

Daniel Agyapong

School of Informatics Computing and Cyber Systems, Northern Arizona University
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Education

- PhD in Informatics and Computing, Northern Arizona University (NAU), Flagstaff, AZ, USA, 2022 - present
Emphasis: **Computer Science**
Thesis: Cross-validation for Training and Testing Co-occurrence Network Inference Algorithms
Supervisor: Dr. Toby Hocking
Cumulative GPA: 4.0/4.0
- BSc in Electrical/Electronics Engineering, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana, 2017 - 2021
Cumulative GPA: 3.76/4.0

Research Interests

My main research interests are in the field of machine learning, with a focus on using cross-validation technique for training and testing co-occurrence inference networks algorithms on various real microbiome data sets [1]. My research address the problem of analyzing multivariate count data, such as species abundances or microbial compositions, and inferring the underlying interactions between the variables.

Publication

- Cross-validation for Training and Testing Co-occurrence Network Inference Algorithms. 2023. arXiv: 2309.15225 [1]

Professional Experience

Graduate Research Assistant

Northern Arizona University

Aug 2022 - Date
Flagstaff, AZ, USA

- Training and testing new machine learning algorithms and developing optimisation algorithms for microbiome sparse data sets.
- Researching on network analysis methods for studying the inter-relationships between microbial communities.
- Teaching and grading graduate courses in computer science.
- Main technologies: Python (Scikit-learn, PyTorch, Numpy), R.

Software Engineer

Google Summer of Code (GSoC '22)

May 2022 - Sept 2022
USA (Remote)

- Wrote code for the R Project for Statistical Computing organisation, as a part of the Google Summer of Code '22 program.
- Modified the tool, Rperform, to track quantitative performance metrics (runtime and memory usage) of R packages that utilises git and testthat for testing across different versions and git branches.
- Developed a custom GitHub Action to make it easier for package developers to use Rperform to test their code.
- Main technologies: R, GitHub Actions, JavaScript, Bash.

Research and Teaching Assistant

Kwame Nkrumah University of Science and Technology

Sept 2021 - Aug 2022
Kumasi, Ghana

- Mentored and supervised students in Digital Systems, Classical Control Systems, Digital Control Systems and Instrumentation engineering courses.
- Used Python, MITMProxy and BurpeSuite to reverse engineer apps.
- Worked on a research project to study some security flaws in a mobile app and a website (Exploited a bug in the payment gateway integration and fixed it to improve the security of the app and also save money).
- Main technologies: Python, MITMProxy, BurpeSuite, MATLAB

Full Stack Engineer

Chosen IT Business Solutions, LLC

March 2021 - May 2022

Accra, Ghana (Remote)

- Built and maintained cross-platform (Android and iOS) mobile apps for Shaq Express delivery company with Flutter and Laravel.
- Fixed a major issue with the Shaq Express user app (The start-up time of the app was extremely long).
- Re-built the entire UI and enhanced the functionality of Farmhouse Movies app, a cross-platform app with more than **300k** users on both Android and iOS platforms with Flutter.
- Developed the back-end and worked on the REST API for Hearts of Oak App (Soccer club app) with Laravel and wrote the mobile app with Flutter.
- Built and launched AukissTV (Movies app) for both Android and iOS mobile platforms as well as smart Android TV platform with Flutter and native Java.
- Worked on the cross platform social media app, Lystn and launched the Alpha and Beta versions of the app on the Appstore and Playstore.
- Main technologies: Flutter, Java, Laravel, MySQL, PostgreSQL, Firebase, OneSignal

Full Stack Engineer

Godlives Delivery

April 2020 - March 2021

Sweden (Remote)

- Built and maintained cross-platform mobile app with Flutter and the backend with Node.js and Express frameworks utilizing technologies like MongoDB for the database management, OneSignal for notifications and MailGun for email API service.
- Integrated STRIPE and SWISH payment gateways for credit card and mobile money payments respectively on the mobile app.
- Improved the efficiency and speed of the development by about 50% and launched a Minimum Viable Product (MVP) just three months after joining the team.
- Main technologies: Flutter, Node.js, Express.js, MongoDB, OneSignal, MailGun, STRIPE, SWISH

Awards and Honors

- Atos IT Solutions and Services Award (USA, 2023)
A prestigious award that recognizes the best students at NAU.
- Member of Black in AI Community (February, 2022)
The Black in AI community is a group of students and researchers who are interested in advancing the field of artificial intelligence with more diversity and inclusion.
- College of Engineering Excellent Student Award/ Provost List at KNUST ('18,'19,'20)
An award that honors the academic excellence and achievements of an undergraduate student in engineering.

References

- [1] Daniel Agyapong et al. *Cross-Validation for Training and Testing Co-occurrence Network Inference Algorithms*. 2023. arXiv: 2309.15225 [cs.LG].