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Koome Derrick

Geospatial Data Scientist

linkedin.com/koomederrick
github.com/koome-dev
My Portfolio website

EDUCATION

The University of Nairobi, Kenya.

Bsc. Geospatial Engineering *August 2013*

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

SKILLS

***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, ArcGIS, Visual Studio Code

***Database**:* MySQL

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 Earth Engine and Geemap libraries. 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

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.

WORK EXPERIENCE

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 3km2 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.
- 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-December2021*

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

- 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)

INTERESTS AND HOBBIES

- **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.