

ANDREWS K. BOAHEN

East Lansing, MI, USA



Andrews Boahen



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RESEARCH INTERESTS

Computer model calibration, Bayesian inverse problems, Uncertainty quantification, AI-Powered & Monte Carlo Inference, Active Learning, Bayesian Optimization and Deep Learning. Application areas include engineering sciences, digital twins and mission-critical physical systems.

EDUCATION

Ph.D. Statistics, MICHIGAN STATE UNIVERSITY

East Lansing, MI

Tentative Thesis: Nonlinear Computer Model Calibration and Related Topics.

Aug 2022 - Current

Advisor: Dr. Chih-Li Sung

M.Sc. Statistics, MICHIGAN STATE UNIVERSITY

East Lansing, MI

Advisor: Dr. Leonard Johnson

Aug 2022 - May 2026

M.Sc. Mathematical Sciences, AIMS-GHANA

Santoe, Greater Accra

Thesis: Large deviations for spatial telecommunication systems: The Boolean model.

Oct 2020 - Jul 2021

Advisor: Prof Kwabena Doku-Amponsah

B.Sc. Actuarial Science, UNIVERSITY OF GHANA

East Legon, Greater Accra

Thesis: Pricing a European put option via genetic algorithm.

Sep 2015 - May 2019

Advisor: Prof Kwabena Doku-Amponsah

PUBLICATIONS

1. **Boahen, A.K.**, Heo, J. and Sung, C.-L. (In preparation). Active Learning for Nonlinear Computer Model Calibration.
2. **Boahen, A.K.**, Katsekor, T. and Doku-Amponsah, K. (2025). Large deviations for spatial telecommunication systems: The boolean model. *Journal of Information and Optimization Sciences*, 1-16. doi/10.47974/JIOS-1338.
3. **Boahen A.K.**, Davis IV, W. L. (2024). In Situ Machine Learning for Intelligent Data Capture and Event Detection. in *Computer Science Research Institute Summer Proceedings 2024*. M. B. P. Adams, T. A. Casey, and B. W. Reuter, eds. Technical Report SAND2024-16688O. Sandia National Laboratories, 2024, pp. 288–297.

SELECTED TALKS

* Invited/ Contributed talks are in blue

1. [SIAM Conference on Uncertainty Quantification \(UQ26\)](#) (March 2026). Active Learning for Nonlinear Computer Model Calibration. (*Minneapolis, MN*).
2. [15th International Conference on Monte Carlo Methods and Applications](#) (July 2025). Active Learning for Nonlinear Calibration. (*Chicago, IL*).
3. [IMS/ASA Spring Research Conference](#) (May 2025). Active Learning for Nonlinear Calibration. (*New York, NY*).
4. CSRI Lightning Talks (July 2024). In Situ Machine Learning (ISML) for Intelligent Data Capture and Event Detection. (*Sandia National Laboratories, NM*).

RESEARCH EXPERIENCE

Michigan State University
Graduate Research & Course Projects

East Lansing, MI
Jan 2026 – May 2026

- Developed an [interactive conformal prediction platform](#) with *Python's streamlit framework*, integrating various regression models.
- Developed an [open-source Python package](#) for Exact and Sparse Gaussian Process Regression, with an interactive app interface underway to extend accessibility to non-technical users.

Michigan State University
Research Assistant

East Lansing, MI
May 2025 – August 2025

- Enhanced the predictive performance of our Non-Additive Calibration (NAC) emulator, achieving 50–60% accuracy improvement in high-dimensional computer experiments.
- Developed novel active learning strategies, derivative-free and MCMC/SGD-based methods to advance model calibration exercises.
- Engineered simulation pipelines for UQ in complex systems, reducing computational overhead across training and active learning workflows by 50%.

Sandia National Laboratories
Summer Intern – Scientific Machine Learning

Albuquerque, NM
June 2024 – August 2024

- Extended ISML algorithms with manifold-learning signatures to enable robust, real-time event detection in nonlinear climate simulations, broadening the applicability of ISML to complex dynamical systems.
- Delivered a lightning talk on ISML algorithms and manifold-learning signatures for real-time event detection to 70 interns and researchers at Sandia's CSRI Summer Symposium.
- Published technical report in CSRI Summer Proceedings 2024 (SAND2024-166880).

African Institute for Mathematical Sciences
Research Master Student

Santoe, Accra
January 2022 – August 2022

- Improved extreme value index estimation in Pareto-type distributions by developing a generalized Pickands estimator that reduced RMSE relative to Hill and bias-corrected Hill competitors across multiple regression frameworks.
- Rigorously characterized the generalized Pickands estimator through theoretical derivations and simulation studies, establishing consistency, unbiasedness, asymptotic normality, and convergence rates under Pareto-type tail assumptions.

HONORS & AWARDS

(2026) Selected as a **finalist for the Institute of Mathematical and Statistical Innovation (IMSI) Summer Graduate Student Internship program**, and funded to participate in the two-week Spring Coding and Data Science Bootcamp.

Awarded the Michigan State University **Graduate School Travel Fellowship** evaluated at \$1000.

(2025) Recipient of the **JMP-P&G Student-Early Career Travel Award** evaluated at \$600.
Elected as a **full member in Sigma Xi**, The Scientific Research Honor Society.

(2024) **Fellowship award** from the **Sustainable Research Pathways (SRP) summer program**.

(2022) Awarded the **research master student scholarship** for the best graduating student from AIMS-Ghana.

(2021) **Valedictorian, summa cum laude** for the 2021 graduation class at AIMS-Ghana.

Winner of the **Design Thinking Hub Hackathon** organized by AIMS-Ghana during graduation week.

Awarded the **F.K.A. Allotey Meritorious award** given to students with at least 6 distinctions (grade $\geq 85\%$) in the review phase of the program and a distinction in their final essay.

- (2020) Awarded the **African Institute for Mathematical Sciences scholarship** estimated at \$25,000.
- (2019) **Winner** of the National Inter-tertiary Actuarial Quiz.
- (2016) Awarded the **UG Sponsorship Scholarship** for brilliant but needy students, covering tuition for the academic years 2016-2017, 2017-2018 and 2018-2019.
- (2011) Selected to be part of the **English Access Micro-Scholarship Program (Access)** sponsored by the U.S. department of State.

SKILLS

Statistical Methods	Gaussian & Deep Gaussian Process Modeling, Bayesian and Variational Inference, MCMC, Conformal Prediction.
Optimization & Design	Sequential design/Active learning, Bayesian optimization and calibration, MCMC/SGD-based calibration, Optimal experimental design.
Machine Learning Programming Languages	Generative models, Manifold learning, CNNs/RNNs, Transformers. RStudio, Python (PyTorch, Keras, TensorFlow), HPC. English (Very fluent), French (Very fluent).

TEACHING EXPERIENCE

Instructor, Michigan State University		
· STT 200 Statistical Methods		2023 Summer
Graduate Teaching Assistant, Michigan State University		
· STT 200 Statistical Methods	2022F, 2023S, 2023F, 2024S, 2024F, 2025S, 2025F	
· STT 882 Probability Theory II		2026S
· STT 872 Statistical Inference		2026S
· STT 843 Multivariate Data Analysis		2026S
Graduate Teaching Assistant, University of Ghana		
· STAT 446 Multivariate Methods		2020S
· STAT 608 Biostatistical Processes		2020S
· STAT 221 Introductory Probability I		2019F
· ACTU 407 Survival Analysis and Modelling		2019F
· STAT 451 Introduction to Stochastic Processes		2019F

SERVICE & PROFESSIONAL AFFILIATIONS

Student Member	IMSI, ASA, SIAM, Sigma Xi
General Secretary	African Graduate Student Association (2026 - 2027)
Elected Student Representative	MSU Statistics Colloquium Committee (2025 – 2026)
Graduate Student Instructional Leader	MSU STT Department (2025 - 2026)
Graduate Student Mentor	MSU STT Department (2023 - 2025)
Mentor (Volunteer)	Lumiere Education (2024-2025)
Judge	28th Annual University Undergraduate Research and Arts Forum (UURAF)
Evaluator	2025 Mid-Michigan Symposium for Undergraduate Research Experiences (MidSURE)
Outreach	12th Annual MSU Science Festival
Outreach	AIMS-Ghana Pi Day Science Event at Santoe
Quiz Team Lead	University of Ghana Actuarial Science Club

MEDIA SPOTLIGHTS

- Oct 2024** **Featured in** Summer 2024 Doctoral Student Internships. MSU Department of Statistics & Probability News. [Link](#)
- Jun 2024** **Featured Participant Profile.** Sustainable Research Pathways (SRP) Program. Sustainable Horizons Institute (2024 spotlight on program alumni/participants). [Link](#)
- Apr 2024** **Featured in Outreach Coverage.** STT Hosts Hands-on Event at MSU Science Festival. MSU STT Department News. [Link](#)
- Nov 2023** **Quoted in Department News.** Instructional Mentoring Program for PhD Students. MSU STT Department News . [Link](#)
- Jul 2021** **Featured as Overall Best Student and Valedictorian.** AIMS Ghana Holds its 9th Graduation Ceremony. African Institute for Mathematical Sciences (AIMS) Ghana News. [Link](#)

REFERENCES

Available upon request.