**Koome Derrick** | +254 725-022-596; koome09@gmail.com | https://www.linkedin.com/in/koomederrick/

**EDUCATION**

**The University of Nairobi, Nairobi, Kenya.**

*Bsc. Geospatial and Space Technology* **August 2013**

# 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

***Database****:* MySQL

***Geospatial Analysis:*** familiar with geopython libraries such as Geopy, Plotly, Folium, Opencage and can perform spatial operations and geocoding on data to generate visuals like Choropleth, Geographical scatter plot, Geographical Heatmap and Markers.

***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 wavelet transform libraries to detect and classify images of 9 US presidents. The workflow involved the following:

* Data Collection: Went on Google and batch-downloaded about 150 photos of each of the 9 presidents. Used the Fatkun tool to batch-download them.
* Data Cleaning: Utilized haarcascade eye and frontface algorithms to detect the face and two eyes. This was such that once the face and two eyes have been detected, the entire face would be cropped and stored in a folder. Wrote Python code that automated the process of visiting folders, carrying out haarcascade and storing the cropped images in a new folder.
* Feature Engineering: Used Python's wavelet transform library to process the images by a Fourier transform process and obtain mapped images of the cropped photos. Both photos(Cropped + wavelet transform) are then converted into a Numpy array and vertically stacked to improve face and eye recognition.
* Model building: Using Python's scikit-learn Library imported modules such as StandardScaler, Pipeline, SVC, train\_test\_split to carry out an initial build.
* Hyper-parameter tuning: Used GridSearchCV paired with a model parameter dictionary to carry out a five-fold cross-validation to get which model performed best. Compared Support Vector Machines, Random Forest and Logistic regression techniques. Random Forest had a score of 40%, SVC 75%, LR 72% with the training dataset. SVC scored 83% and LR 86% with the test dataset. Since the average was a tie between SVC and LR, settled on SVC since it came out on top after a five-fold cross-validation.
* Model Saving: Saved the model (pickle file) and name dictionary using Joblib and JSON modules.
* Model Deployment: Used Streamlit Python library to build the UI of the final web app. Wrote Python code surrounding the saved model that will allow users to upload an image of any of the 9 US presidents and get a report of who the president is together with a class probability report. Finally, I deployed the model on Heroku with this link: <https://american-president-classifier-a8dad2a561a0.herokuapp.com/>

# WORK EXPERIENCE

April 2014-Current

**Various:** *Geospatial Surveyor*

I worked in various capacities as a Surveyor, two years for a busy geospatial firm and then the next eight as an independent surveyor. I worked in projects all across East Africa (Kenya, Rwanda, Somalia and South Sudan) and even became a licensed drone pilot and co-authored an industry book as indicated earlier. After about nine years in the industry, I was enamored by the tech world and spent the last one year and a half exploring where I would fit. I explored UX design and got some certifications from Google but I found my interests and efforts gravitating towards Python and then subsequently into Data Science and Machine Learning.

# 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.