the Promotion Time Cure Model

UTA

- Investigated the incorporation of machine learning methods into the incidence component of promotion time cure models.
- Compared traditional regression with SVM, decision tree, random forest, neural network, spline, and gradient boosting approaches through simulation and real-data analysis.
- Evaluated methods using cure-probability estimation, survival estimation, and predictive performance.

- Developed and studied EM-based estimation procedures for promotion time cure models under interval censoring.
- Investigated extensions to mixed-case interval censoring, including left-censored, interval-censored, right-censored, and exact event-time observations.
- Explored parametric and semiparametric approaches to modeling the latency distribution.

Teaching Experience

University of Texas at Arlington

Graduate Teaching Assistant, Department of Mathematics

Arlington, TX

Sep. 2024 – Dec. 2024

- Supported undergraduate Calculus instruction through grading, assessment, exam proctoring, and student assistance.
- Explained mathematical concepts and problem-solving methods to undergraduate students.

Kwame Nkrumah University of Science and Technology

Undergraduate Teaching Assistant, Department of Statistics and Actuarial Science

Kumasi, Ghana

Sep. 2023 – Sep. 2024

- Provided instructional support in undergraduate statistics and data analysis courses.
- Assisted students with statistical concepts, data analysis, and undergraduate research projects.
- Graded examinations and assignments and developed assessment materials.

Additional Research Experience

Bureau of Integrated Rural Development

Junior Research Assistant

Kumasi, Ghana

Oct. 2022 – Dec. 2022

- Conducted quantitative and qualitative data analysis using R and Excel.
- Assisted with literature reviews, survey development, data collection, and preparation of manuscripts, abstracts, and posters.
- Transcribed interviews, managed research data, and produced data visualizations for ongoing research projects.

Research Presentations

“A Comparative Study of Machine Learning Methods in the Promotion Time Cure Model”
Tea Time Research Talk, Division of Data Science, Department of Mathematics, University of Texas at Arlington Oct. 24, 2025

Conferences & Workshops

- Teaching Statistical Thinking Workshop, Curry College, Milton, MA
 - Preparing to Teach Statistics and Data Science Workshop, Boston, MA
 - LS-PAC MODELS Workshop: The Future of Academia – “Are You In or Are You Out?”, Louisiana State University, Baton Rouge, LA
 - KU Probability and Statistics Conference 2024: Stochastic Analysis and Related Areas, University of Kansas, Lawrence, KS
- Jul. 31–Aug. 1, 2026
- Aug. 2, 2026
- Apr. 12–13, 2025
- Nov. 9–10, 2024

Technical Skills

Programming:

Statistical Methods:

Machine Learning:

Software & Tools:

Research Skills:

R, Python, SQL

Survival Analysis, Cure Models, Regression Analysis, Time Series, Monte Carlo Simulation, EM Algorithms

Logistic Regression, Support Vector Machines, Decision Trees, Random Forests, Neural Networks, Gradient Boosting

LaTeX/Overleaf, SPSS, Excel, High-Performance Computing (HPC)

Statistical Modeling, Data Analysis, Simulation Studies, Literature Review, Scientific Communication

Honors & Leadership

- Winner, National Statistics Quiz Competition, Ghana, 2022.

- Academic Board Member, Ghana Association of Statistics Students, 2021–2022.
- Deputy Head of Internship & Scholarships, 2022–2023.