Daniel Agyapong

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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

I am deeply passionate about machine learning and its capacity to transform data into actionable insights. My expertise lies in employing the cross-validation technique to train and test a diverse array of algorithms. This approach ensures robust learning from large datasets, with an emphasis on continuous optimization methods such as clustering, regression, ranking, and classification. My goal is to leverage these skills to contribute to innovative solutions. My research addresses the problem of analyzing sparse multivariate count data, such as species abundances or microbial compositions, and inferring the underlying interactions between them [1].

Publication

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

Professional Experience

Graduate Research Assistant   Aug 2022 - Date
Northern Arizona University   *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   May 2022 - Sept 2022
Google Summer of Code (GSoC '22)   *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   Sept 2021 - Aug 2022
Kwame Nkrumah University of Science and Technology   *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   March 2021 - May 2022
Chosen IT Business Solutions, LLC   *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   April 2020 - March 2021
Godlives Delivery   *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].