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# Koome Derrick

*Geospatial Analyst*

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[github.com/koome-dev](https://github.com/koome-dev)  
[My Portfolio website](#)

## EDUCATION

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**The University of Nairobi, Kenya.**

*Bsc. Geospatial Engineering*

*August 2013*

Relevant Courses: Remote Sensing, Geographical Information Systems (GIS), Digital Cartography

## SKILLS

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**Programming Languages:** SQL, Python

**Machine learning:** familiar with the Scikit-Learn library and algorithms such as logistic regression, support vector machines, decision trees, random forests, k-fold cross validation, hyper-parameter tuning etc.

**Software's:** Pycharm, Jupyter notebooks, QGIS(with GRASS), ArcGIS Online, Visual Studio Code, ArcGIS Pro

**Database:** MySQL, PostGIS

**Geospatial Analysis:** familiar with geopython libraries such as Geopandas, Geopy, Plotly, Folium, Opencage and can perform spatial operations and geocoding on data to generate visuals like Choropleth, Geographical scatter plot, Geographical Heatmap, Markers and Marker Clusters. Familiar with Google Earth Engine for machine learning and change detection. Currently learning deep learning for satellite imagery to develop models that monitor and respond to natural disasters.

**Core Competencies:** Writing – Co-author of an industry book *“Project Design for Geomatic Surveyors and Engineers”* which is available for sale on **Amazon**.

## PROJECT EXPERIENCE

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*January 2024 – February 2024*

**Machine learning project with deployment: American President OpenCV Classification**

This machine-learning image classification project makes use of Python's opencv and pywavelet transform libraries to detect and classify images of 9 US presidents. I collected around 150 photos each of nine U.S. presidents using Google and the Fatkun tool. For data cleaning, I employed haarcascade algorithms to detect faces and eyes, cropping and storing the detected faces via automated Python scripts. In feature engineering, I used Python's wavelet transform library to process the images and improve recognition by converting them into Numpy arrays. For model building, I used scikit-learn's StandardScaler, Pipeline, SVC, and train\_test\_split modules. Hyper-parameter tuning with GridSearchCV compared SVM, Random Forest, and Logistic Regression, ultimately choosing SVC based on performance. I saved the model using Joblib and JSON modules and deployed it using Streamlit for the UI, allowing users to identify presidents from uploaded images. The final model was deployed on Heroku [here](#).

*March 2024*

**Global warming Geospatial Analysis**

Analyzed global average temperatures of the world with data spanning more than 200 years (1750-2020) and developed beautiful visualizations using line charts, choropleth maps and geographical heat maps. Was able to extract the relevant information using my python and pandas library skills. Was able to create visualizations to show that average global temperatures have been increasing with the rise in industrialization.

*April 2024*

**Covid 19 Geospatial Analysis**

Analyzed Global Covid 19 data acquired during the pandemic. The data included confirmed, recovered and death cases from the beginning of the pandemic to February 2022. I was able to create animated choropleth maps that

show the rate of spread of the disease as well as the recovery rate. Also created animated geographical scatter plots that showcased the same information with a different visualization. I also explored the use of markers and marker clusters to demonstrate the cumulative covid 19 deaths per country.

*August 2024*

### **Leaflet Map of Kenyan Health facilities**

Created a web-app using the leaflet JavaScript library. Added Open Street Map as the basemap and added GoogleStreet, Hybrid, Satellite as additional operational layers. Overlaid the operational layers with polygon GeoJSONs of more than a thousand Kenyan Health Facilities.

*August 2024*

### **Leaflet Realtime Location Tracker**

Created a realtime location tracker app using leaflet.js. The app has special features of not only tracking location but also mobility.

## **WORK EXPERIENCE**

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### **Nile Surveys and Geo-solutions LTD**

*April 2014-December 2015*

*Survey Party Chief*

- Worked on the Kalobeyei Settlement Scheme in Kakuma. Was in the team that performed the topographical survey as well as the spatial planning of the scheme. A UNHCR project.
- Worked on the pipeline route survey for the provision of water in Bentiu refugee camp, Unity State, South Sudan. A UNICEF project.
- Worked on the cadastral survey of Konza Technopolis, a Kenyan Vision 2030 project.

### **Cheswick Surveys**

*January 2016-Present*

*Owner/Projects Lead*

- Worked on drone/UAV mapping of 3km<sup>2</sup> for a run-of-the-water power project. Came up with an Orthomosaic and Digital Elevation model using Pix4D processing software. Digitized cadastral maps using ArcGIS software and then subsequently overlaying the two. Created a GIS database of the same by including attributes such as title number, acreage etc.
- Sold software and hardware products for Carlson Software, an American software company founded in 1983 with headquarters in Kentucky, USA. Their most famous offerings include Carlson Survey, SurvPC, SurvCE, Photo Capture etc.

### **Corsmap**

*September 2017-December 2021*

*Co-Founder*

- Together with two others, we created a Geographic Information System (GIS) for all the Continuously Operating Reference Stations (CORS) for Africa. In total we web-mapped and created a system with data and metadata of more than 250 CORS across 28 African Countries.

## **CERTIFICATES**

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- Kaggle: Geospatial Analysis
- Udemy: Spatial Analysis and Geospatial Data Science in Python
- Udemy: Google Earth Engine for Machine Learning and Change Detection
- Udemy: Complete Tensorflow 2 and Keras Deep Learning Bootcamp(Ongoing)
- Esri: Spatial Data Science; The New Frontier in Analytics (Ongoing)
- Kenya Civil Aviation Authority: Remote Pilot's License

## **INTERESTS AND HOBBIES**

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- **Favorite books:** Virtuous Leadership (Alexander Havard), Zero to One (Peter Thiel), Linchpin (Seth Godin), Atomic Habits (James Clear).
- **Natural abilities:** I write well. I wrote dozens of articles in my previous industry which got published in leading industry magazines at the world stage.