OLUSEGUN EKUNDAYO ADEBAYO

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Work Experience

Bioinformatician/Post-doc Researcher   09/2025 - current
Collège de France, CIRB - Denis Duboule

- Conducting research on **chromatin organization and developmental gene regulation** using large-scale 2D/3D omics multi-omics datasets.
- Administering and maintaining a **local Galaxy server** to provide reproducible, user-friendly bioinformatics workflows for lab members.
- Applying **DevOps practices** (Ansible for automation, Singularity/Docker for containerized workflows, Git/GitHub for version control) to ensure maintainable and scalable computational environments.
- Developing and integrating **custom workflows** into Galaxy for seamless data analysis.
- Performing bioinformatics analyses and visualization in **Python, R, and Bash**, translating computational results into biological insights and publications.
- Supporting collaborative research by ensuring workflow reproducibility, scalability, and security.

Bioinformatician/Post-doc Researcher   05/2025 - 08/2025
University of L'Aquila, DISIM - Antinisca Di Marco

- Developed pipelines to interpret **BRCA1 and BRCA2 variants** in cDNA format and generate mutated FASTA sequences based on CDS references.
- Implemented algorithms to inject **combinations of pathogenic and non-pathogenic mutations** while handling positional shifts to maintain sequence integrity.
- Created automated workflows for **window-based mutation extraction** (500–1000 bp) to support downstream analysis on **HPC clusters**.
- Applied **machine learning classification** using DNABERT2 to predict variant effects, integrating results into analysis pipelines.
- Maintained reproducibility and transparency with **Python pipelines** and version-controlled code hosted on **GitHub**.

PhD Researcher   03/2022 - 03/2025
Université Marie & Louis Pasteur, LmB - Raluca Eftimie

- Computer Vision with Python, OpenCV and YOLO.
- Conduct **data analysis** using Python (Pandas, NumPy) for biological and bio-mechanical experiments.
- Develop machine learning models using **Keras, Tensorflow**, and **scikit-learn** and deploy them using FastAPI and Streamlit.
- Utilize **FEniCS** for finite element analysis.
- Present research results at international conferences and collaborate with interdisciplinary teams.
- Develop local and non-local mechanistic mathematical models to describe biological and medical problems.
- Use Git and Github to store and host codes.

Data Scientist   10/2021 – 02/2022
Livingston Research, Rome, Italy

- Applied **data analysis** and **machine learning algorithms** in **R** and **Python** to solve client problems.
- Delivered content related to **statistical analysis** and **machine learning** concepts.
- Used advanced **Excel, Matplotlib** and **seaborn** for data analysis and visualization

Education

PhD in Applied Mathematics.   03/2022 - 03/2025
Université de Bourgogne Franche-Comté (UBFC).

Master degree in Artificial intelligence and Machine learning   08/2021 – 03/2024
Simplilearn Solutions

Joint Master degree in Mathematical Modeling In Engineering   09/2019 – 09/2021
Technische Universität Wien, Vienna (Austria) Mathmods.

Joint Master degree in Mathematical Modelling In Engineering   09/2019 – 09/2021
Università degli Studi dell'Aquila. (Italy) Mathmods.

Bachelor of Science   06/2014 - 02/2018
BSc. Mathematics, Obafemi Awolowo University. Ile-Ife (Nigeria).

Digital Skills

- **Data Analysis & Machine Learning**: Python scikit-learn, Keras, Tensorflow, PyTorch.

- **Workflow & Automation**: Snakemake, Nextflow, runHiC, Ansible, Git/GitHub

- **Containers**: Singularity, Docker

- **Bioinformatics**: Galaxy server administration, Hi-C, RNA-seq, multi-omics analysis, HPC

- **Visualization**: Excel, R, Matplotlib, Seaborn, PowerBI, Paraview, ggplot2, Plotly, Dash.

- **Model Deployment**: Streamlit, Tensorflow Server, FastAPI

- **Programming Languages**: Bash, Python, MATLAB, R, C/C++

- **Operating Systems**: Linux/Unix, Windows, MacOS, SLURM cluster server.

- **Database** SQL.

- **Cloud Services** GCP, AWS.

Honor and Awards

AfriGen-D IBT_2025 – Introduction to Bioinformatics Training. University of Cape Town, AfriGen-D [2025]: Selected participant in this competitive hybrid/online bioinformatics training course.

Financial support towards the XLIV Dynamics Days Europe (DDE'24 – Bremen), Constructor University, Bremen, Germany [2024]: Funded by the *wilhelm und else heraeus-stiftung*

International Doctoral student Mobility to the University of Dundee, Scotland [2024]: Funded by Université de Bourgogne Franche-Comté (*"projet mobilité internationale 2024"*)

PhD scholarship in Applied Mathematics from the Université de Bourgogne Franche-Comté (UBFC) [2022]: Funded by ANR-PRCI Project.

Mathmods Consortium Thesis Grant [2022]: The award was given to those who completed their thesis at the appropriate time

MathMods Consortium Scholarship. Mathmods Consortium (the University of L'Aquila, TU Vienna, University of Hamburg, University of Cote d'Azur)[2019-2021]: The award covered the first and second year of my Masters thesis. Azienda per il Diritto agli Studi Universitari L'Aquila (ADSU) Scholarship

University of L'Aquila Grant [2019-2020]: The award covered the first year of my Masters thesis and was awarded to the top 20 on the ranking list.

Publications

Adebayo, O. E., Trucu, D., and Eftimie, R. (2025c). Condition number for finite element discretisation of nonlocal PDE systems with applications to biology. arXiv preprint (2025) arXiv:2508.09781

Adebayo, O.E., Chatelain, B., Eftimie, R., Trucu, D. Deep learning approaches for classifying images of keloids in the context of malignant and benign skin disorders, *Diagnostics*, **15** (6)(2025), 710

Adebayo, O.E., Trucu, D., Eftimie, R., Analytical investigation of a non-local mathematical model for normal and abnormal wound healing. *Discrete and Continuous Dynamical Systems - B.*, **30** (7) (2024) 2401-2428

Adebayo, O.E., Urcun, S., Rolin, G., Bordas, S., Trucu, D., Eftimie, R.: Mathematical investigation of normal and abnormal wound healing dynamics: local and non-local models. *Mathematical Biosciences and Engineering*, **20**, (2023), 17446 - 17498

Eftimie, R., Rolin, G., **Adebayo, O.E.**, Urcun, S., Chouly, F., Bordas, S.: Modelling keloid dynamics: a brief review and new mathematical perspectives. *Bulletin of Mathematical Biology*, **85** (2023), 117

Certifications

- Introduction to Bioinformatics: *AfriGen-D ǁ University of Cape-Town* 08/2025
- Artificial Intelligence Engineer: *Simplilearn* 04/2024
- Deep Learning with Keras and Tensorflow: *Simplilearn* 09/2023
- Machine Learning: *Simplilearn* 09/2023
- Data Science with Python: *Simplilearn* 09/2023
- Introduction to Artificial Intelligence: *Simplilearn* 09/2021
- Applied Plotting, Charting & Data Representation in Python: *Coursera ǁ University of Michigan* 10/2020
- Data Analysis with Python: *Coursera ǁ IBM* 09/2020
- Introduction to HTML5: *Coursera ǁ University of Michigan* 03/2019

Presentations

XLIV Dynamics Days Europe (DDE'24 – Bremen, Constructor University). *Investigating normal and abnormal wound healing: from deterministic nonlocal mathematical models to machine learning* [July-August 2024].

2nd SSEN Annual Postgraduate Research Symposium (University of Dundee). *Modeling and Analysis of Non-local Interactions in Wound Healing: Numerical Simulations, Analytical Investigations, and Machine-Learning Approaches* [May 2024].

Journées numériques de Besançon 2024: Data driven computing and modeling in biology. *Mathematical modeling of wound healing: local and non-local models* [January 2024].

XXIIeme Journee de l'ED Carnot Pasteur Universite de Franche-Comte. *Mathematical modeling of wound healing: local and non-local* [June 2023].