Christopher Odoom

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Profile

- **Statistics PhD Candidate** with 3+ years of experience building statistical and machine-learning workflows for high-dimensional, complex, and real-world data. Strong background in Python, R, SQL, predictive modeling, complex survey analysis, deep learning, with peer-reviewed publications and experience leading projects from data processing and model development to interpretation, reporting, and stakeholder communication.

Skills

- **Statistics:** complex survey inference, GLM/GLMM, GAMs, penalized splines, nonparametric methods, survival analysis, claims-cost modeling
- **Public Health Analytics:** accelerometry processing, sedentary behavior estimation, NHANES analysis, population-health modeling
- **Machine Learning:** deep learning, XGBoost, CatBoost, LightGBM, model selection, cross-validation, Optuna tuning
- **Programming:** Python, R, SQL; pandas, NumPy, scikit-learn, statsmodels, `dplyr`, `survey`, `mgcv`, `lme4`
- **Tools:** Git/GitHub, Slurm, Jupyter, R Markdown, LaTeX, reproducible reporting

Experience

University of Massachusetts Amherst | Primary Instructor, STAT 111 September 2026 – December 2026

- **Primary instructor for introductory statistics**, teaching two 75-minute classes per week on data, study design, probability, estimation, and hypothesis testing
- **Designed the full course curriculum and instructional materials**, including lecture slides, activities, assignments, review sessions, and assessments
- **Developed and administered four midterms and a final examination** aligned with course learning objectives
- **Managed grading, student feedback, office hours, and course communication** through Canvas and WebAssign

ADALab, University of California San Diego | Research Assistant April 2026 – September 2026

- **Porting CHAP posture-classification inference from Python to R** for prediction-only accelerometer-based sedentary-behavior research
- **Reimplementing CNN and bidirectional LSTM architecture in R** and loading pre-trained CHAP model weights for reproducible posture prediction
- **Validating Python–R prediction equivalence** on NHANES accelerometer data, with matching timestamps, labels, and probabilities within floating-point precision
- **Applying the externally validated CHAP-wrist model** to NHANES wrist data and contributing technical feedback to improve prediction-only workflows

Center for Data Science and Artificial Intelligence, UMass Amherst | Project Manager Jun 2025 – Aug 2025

- **Designed statistical efficiency metrics** for GPU jobs (rate- and duration-normalized); built Python pipeline across **665K** job logs to estimate, track, and report utilization
- **Automated reporting & dashboards** for stakeholders; prioritized interventions with research computing
- **Led a team of 4** and coordinated with Unity stakeholders/faculty mentors to align analytics with user needs

Department of Mathematics & Statistics, UMass Amherst | Researcher Sep 2022 – May 2026

- **Graduate Research Assistant**: Nonparametric derivative estimation with penalized B-splines; asymptotics and an improved estimator — *May 2024–Jul 2025*
- **Student Statistical Consultant**: Study design, modeling, reproducible workflows; written recommendations — *Sep 2023–May 2024*
- **R Tutor**: R Tutoring Centre — data wrangling, visualization, and introductory modeling in R — *Sep 2023–Dec 2023*

Projects

- **NHANES Sedentary Behavior Estimation** — estimated nationally representative sedentary time from 2011–2014 wrist accelerometry using ML posture/sleep predictions, survey weights, and reproducible R/Python pipelines — *Aug 2025–Present*
- **CHAP2R Prediction Pipeline** — porting CHAP posture-classification inference from Python to R; reimplemented CNN/BLSTM architecture and validated Python–R prediction equivalence on NHANES accelerometer data — *Apr 2026–Present*
- **Unity GPU Efficiency Analytics** — led a data science project analyzing Unity cluster GPU usage; built Python workflows to summarize job-log patterns and support research-computing resource allocation — *Jun 2025–Aug 2025*

- **2026 NESS Statathon: Policy Retention Modeling** — developed an end-to-end insurance policy-cancellation prediction workflow using historical policy records, ZIP/county-level FEMA, RUCA, and NIBRS context features, LightGBM/XGBoost models, year-aware validation, and Optuna tuning — *Apr 2026–May 2026*
- **Travelers Modeling Competition / Kaggle** — built claim-cost prediction models for right-skewed insurance outcomes using feature engineering, model comparison, and competition-based evaluation — *Oct 2023–Nov 2023*
- **Statistical Model Suggester** — developed a Flask/R website that recommends statistical model classes from user problem statements using rule-based and statistical guidance — *Mar 2024–May 2025*

Publications

- Ohemeng, E., Musah, M., Clouston, P., **Odoom, C.**, & Doe, S. M. (2026). Impact of forest policy reforms on timber export performance in Ghana. *Discover Forests*, *2*, Article 44. DOI
- Folitse, D., **Odoom, C.**, Boateng, A., & Gil-Alana, L. A. (2026). Beyond spending: nonlinear impacts of health financing and out-of-pocket costs on mortality in Africa. *Health Economics Review*. DOI
- Kharasch, E., Gately, R., **Odoom, C.**, Gallagher, O., & Gatlin, M. (2025). Efficacy of fenbendazole in small ruminants on southern New England farms. *Veterinary Parasitology: Regional Studies and Reports*, 101292. DOI
- **Odoom, C.**, Boateng, A., Mensah, S. F., & Maposa, D. (2024). Modeling the daily dynamics in bike rental system using weather and calendar conditions: A semi-parametric approach. *Scientific African*, 24, e02211. DOI
- **Odoom, C.**, Folitse, D., Boateng, A., Alaña, L. A. G., & Maposa, D. (2024). Beyond GDP: A statistical analysis of timber trade dynamics in Ghana using structural vector autoregression. In *Intelligent Computing and Optimization: Proceedings of ICO 2023, Lecture Notes in Networks and Systems* (Vol. 1169). Springer. DOI
- Boateng, A., Aidoo, E. N., Maposa, D., **Odoom, C.**, & Owusu, S. A. (2024). Optimizing binary classification by handling class imbalance in machine learning models. In *Intelligent Computing and Optimization: Proceedings of ICO 2023, Lecture Notes in Networks and Systems* (pp. 555–568). Springer. DOI
- Boateng, A., **Odoom, C.**, Mensah, E. T., Fobi, S. M., & Maposa, D. (2023). Predictive analysis of misuse of alcohol and drugs among youths and adults in the United States: A machine learning approach. *Applied Mathematics & Information Sciences*, 17(2), 261–271. DOI

Education

University of Massachusetts Amherst, United States Expected May 2027
Doctor of Philosophy in Statistics (**GPA: 3.98/4.00**)
- **Dissertation:** Research: deep-learning-based sedentary behavior estimation from NHANES wrist accelerometry; nonparametric derivative estimation with penalized B-splines

University of Massachusetts Amherst, United States Jul 2022 – May 2024
Master of Science in Statistics (**GPA: 4.00/4.00**)
- **Selected coursework:** Selected coursework: nonparametric regression, Bayesian methods, machine learning, advanced statistical computing

Kwame Nkrumah University of Science & Technology, Kumasi, Ghana Aug 2017 – Nov 2021
Bachelor of Science in Statistics (**GPA: 3.98/4.00**)
- **Selected coursework:** Selected coursework: probability theory, linear models, time series, multivariate analysis

Presentations, Competitions & Awards

- **Student Poster Award, sponsored by Munich Re,** 37th New England Statistics Symposium (NESS), University of Connecticut — *May 2024*
- **Poster Presentation, 37th NESS,** "Nonparametric Derivative Estimation with Penalized B-Splines: Asymptotics and an Improved Estimator" — *May 2024*
- **Student Research Awards Abstract Acceptance, Sigma Xi IFoRE,** large-scale NHANES wrist accelerometry and sedentary behavior estimation — *Sep 2025*
- **Travelers University Modeling Competition,** advanced to presentation phase; presented predictive modeling work to Travelers judges — *Nov 2025*
- **2026 NESS Statathon / Kaggle,** built policy-cancellation prediction models using LightGBM/XGBoost, external county-level features, and Optuna tuning — *Apr–May 2026*

Affiliations & Memberships

- **Department of Mathematics & Statistics, University of Massachusetts Amherst** — PhD student in Statistics
- **ADALab, University of California San Diego** — Research Assistant, CHAP2R Project
- **New England Statistical Society (NESS)** — Member
- **American Statistical Association (ASA)** — ASA Connect participant
- **Sigma Xi, The Scientific Research Honor Society** — Nominated for Associate Membership — *2026*