JUSTICE OHENE AMOFA

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PROFESSIONAL SUMMARY

Highly motivated and results-oriented scientist with experience in software engineering, Machine Learning, computational data analysis and visualization, programming, and Containerization. Seeking a research and development position in a Biomedical Research, Genomics, Software Engineering, Large Language Models, Computational Science cheminformatics with drug discovery, Bioinformatics or related environment to utilize my research and programming skills to solve applicable problems within and out of public health.

KEY SKILLS

Programming: R, Python, Rust, PHP, Bash Scripting, MATLAB, OCTAVE

Machine Learning / Data Science: Scikit-learn, PyTorch, KERAS, TensorFlow, Theano

Software Engineering Frameworks: Flutter, MERN stack, Django, Flask

DataBases Management: MySQL, PostgreSQL, MongoDB

Cloud/Containerization: Docker, Singularity, HPC

Application Programming Interface (API): Rest API

Bioinformatics Tools and Packages: Nextflow(Nf Core), Galaxy, GISAID, SeekDeep Pipeline, Bacpage , Bactmap, Cholgen, Harmonization , Mamba and Conda Packages.

High Performance Computing: WSU Grid, LENGAU, Tesla V100 GPU

Document Creation: Microsoft Office Suite, Mendeley, Zotero

Modelling Software: Gaussian, VMD, PyMOL, Spartan, Avogadro, ChemDraw *Chemical*

EDUCATION

BSc | *Health Science*
University of the People, Pasadena - California, United States of America (USA)
School of Sciences   - Public Health Science

BSc | *Mathematical Science (Computer Science)*
University of Ghana, Legon (Accra) (Ghana)
School of Physical and Mathematical Science   - College of Basic and Applied Sciences

Diploma | *Health Science (Associate Degree)*
University of the People, Pasadena - California, United States of America (USA)
School of Sciences   - Public Health Science

RESEARCH / WORK EXPERIENCE

Noguchi Memorial Institute for Medical Research
Bioinformatics Research Assistant (60 hours/week)   Supervisors – Dr. Bright Adu / Prof. Dorothy Yeboah-Manu

- ✦ Developed the Flux Inventory System, a scientific inventory management tool for the lab and institute, enhancing data organization and accessibility across the Genomics and Bioinformatics Core Facility Unit
- ✦ Engages in the analysis of bacterial pathogens, including cholera, tuberculosis, Klebsiella, and various infectious viruses, contributing to critical public health research and surveillance.
- ✦ Assists in the development of bioinformatics analysis pipelines for whole genome and amplicon sequencing data, improving the efficiency of data processing and analysis.
- ✦ Supervise and train interns and students on Bioinformatics workflows, techniques, protocols and facilitate bioinformatics and genomics training programs organized by external organizations, such as the Africa CDC, hosted at our institute and tailored for various African countries towards capacity building.
- ✦ Contributes to the creation of standard operating procedures (SOPs) for bioinformatics analysis, ensuring reliable and reproducible data handling, also contributes to Open repositories on Bioinformatics Pipelines on Github, Gitlab, Stack Overflow, Reddit and open-source codes of pipelines.

USQRD & Omnitech Solutions Limited   Remote, London Area, United Kingdom
Large Language Models (LLM) Engineer (40 hours/week)   *Supervisor* – Mr. Daniel Usyvat
- ✦ Developed and optimized large language models (LLMs) for various applications, enhancing the performance and accuracy of data-driven solutions.
- ✦ Collaborated with cross-functional teams to integrate LLM capabilities into existing systems, facilitating improved user interactions and data processing workflows and conducted extensive testing and evaluation of LLM outputs to ensure reliability and adherence to project specifications.

- ✦ Engaged in data preprocessing and feature engineering to enhance model training, resulting in significant improvements in model performance and Assisted in the documentation of processes and methodologies, contributing to knowledge sharing and best practices within the team.

Data Engineer (40 hours/week) **Trestle Academy, 4ᵗʰ IR**   *Supervisor* – Mr. Dereke Djede / Wonders Aggor
- ✦ Design, develop and maintain software Application with collaborations to gather requirements and also writes clean, efficient and well documented code and also troubleshoot, debug and resolve software defects.
- ✦ Implement statistical models for data analysis and identify trends, patterns and anomalies in datasets. Utilizes visualization tools for effective storytelling and also employ version control systems to manage code and analytical scripts.

Theoretical and Computational Chemistry   Accra, Ghana
Research Intern (*60 hours/week*)
- ✦ Provided chemical and mechanistic insight into a series of selected organic reactions using DFT
- ✦ Learned how to use software such as Spartan 14, Gaussian 09, Avogadro, Chem Draw and CYL view

SELECTED HONOURS / AWARDS
- ✦ Government of Ghana merit-based Scholarship for higher education in a local Universities (Date of award: September 2018. Duration: November **2018 – 2020**
- ✦ Full Scholarship, University of the People (**BSc Health Science**), awarded full scholarship amounting to $7,400 for course assessment fees.
- ✦ Full travel Sponsorship and scholarship for Vibriowatch and Cholera Genomics Course (CIDRZ) – Lusaka, Zambia
- ✦ Full Sponsorship award for Biostruct -Africa Workshop (Empowering Africa-based Scientist through structural biology knowledge- Nairobi, Kenya (**Full Funding)**
- ✦ Full Sponsorship (Poster and Abstract Presentation) – Harnessing Functional Genomics in Cancer Research Opportunities for Diagnosis and Treatment – Windhoek, Namibia
- ✦ Full Sponsorship (PHA4GE Conference 2025) (Workshop and Abstract Presentation) – Data for Action: Overcoming Challenges and Seizing Opportunities in Public Health Genomics, Cape Town, South Africa

FACILITATING EXPERIENCE
✦ CDC-ASLM Bacterial Genomic Surveillance with a Focus on Antimicrobial Resistance – *Facilitator*
✦ H3ABioNeT & Wellcome Connecting Science Genomic Sequencing Bioinformatics (GSB) Africa – *NMIMR Classroom Facilitator.*
✦ AI for Clinicians: Leveraging AI tools for Clinical Practice, Biomedical Research and Grant Writing – *Facilitator* (Noguchi Memorial institute for medical Research)

SELECTED PRESENTATIONS
✦ **Oral Presentation**: *"Genomic Approaches to Bacterial Antimicrobial Resistance Surveillance"* – Wellcome Connecting Sciences Workshop on Bacterial Pathogen Genomics, Johannesburg, South Africa. Organized by Wellcome Connecting Sciences and NICD

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✦ **Bacteriology Journal Club Presentation**: *"Analyzing Bacteriological Surveillance Data Using Genomics Approaches"* – Monthly Bacteriology Department Journal Club, Noguchi Memorial Institute for Medical Research.

✦ **Immunology Journal Club Presentation**: Presented on *"Immune Response Trends in Pathogen Genomics Surveillance"* at the Noguchi Memorial Institute for Medical Research, Immunology Department, ARL Training Lab.

✦ **Genomics and Bioinformatics Core Facility Journal Club:** Presented on "Public Health Alliance for Genomic Epidemiology, Advancing Public Health through Genomic Epidemiology" at the Bioinformatics Lab, Noguchi Memorial Institute for Medical Research.

EXTRA CURRICUULAR ACTIVITIES AND VOLUNTEERING SERVICES

✦ **Leader and Coordinator,** *Cholera Genomics Data Analysis Working Group*
A working great initiative that was organized by Prof. Nicolas Thomson and Dr. Jolynne Mokaya as a result of the Cholera Training to come together with a great innovative mind to curate pipelines, data and assist ongoing countries who are endemic and provide analysis reports to policy decision makers about their country.
✦ **Software Engineer Educator,** *Trestle Academy*
One of the educators where I shared my background and stories of success. In particular, I provided best tips and practices that students can take in order to improve their way of life to become a better software Engineer.
✦ **NGS Code Clube Facilitator***, Genomics Core Facility Lab – Noguchi Mem. Institute for Medical Research*
A code club set up in the Institute to bring each one to the Tech World of Genomics and machine learning.
✦ **Volunteer,** Smile on Faces Foundation
a foundation set up to raise money Together with a team, used to educate the people in the community, support orphanages and street children with technical skills like, cooking, beads making, saponification, and formal education. etc

PROFESSIONAL MEMBERSHIPS

Open Bioinformatics Foundation (OBF)| American Chemical Society (ACS) | SAGESA - Society for African Genomic Surveillance of Antimicrobial Resistance | Bioinformatics & Computational Biology (B&CB) | PHA4GE-Bioinformatics Pipelines and Visualization Working Group | NGS Academy, Africa PGI | Google Flutter App

Developers | Microsoft Learn Student Ambassadors | American Society for Microbiology (ASM) | NGS code Club|Cholgen Group| NfCore Ambassadors

CONFERENCES, WORKSOPS, SAMPLE PROJECTS AND REFEREES

To be handed in upon request. | Reference, conferences, workshops and projects are also available on request.

MAJOR PROJECTS AND UNDERTAKINGS

- **Flux Inventory System:** This system is designed for institutes to efficiently manage their inventory. It keeps track of stock levels, ensuring that supplies are never depleted unexpectedly, and aids in maintaining optimal inventory for operational continuity**.** I continue to manage and fix bugs in relation to the system. **App Url (https://flux-inc.onrender.com/**)

- **TB Detection App – Genomic Sequencing Bioinformatics (GSB) Africa – NMIMR Classroom Facilitator:** This application facilitates the detection of tuberculosis through advanced genomic sequencing techniques. As part of the GSB Africa program at the Noguchi Memorial Institute for Medical Research (NMIMR), this role involves teaching and guiding students in using bioinformatics to analyze genomic data for TB detection**. App Url (https://iamamofa-tb-detection-tb-detectionappapp-xlqsyp.streamlit.app/**)

- **PANGenS Web Training Portal and PANGenS Web Site–** Built and management of PANGenS
  Website. The Web Training portal is an online Learning management site to management the courses to be taken freely by consortium members. And also manages the consortium website. **App Urls (https://genofluxcore.com/ , https://pangens.org/)**

- **GoodReads Data Pipeline:** Built a data pipeline where **d**ata is captured in real time from the goodreads API using the Goodreads Python wrapper (View usage - Fetch Data Module). The data collected from the goodreads API is stored on local disk and is timely moved to the Landing Bucket on AWS S3. ETL jobs are written in spark and scheduled in airflow to run every 10 minutes. (**https://github.com/iamamofa/Final_project_Justice_goodreads_etl_pipeline**)

- **NMIMR Cholegen Analyzer –**NMIMR, the Cholegen Analyzer, built a pipeline to undertake and automate analysis of cholera pathogen. Its an updated version that was previously started by another institute in Ghana.It is currently under construction to be converted to a web app. The pipeline can currently be run only locally. **App Url (https://github.com/seqafrica/bacpage_nmimr**)

PUBLICATIONS –PUBLISHED & UNPUBLISHED RESEARCH ARTICLES AND PAPERS)

- **Amofa, J. Ohene**, M.Najah, Agyenkwa-Mawuli . K, Asare. P, Adu. B, Otchere. I.D, Yeboah-Manu D. (2024). Using AI and machine learning to predict TB infections based on patient demographics, risk factors, and clinical presentations, optimizing early detection and reducing diagnostic delays.

- Najah M, Amofa J.O, Ghansah. A, Asare. P, Adu. B, Otchere. I.D, Yeboah-Manu D. (2023).
  Utilization and Approaches of Bioinformatics in Malaria genomics

- **Amofa, J. Ohene**, M.Najah, Agyenkwa-Mawuli . K, Asare. P, Adu. B, Otchere. I.D, Yeboah-Manu D. (2024). Exploring the creation and repurposing of Mycobacterium Tuberculosis (MTB): Bioinformatics and Data Analysis pipelines through the utilization of scientific workflow systems and Standard Operating Procedures. (SOPs)

- **Amofa, J. Ohene**, M.Najah, Agyenkwa-Mawuli . K, Gyampo .K, Asare. P, Adu. B, Otchere. I.D,Yeboah-Manu D. (2024). Integrating digital health solutions to address cyberbulling's impact on youth mental health and support chronic condition management in adolescents.

- Kwasi Atweri Akowah, Evangeline Obodai, Grace Arezie Kyire, Roland Elikem Anlonya, **Justice Ohene Amofa**, Evelyn Yayra Bonney, Ivy Asantewaa Asante, Nana Afia Asante Ntim, Joseph Humphery Kofi Bonney and John Kofi Odoom[*]. Nosocomial infection of SARS-CoV-2 among laboratory staff in a Biomedical Research Institution

WORKSHOP AND CONFERENCES

SeqShere+ Training: TB Genomics Data Analysis

Noguchi Memorial Institute for Medical Research – PANGenS (Pan-Africa Network for Genomics
Surveillance of Poverty Related Disease and Emerging Pathogens)

Malaysia-Japan bilateral Workshop on Bioinformatics and Bioresource

National Institute of Genetics, Mishima, Japan

NGS Academy Bioinformatics Training on Pathogen Surveillance

South African National Bioinformatics Institute (SANBI), University of the Western Cape.

Cape Town. South Africa

Genomics for Antimicrobial Resistance Surveillance and One Health

Wellcome Connecting Sciences & NICD, Johannesburg, South Africa

Genomics workshop on SeekDeep pipeline for Paired end Illumina Amplicon Targeted Sequencing Analysis

Noguchi Memorial Institute for Medical Research, Accra, Ghana

AI2050 AI/ML Tools in Drug Discovery Workshop

H3D Foundation and Ersilia – Accra, Ghana

DSI-Africa: First Human Genome Repeat Expansion Analysis Virtual Workshop

Data Science for Health Discovery and Innovation in Africa, Consortium, South Africa **Genomic Sequence Bioinformatics (Certificate)**

H3ABioNet – Pan African Bioinformatics Network for H3Africa **(NMIMR Classroom)**

Vibriowatch and Cholera Genomics Course 9th - 14th February 2025 Centre for Infectious Disease Research (CIDRZ) - Zambia

Ghana genomics workshop on Molecular Inversion Probe Design and Population Genetics Analysis – Noguchi Memorial Institute for Medical Research, Accra, Ghana

DS-ZOOFOOD Workshop on Infectious Disease Modelling, University of Ghana (Department of Medical Microbiology- University of Ghana Medical School)

12 Months Software Engineering Training (Certificate)

ALX Africa (online)

Crash Courses on Python, Flutter, Data Science,etc (Certificate)   Coursera, Udemy, DataCamp and Zindi

Africa

REFEREES

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