Fredrick Kebaso Mariita

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Career Objective

To develop expertise in machine learning and deep learning and its application to genomics data analysis and become a renowned biological Data analyst, Research Leader and Trainer in the field of Computational Biology. I hope to join a team of translational researchers in Africa who work to generate research evidence that informs policy in critical sectors, particularly genomics.

Experience

International Centre of Insect Physiology and Ecology   *Nairobi, Kenya*
Graduate Research Fellow   *Oct 2021 - Current*

- Assembling and annotating the chemosensory genes for 3 *Hippoboscus* species in de novo
- Developing a de novo assembly and annotation pipeline

International Centre of Insect Physiology and Ecology   *Nairobi, Kenya*
Molecular Bioinformatics Intern   *Oct 2020 - March 2021*

- Worked under the Molecular Biology and Bioinformatics Unit to build an RNASeq analysis pipeline.
- Refined my skills in Nextflow workflow development language, Python and R programming, and learned project management and organization using GitHub.

H3ABioNet - Introduction to Bioinformatics Training course (2021 and 2023   *Virtual*
Teaching Assistant   *April 2023 - Current*

- Responsibilities: Facilitating the introduction to Bioinformatics Course training sessions, tracking participants' attendance and progress, setting up the virtual training sessions, and attending to participants' questions.

Education

Pwani University   *Kenya*
Masters in Bioinformatics   *Oct 2021 – Current*

- **Subjects:** Computational Biology, Data Science, Programming.
- Thesis Title: De novo genome assembly and chemosensory gene annotation for three *Hippoboscus* species.

Kenyatta University   *Kenya*
BSc Molecular and Cellular Biology   *Aug 2014 – Nov 2018*

- **Subjects:** Molecular Biology of the Cell and Biotechnology.
- Attained second class upper division (69.06 points).

Kenyatta University   *Kenya*
Certificate in Growing Leaders Programme   *Jan 2018 – Aug 2018*

- **Subjects:** Leadership Skills.
- Attained Distinction.

Mirogi Boys   *Kenya*
Kenya Certificate of Primary Education - KCSE   *Aug 2010 – Nov 2013*

- Attained B+ of 71 points.

Relevant Training & Short Courses

Data Science and Machine Learning
WorldQuant University

Online

July 2022 - Current

- Projects undertaken: Five of the total Eight projects completed so far
- Skills learned: Data wrangling, Model development, Model testing and Deployment

Biological Data Science Summer Workshop
The University of Chicago

Virtual

8th Aug 2022 – 19th Aug 2022

- **Topics:** Classical machine and deep learning theory.
- **Description:** Got introduced to the basics of classical machine learning theory, including feature selection, supervised learning, neural networks, support vector machines, and decision trees. Used Matlab to implement classification and clustering. In deep learning, I learned how to use deep machine learning to analyze protein sequence data.

Bioinformatics Residential Training Course
International Centre of Insect Physiology and Ecology (ICIPE)

Kenya

July 2022 – Aug 2022

- **Projects:** ONTmetacriptom-NF.
- **Description:** A Nextflow Pipeline for Oxford Nanopore Technology (ONT) Long Reads Metatranscriptomic Data Analysis.

Leadership in Africa Training
Pwani University

Kenya

June 2022 – July 2022

- Topics: Leadership skills, Project management, Mentorship.

Research Data Management (RDM)
H3ABioNet is a Pan African Bioinformatics Network for the Human Heredity and Health in Africa (H3Africa) consortium

Kenya

July 2022 – Aug 2022

- **Description:** Trained on the principles and practices of Research Data Management (RDM). These include data discovery and re-use, data documentation and organization, data standards and Ontology, data storage and security, repositories and policies, FAIR & reproducibility, and best practices in developing an effective Data Management Plan.

Next Generation Sequencing (NGS)
H3ABioNet is a Pan African Bioinformatics Network for the Human Heredity and Health in Africa (H3Africa) consortium

Virtual

April 2021 - June 2021

Description: The course enriched me with skills for NGS data analysis such as RNASeq, variant calling, Genome Assembly, Genome annotation, Chip Seq and General Bioinformatics algorithms such as Fastqc, Trimmomatic, Salmon, Samtools etc and Technologies such as Illumina, PacBio and Nanopore sequencing platforms

Projects

De novo Genome assembly and annotation of Chemosensory gene annotation
International Centre of Insect Physiology and Ecology (ICIPE)

Nairobi, Kenya

October 2022 - Current

- **Description**: Assembling the genome of three Hippoboscus species: *Hippoboscus camelina*, *Hippoboscus variegata*, and *Hippoboscus longipennis*. Performing annotation of the whole genome and then narrowing down to chemosensory genes.

Effects of long-term push-pull technology on the soil microbiome
ASBCB Omics Codeathon

Virtual

October 2022

- Worked with metagenomics data from the soil. Elucidated the effects of the push-pull technology on the soil microbiome using whole genome shotgun metagenomics datasets with the SqueezeMeta pipeline.

ONTmetacriptom-NF - Nanopore analysis pipeline
International Centre of Insect Physiology and Ecology (ICIPE)

Kenya

July 2022 – Aug 2022

- **Description**: A Nextflow Pipeline for Oxford Nanopore Technology (ONT) Long Reads Metatranscriptomic Data Analysis.

RNASeq analysis Pipeline Development   *Nairobi, Kenya*
International Centre of Insect Physiology and Ecology (ICIPE)   *Oct 2020 - Feb 2021*
- **Description**: The project explored RNASeq analysis pipelines and provided a guide to the preferred pipelines for RNASeq data analysis.

Relevant Skills

Machine learning and Deep learning

- Currently using online platforms to learn various machine learning aspects such as Feature selection, Supervised learning, Neural networks, Support vector machines, Decision trees (using Matlab to implement classification and clustering), and Deep Learning for proteins.

Programming

- Python, Linux OS, R, Nextflow workflow language

Bioinformatics

- De novo Genome Assembly and Annotation, Metagenomics data analysis, NGS Technologies, RNASeq Analysis skills, Variant Calling, Deep learning and Machine learning for proteins

Miscellaneous

- Analysis Pipeline development, Git and GitHub

Soft Skills

- Team management, Time Management, Problem-solving, Documentation

Achievements

Fellowship, EANBiT Msc Bioinformatics Fellowship, Eastern Africa Network of Bioinformatics -(ICIPE)   *2021 - present,*
Nairobi, Kenya

Volunteering

H3ABioNet - IBT course both 2021 and 2023   *Virtual*
Teaching Assistant   *April, 2023 - Current*
- Responsibilities: Facilitating the introduction to Bioinformatics Course training sessions, tracking participants' attendance and follow up on progress, setting up the virtual training sessions, attending to participants' questions

Interests

- Watching Soccer
- Watching Documentaries
- Reading Novels

References

References available upon request.