NAME: **Lawrence Nderu, Ph.D.**

POSITION TITLE: **Lecturer, Jomo Kenyatta University of Agriculture and Technology**

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Jomo Kenyatta University of Agriculture and Technology, Kenya	BSc (Honors)	07/2005	Mathematics and Computer Science
Jomo Kenyatta University of Agriculture and Technology, Kenya	MSc	07/ 2011	Software Engineering
University of Paris VIII, Saint-Denis, Paris, France	Ph.D.	12/ 2015	Computer Science – Artificial Intelligence and Fuzzy Logic

A. Personal Statement

I have a strong Computer Science background with specialization in Artificial Intelligence and data science and acquired the expertise, scientific skills, and enthusiasm to serve as leader on various research projects, and to effectively coordinate teams to develop skills and implement various research programs. I am currently leading projects on use of deep learning for detection of pre-cancerous lesions and ensemble for viral diseases spread prediction. I am also involved in the project on ensemble approaches in prediction of the Solar Energy. I am also a lead instructor for the Jenga school of Data Science and Artificial Intelligence, where I am involved in the teaching of data science.

B. Selected Publications

Dalton Ndirangu Waweru Mwangi, **L. Nderu.** (2019). A Hybrid Ensemble Method for Multiclass Classification and Outlier Detection. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, *45*(1), 192–213.

Ndirangu, D. Mwangi, W., & **Nderu, L.** (2018). An Ensemble Outlier Detection Method for Multiclass Classification Problem in Data Mining. *Proceedings of the 2018 International Conference on Data Science and Information Technology*, 38–42.

Ndirangu, D., Mwangi, W., & **Nderu, L.** (2018). An ensemble outlier detection method for multiclass classification problem in data mining. *Proceedings of the 2018 International Conference on Data Science and Information Technology*, 38–42.

Waruhari, P., Babic, A., & **Nderu, L.** (2017). A Review of Current Patient Matching Techniques. *Studies in Health Technology and Informatics*, *238*, 205–208. https://doi.org/10.3233/978-1-61499-781-8-205

Waruhari, P., & **Nderu, L**. (2017). An Elliptic Curve Digital Signature Algorithm (ECDSA) for Securing Data : An Exemplar of Securing Patient ' s Data. *Pan African Conference on Science, Computing and Telecommunications (PACT)*, 5–10.

Gachanga, E., Kimwele, M., & Nderu, L. (2019). Feature Based Data Anonymization with Slicing Method for Data Publishing. *Proceedings of the 2019 11th International Conference on Machine Learning and Computing*, 274–279.

C. Positions and Honors
Positions and Employment
2011- present Lecturer, Department of Computing at Jomo Kenyatta University of Agriculture and Technology

2020- Present, Manning Publications mentor for liveProjects Data science projects:
  a) Training and Deploying an ML Model as a Microservice
  b) Use Machine Learning to Detect Phishing Websites
  c) Authorship Identification with Text Mining and Machine Learning

2008-present Adjunct, United States International University (USIU-A), Faculty of Science and Technology, Nairobi, Kenya

2019- present Member, Innovation Centre for Computing and Technological Solutions Sub-task of the Africa - ai- Japan Project

2020-present Member, collaborative research team between Information Communication Authority (ICTA) and Institutions of higher learning in Kenya

2014 – 2016 Chairman, Association of France Alumni in Kenya (AFRAKEN)

Other Experience and Professional Memberships
1912-present Member, Association of France Alumni in Kenya (AFRAKEN)
2018-present   Reviewer, Manning publications

PhD Supervision, work that is defended successfully

Dalton Ndirangu
An Ensemble Model for Classification and Outlier Detection Method in Data Mining
Jomo Kenyatta University of Agriculture and Technology
May 2020

Esther Gachanga
Sensitivity and Feature Based Anonymization for Data Publishing
Jomo Kenyatta University of Agriculture and Technology
May 2020

Honors
2012   Government of France PhD Scholarship Award in France

D. Research Support

Ongoing Research Support

Prediction of Locust Invasions and Impact Using Artificial Intelligence and Unmanned Aerial Vehicles (Drones) for Control and Surveillance

To develop a model for disseminating locust related intelligence and alerts in a timely manner to enable effective control. The activities are: Analyzing and visualizing the dataset, Deploying the results on the FastAPI Web Service, setting up the monitoring Stack (Prometheus and Grafana), Integrating the metrics collection Functionality in the web service, and Testing dashboard

JFY 2020/2021 (Lawrence nderu, PI)   11/06/2020 - 11/6/2021
An Ensemble Approach Based on Numerical Weather prediction and Random Forest for Solar Energy Forecasting: Case study of Garissa County.

As most countries are coming up with ways that will see to it that the SDG 7th goal of clean and affordable energy is addressed, the rate of adoption and use of renewable energy, particularly, solar energy, has greatly risen. The main challenge facing solar energy is its intermittent nature thus integrating solar power farms to the national electricity grid may make the grid unstable thus interrupting its normal working conditions. To address

this, it becomes important to accurately forecast on the amount of solar power a given surface on earth is anticipated to receive in a given time thus enabling an informed decision. Research has been carried out of how to effectively forecast the amount of solar irradiance, nonetheless, it was noted from the literature review that there exists no study that attempted to use a technique whereby all of the three solar forecasting techniques, that is, NWP, satellite imagery and Machine learning algorithms were considered. This study aims at integrating the NWP and ML techniques and then use data obtained from a satellite-to-irradiance model to train and test the developed algorithm with the intention of coming up with a better performing and optimized algorithm for solar radiation forecasting.

COMPLETED

FE Field 2014/2015 (PI: Lawrence Nderu)   28/05/14- 28/05/14
Sensors in Agriculture Project

This project aims at increasing efficiency in food production by providing farmers with relevant information using sensors. Such information is needed as farmers have limited resources (seed, water, fertilizer, pesticides, human power) and are always in doubt in which location and when they should supply these resources. Small scale farmers who have limited resources, are the most in need of this kind of information. The project aims at gathering spatial information from various sensors such as drones, temperature, and humidity sensors and so on.