SMAILA AMOANU

PhD Student, Statistics & Data Science (Mathematical Statistics), University of Nevada, Reno (UNR)

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Education

PhD, Statistics & Data Science (Mathematical Statistics) — *University of Nevada, Reno, USA* 2024–present
Advisor: **Mihye Ahn, PhD**. Focus: Probability & Measure, Statistical Inference, Time Series, Linear Models.

MSc, Mathematics — *African Institute of Mathematical Sciences (AIMS), Rwanda* 2023–2024
Thesis: *Retrospective impact quantification of malaria interventions in Ghana (IRS focus).*
Supervisors: **Stephen Moore (UCC, Ghana)**; **Christian Selinger (Swiss TPH)**.

BSc, Statistics — *Kwame Nkrumah University of Science & Technology (KNUST), Ghana* 2018–2022
Undergraduate Thesis: *Impacts of government expenditure on economic growth in Ghana* (VAR & cointegration).
Supervisor: **R. K. Avuglah, PhD**.

Research Interests

Probability & Measure; Statistical Inference (likelihood/GLR); Time Series (ARMA/GARCH; weak dependence); Biostatistics & Epidemiology (malaria modeling); Bayesian methods; Interpretable ML.

Manuscripts & Works in Progress

- **Central Limit Theorems for Estimators in ARMA Models under Weak Dependence: Theory and Empirical Validation** — in preparation, 2025. Theory development with validation on financial and public-health time series (R).

- **Comparative Forecasting of Financial Time Series Using ARIMA, GARCH, Random Forest, and XGBoost Models** — working paper/preprint, 2025. Comparative evaluation using MAE, RMSE, and MAPE (R).

- **Comparative Machine Learning Models for Diabetes Prediction** — with collaborators, in progress, 2025. Benchmarking via R `mlr3`; calibration, interpretability, and deployment considerations.

Research & Analytics Experience

MSc Thesis Researcher — *AIMS Rwanda — Epidemiology & Biostatistics* 2023–2024

- Quantified retrospective impact of malaria interventions (IRS focus) in Ghana using district-level geospatial data.

- Built stochastic and deterministic transmission models; parameterized with MAP inputs; summarized findings for targeting and planning.

OpenMalaria Policy Simulations — *Geita, Tanzania* 2024

- Ran intervention scenarios in **OpenMalaria** (VecNet baselines) and summarized outcomes for decision support.

Technical Pricing (Insurance) — *Machine Learning*   2023

- Trained KNN, Random Forest, and XGBoost models on `freMPL3`; evaluated with RMSE and R^2.
- Used encoding and scaling; applied PDP and **SHAP** for interpretation.

Undergraduate Thesis — *KNUST* — *Time Series & Econometrics*   2022

- VAR/VECM analysis of government expenditure and GDP growth in Ghana.
- Stationarity checks (ADF), lag selection (AIC/BIC), cointegration testing (Johansen), and model estimation.
- Granger causality, impulse response functions, and FEVD; summarized implications.

Ghana Crime Trends & Forecasting — *Time Series & Dashboards*   2022

- Built an analytics dashboard for 2010–2021 crime trends by city/offense; produced national forecasts using ARIMA.

Counterfeit Banknote Detection — *Statistical Modeling*   2022

- Developed a logistic regression classifier in R using geometric features; summarized feature relevance and decision thresholds.

Financial Stress & Academic Performance — *Study Design & Inference*   2020

- Designed an analysis of fee arrears and grades using one-way ANOVA and two-sample *t*-tests; reported findings for action.

Teaching Experience

Teaching Assistant / Instructor — *KNUST* — *Dept. of Statistics & Actuarial Science*   Nov. 2022–Aug. 2023

- Prepared lecture notes and slides using LaTeX (Overleaf).
- Taught/assisted sessions in **Regression Analysis**, **Differential Equations**, and **Algebra**.
- Supported undergraduate and graduate students with research work and academic guidance.
- Managed assessment support: assignments/exams on the virtual classroom, grading, attendance, and student records.
- Designed flyers/posters and coordinated the department's weekly graduate seminar series.

Teacher — *Estann Schools Complex, Awutu-Bawjiase, Ghana*   Jun. 2017–Aug. 2018

- Planned weekly instruction and assessments; prepared handouts and learning support materials.
- Used Excel to track and analyze student performance; communicated progress and needs to parents.

- Conducted small surveys and reported findings to support school decision-making.

Teaching Appointments — *University of Nevada, Reno (UNR) — Dept. of Mathematics & Statistics*   Fall 2024–present

- **Graduate Teaching Assistant, MATH 126: Precalculus I** (Fall 2024) — recitations, office hours, grading support.

- **Graduate Teaching Assistant, MATH 181: Calculus I** (Spring 2025) — recitations, problem sessions, exam review, grading support.

- **Instructor of Record (Lead Lecturer), MATH 126-4001: Precalculus I** (Summer 2025) — primary instruction; assessment design; Canvas & Pearson MyLab course management.

- **Graduate Teaching Assistant, MATH 181: Calculus I** (Fall 2025) — recitations, office hours, grading support.

- **Instructor of Record (Lead Lecturer), MATH 181: Calculus I** (Winter 2026) — primary instruction; assessment design; course management; office hours.

- **Graduate Teaching Assistant, STAT 152: Introduction to Statistics and Probability** (Spring 2026) — recitations/labs, office hours, grading and student support.

Industry / Professional Experience

Database Developer (Consultant) — *Independent Client Projects*   2019–present

- Designed and deployed Microsoft Access/SQL database systems for schools and small businesses, from requirements gathering to implementation and handover.

- Developed relational schemas (ERDs), validated data-entry forms, queries, and automated reports/dashboards for operations and management reporting.

- **Selected client systems:**

  - *Reliance Technical Co. (Kuwait)* — **HR Database (MS Access)**, Nov. 2023–Feb. 2024: employee records, documents/contracts, leave tracking, payroll-ready fields; role-based access; reporting; training and documentation.

  - *MorePlex Company Ltd (Ghana)* — **Company Management System (MS Access)**, 2021–2022: employees/HR, payroll workflows, production tracking, inventory, procurement; reporting; training and documentation.

  - *Y2M Co. Ltd (Mauritius)* — **Inventory & Sales Management (MS Access)**, [Year]: stock and sales tracking, invoicing, automated reports; training and documentation.

  - *TEALEX IT Shop (Sierra Leone)* — **Inventory & Sales Database (MS Access)**, [Year]: stock movement, transaction logging, sales reports; training and documentation.

  - *Archfield School (Ghana)* — **School Management System (MS Access)**, [Year]: enrollment, student records, fees/receipts, term reports; training and documentation.

  - *Modern High School (Ghana)* — **School Management System (MS Access)**, [Year]: enrollment, attendance, assessments/grading, fees/receipts, term reports; training and documentation.

- *Nolawi Academy (Ethiopia)* — **School Management System (MS Access)**, [Year]: enrollment, attendance, assessments/grading, fees/receipts, term reports; training and documentation.
  - *Great Admissions College (Guinea)* — **School Management System (MS Access)**, [Year]: enrollment, attendance, assessments/grading, fees/receipts, term reports; training and documentation.

Database Developer (Consultant) — *PEKO Plaza — Kumasi, Ghana*   Jun. 2020–Apr. 2021

- Architected multi-division databases; migrated legacy spreadsheets to relational backends; produced ERDs.
- Implemented automated backups and reporting queries; supported users through training and documentation.

Data Entry & Claims Analytics (Intern) — *Awutu Bawjiase Polyclinic — Ghana*   Jul. 2021–Sept. 2021

- Consolidated insurance claims across departments, cleaned anomalies, and delivered monthly earnings summaries/dashboards.

Entrepreneurship, Outreach & Media

- **Founder, Arkos Datateks** (2020–present) — software solutions and training for businesses and institutions (POS/Inventory, School Management, Payroll/Invoice).
- **Founder, DataTechsTutorials (YouTube)** (2021–present) — 14,000+ subscribers; tutorials on Microsoft Access, SQL, and Excel; database design and analytics mentoring.
- **Founder, The Christ Walk (YouTube/Facebook)** (2024–present) — motivational and Bible-teaching series with regular publishing.
- **Author** — *PRAYER: Connecting Earth and Heaven*; *Visions of the Night, Victories in the Day*; *You Are Not Here by Accident.*

Awards & Honors

- Scholarship of Merit, University of Nevada, Reno (USA), 2024.
- Scholarship of Merit, AIMS Rwanda, 2023–2024.
- Top-5 ranked PhD applicants (cohort), UNR, 2024.
- Most Outstanding Student, Great OSTECH, 2017.
- Best I.C.T. Student, 2015.

Certifications (Selected)

Power BI for Beginners (SkillUp by Simplilearn); Introduction to SQL (DataCamp); Website Design using WordPress (Copes I.T. Labs); Modern Statistics & ML (AIMS Research for Global Health); Data Analysis using Excel (Open Labs Ghana).

Conferences & Workshops (Selected)

- MIM Conference, Rwanda (Apr. 2024).

- Modern Statistics & ML for Global Health, Rwanda (Feb. 2024).

- Jobberman Soft-Skills Seminar, Ghana (Apr. 2022).

- Starting a Career in Data Science (May 2021).

- Academic & Business Symposium, Ghana (Mar. 2020).

Technical Skills

Statistics/ML	R (mlr3, tidyverse), Python (pandas, numpy, scikit-learn), SQL, SPSS, Stata, MATLAB
Data/BI	Power BI, Advanced Excel, Google Workspace
Methods	GLR, ANOVA/Regression, Time Series (ARIMA/ARMA), Survival, Bayesian basics
Development	VBA (MS Office), LaTeX/Overleaf, ERD/schema design, basic Git
Epidemiology Tools	OpenMalaria; geospatial data preparation

Leadership & Service

- **Men's Ministry Leader**, PIWC Reno (2025–present).

- Academic Board Head, Science Students Association, KNUST (2021–2022).

- Deputy Electoral Commissioner, Ghana Assoc. of Statistics Students, KNUST (2020–2021).

- Organizer, weekly department research seminars (KNUST).

References

Available upon request (recommended contacts: **Mihye Ahn, PhD**; **Stephen Moore**; **Christian Selinger**; **Paul Hurtado, PhD**).