

AFRICURA

Travel Recommendation System



Unlock Africa's Hidden Gems: Personalized Travel Recommendations at Your Fingertips!

Meet the team

Introducing the Dream Team: Unleashing the Power of Data to Shape Your African Adventure!"



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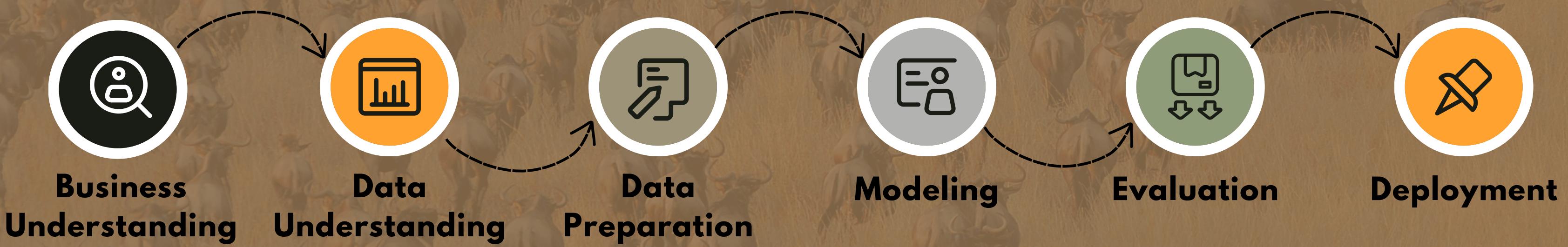
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CRISP-DM Roadmap

This project was carried out using the CRISP-dm methodology



Overview

- **Tourism is a powerful vehicle for economic growth and job creation all over the world.**
- **As African economies ease Covid-19 restrictions to strengthen their financial situations, the tourism sectors in the region are experiencing a resurgence.**
- **A travel recommender system can drive tourism growth by delivering personalized recommendations, enhancing user experiences, promoting lesser-known destinations and continually improving its recommendations based on user feedback.**

Problem Statement

- Tourists face immense challenges in finding suitable travel destinations that align with their preferences, budget, and time constraints.
- The main aim of AfricuraAI is developing a recommendation system that suggests ideal tourist destinations based on customer reviews, budget limitations, specific locations and amenities

Business Understanding

- AfricuraAI is a business dedicated to revolutionizing travel exploration in Africa using machine learning.
- AfricuraAI Recommendation system provides personalized recommendations for the best tourist destinations in Africa

Business Understanding

Objectives

- Creating a recommendation system based on budget.
- Identifying top destinations in Africa
- Fostering customer loyalty
- Increasing customer engagement, generating revenue, and collecting user information and feedback

Goals

- Building a machine learning model to predict hotel ratings
- Establishing evaluation metrics
- Implementing a real-time recommendation feature
- Deploy the recommendation system using streamlit

Success Metric

- Root Mean Squared Error (RMSE) close to 0 to evaluate model efficiency

Data Understanding

The data scrapped from Tripadvisor, stored in Json files and loaded into python

Data Mining

This data was for 15 top destinations in Africa which are Egypt, South Africa, Cape verde, Kenya, Uganda, Tanzania, DRC, Rwanda, Senegal, Morocco, Namibia, Madagascar , Ethiopia, Malawi, Ghana, Seychelles, Zambia

It contained 35836 rows and 65 columns. 8 Columns were of datatype integer and float while the rest were object columns.

Data Preparation

1

SELECTING

Identify a problem and form a thesis statement.

2

CLEANING

Review literature related to your topic.

3

FORMATING

Come up with an educated guess based on your research.

4

FEATURE ENGINEERING

Read resources to support your hypothesis.

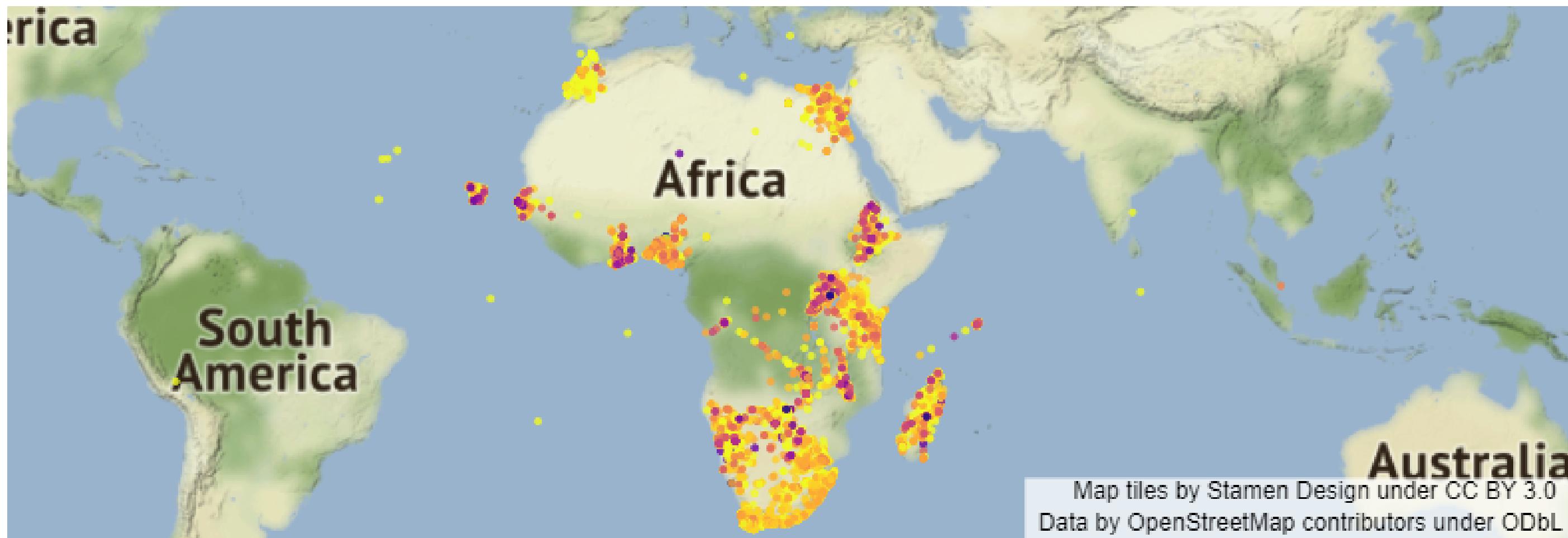
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CONCLUSION

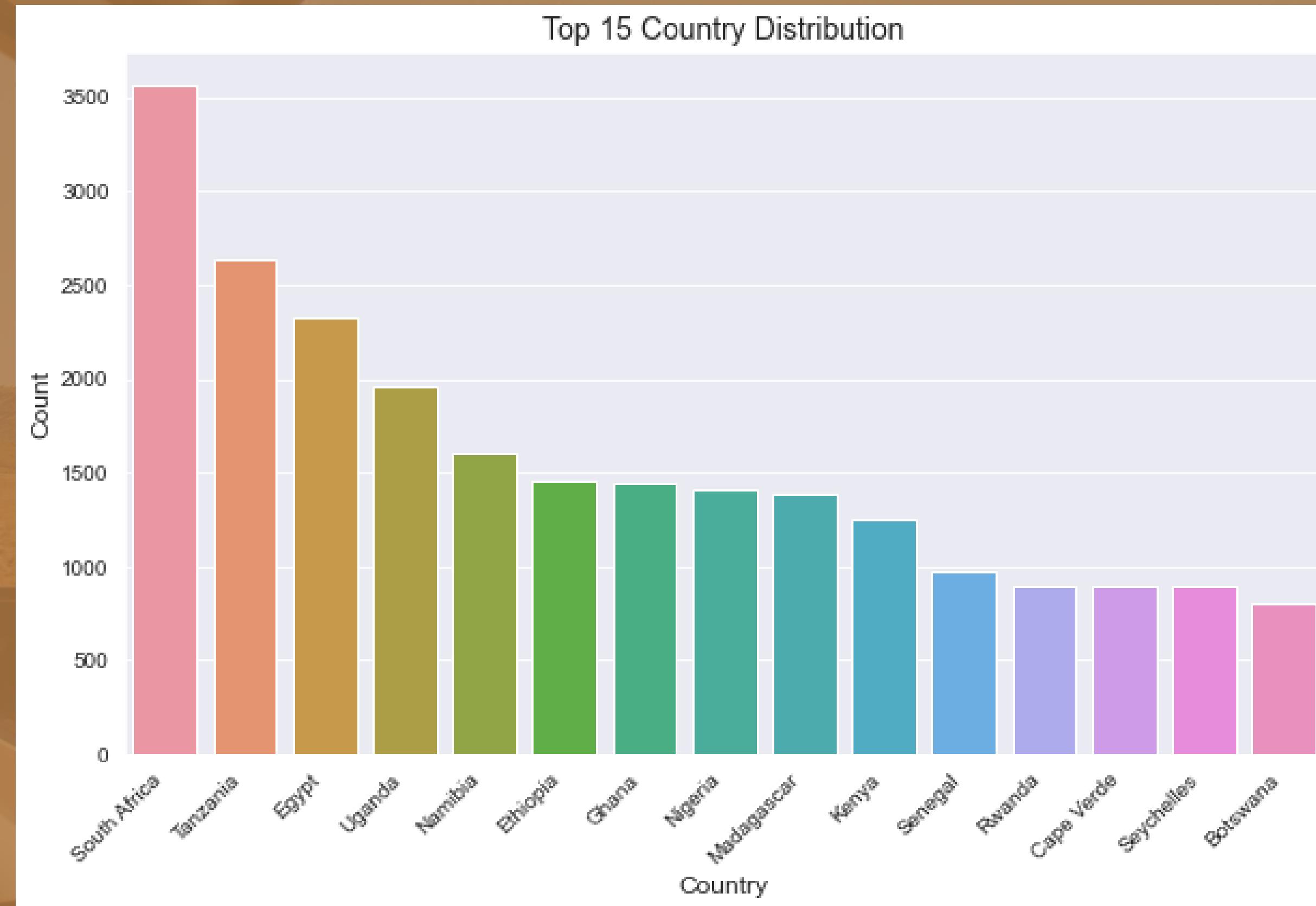
Interpret the results and write your conclusions.

A map showing the distribution of attraction sites

Places to visit by Location

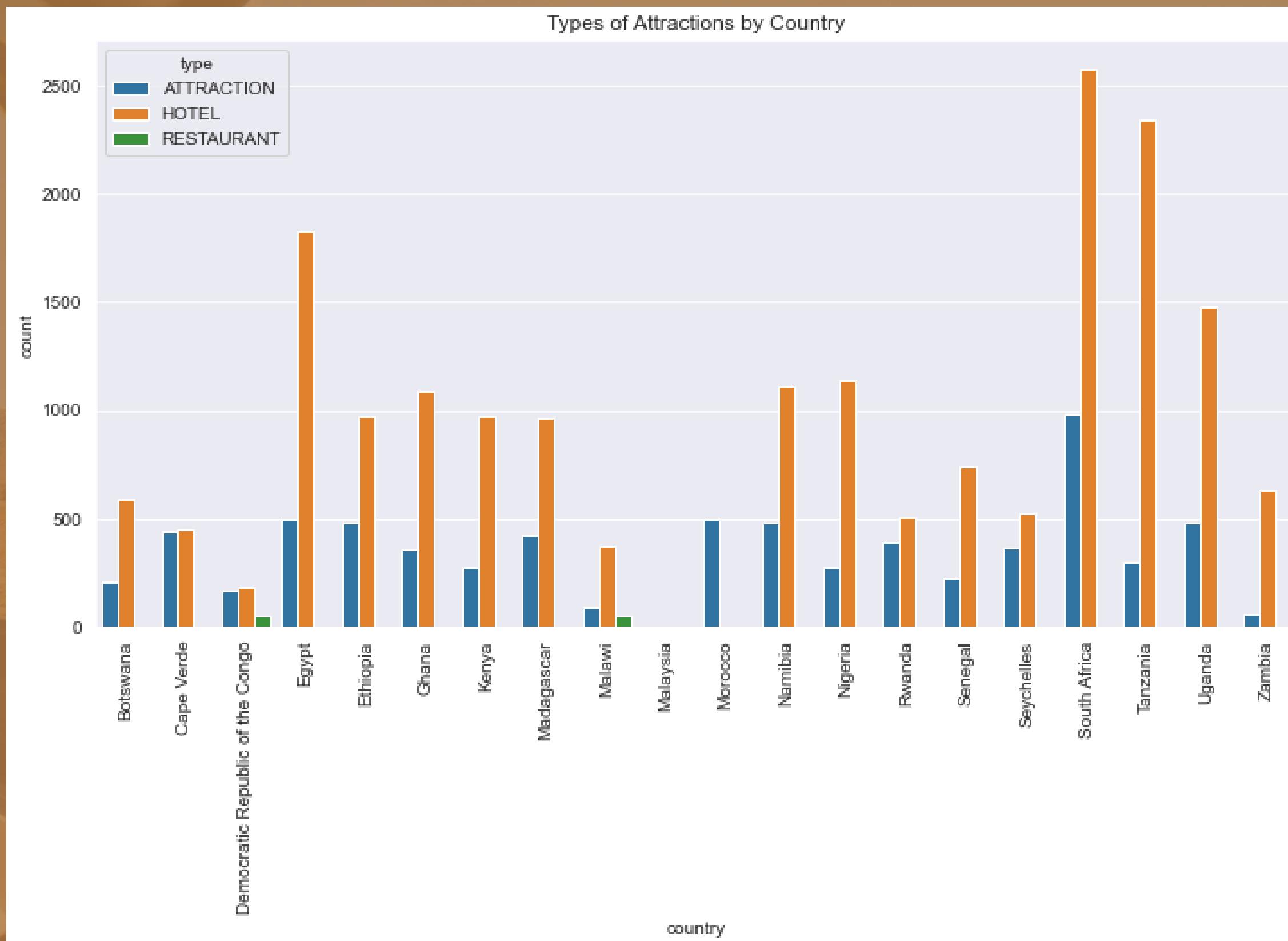


The distribution of destinations per country

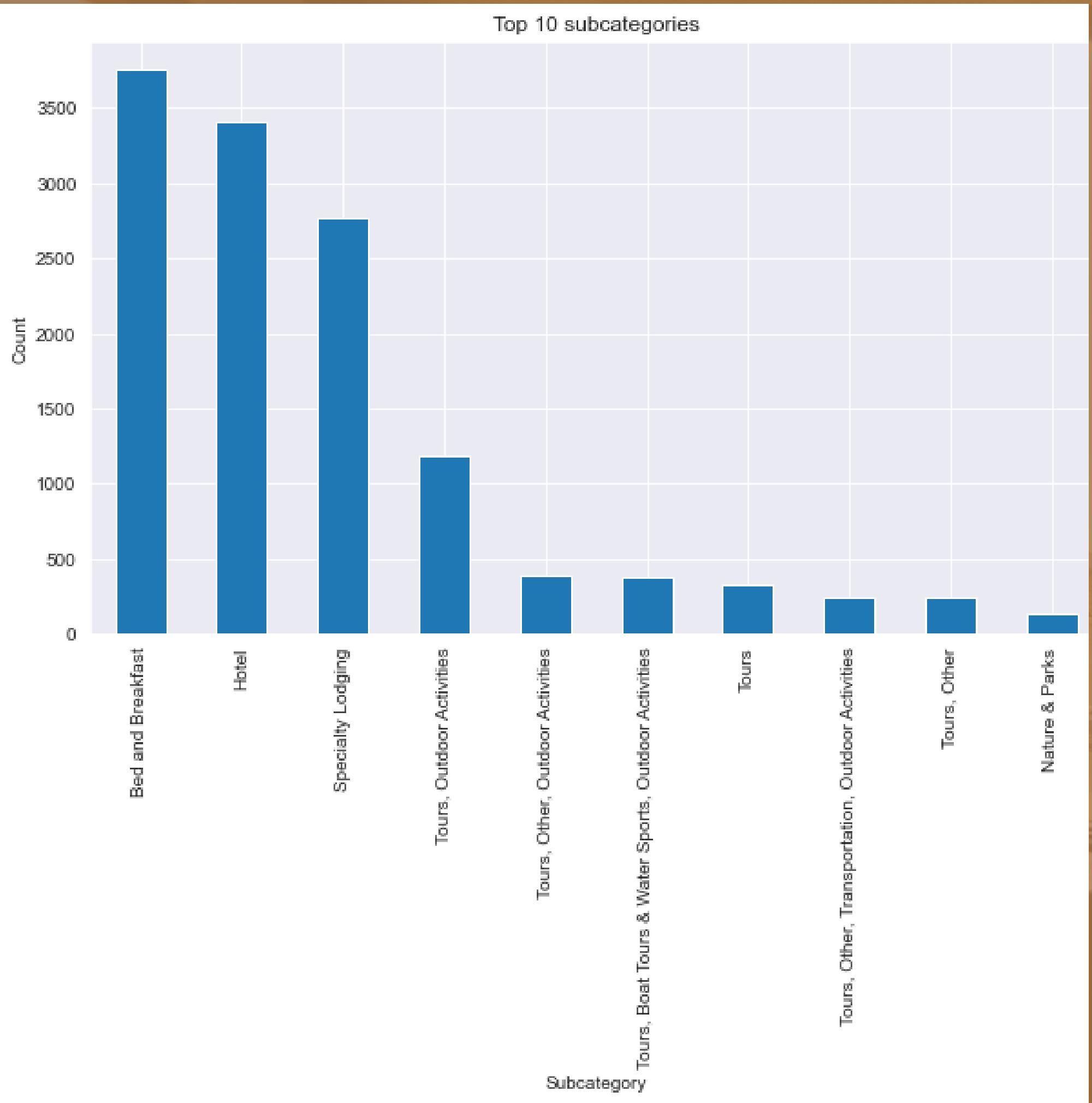


South Africa is the leading destination being followed by Tanzania and Egypt.

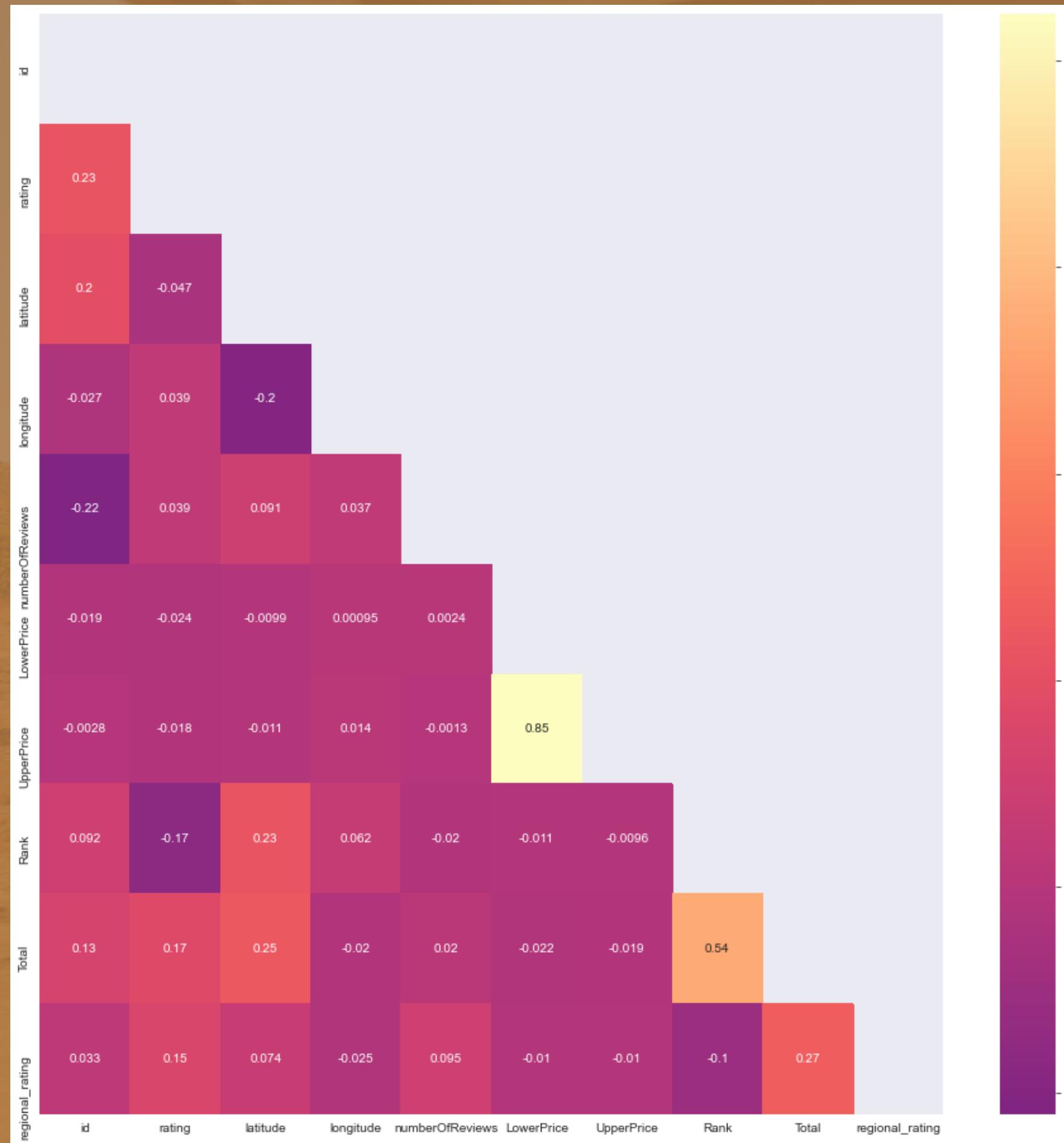
The distribution of attraction types per country



**Hotels are the leading attractions for tourist in all the countries followed by attraction.
Restaurant`is the least preffered attraction in all countries.**



The graph shows the top subcategories for tourist destinations in Africa. Bed and breakfast leads followed by Hotel and speciality lodging.



There appears to be very little correlation between features apart from upper and lower price.

MODELLING

KNN Basic Model

- Baseline Root Mean Square Error (RMSE): 0.7157

- Baseline Mean Absolute Error (MAE): 0.5230

These metrics provide a measure of the model's prediction accuracy and the average difference between predicted and actual ratings.

SVD Model

MODELLING

- Root Mean Square Error (RMSE):
0.7066

- Mean Absolute Error (MAE): **0.5142**

A lower RMSE value of **0.7066** signifies improved accuracy in our predictions, indicating a reduction in the average error of approximately **0.7066** units.

MODELLING

NMF Model

- Root Mean Square Error (RMSE):
0.7157
- Mean Absolute Error (MAE): 0.5103

With an RMSE of 0.7157 and an MAE of 0.5103, this model showcases its ability to accurately predict user ratings and provide personalized recommendations.

MODELLING

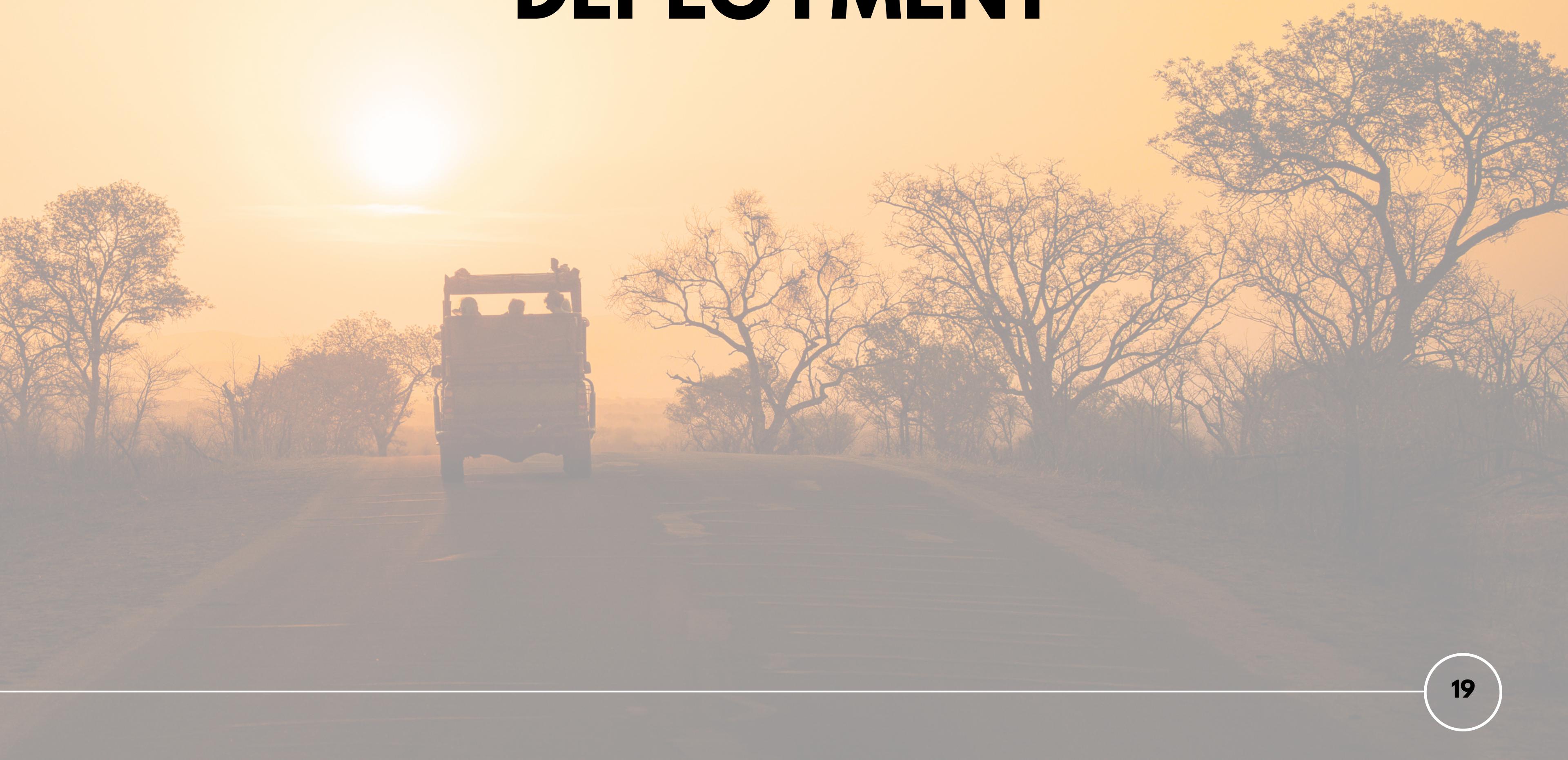
Ensemble Methods

- Blended model achieves remarkable RMSE of 0.7034

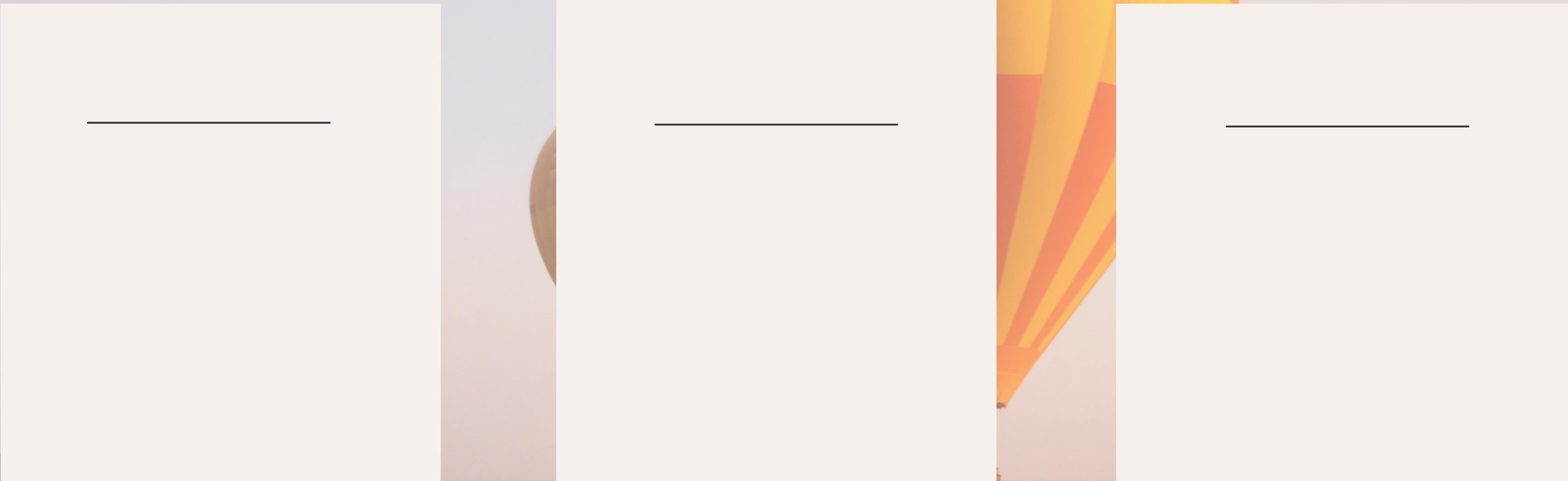
- Mean Absolute Error (MAE): 0.5099

We scaled the data using MinMaxScaler for optimal feature representation and leveraged ensemble methods, combining NMF, SVD, and SVDpp models with Majority Voting

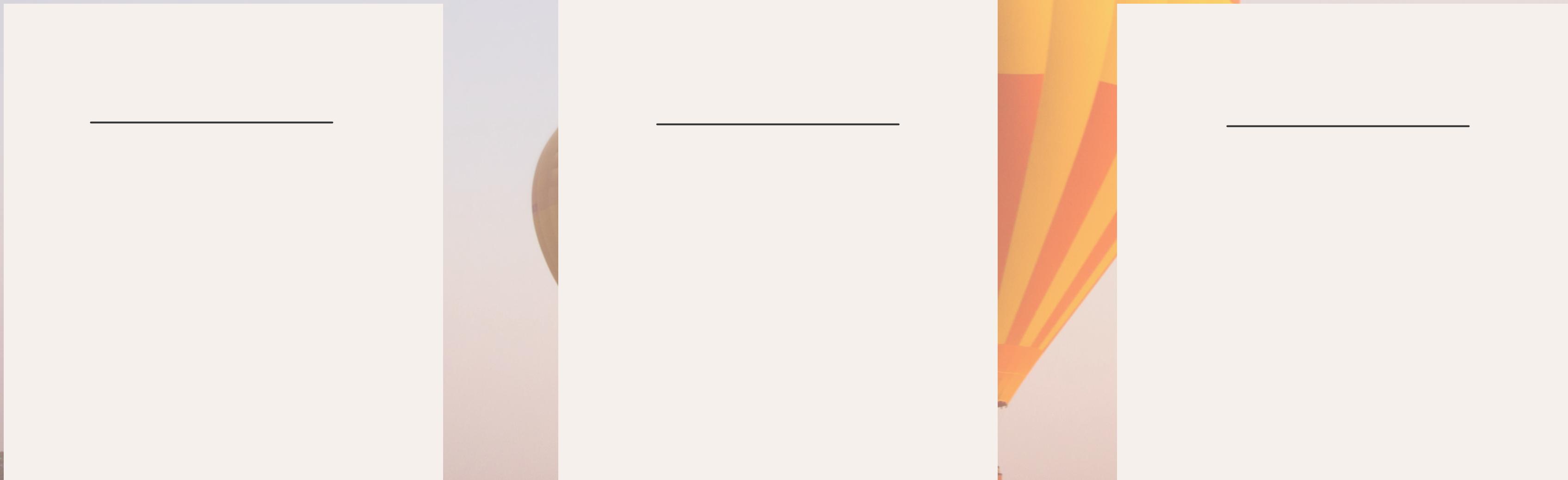
DEPLOYMENT



RECOMMENDATIONS



CONCLUSIONS



A close-up photograph of a giraffe's head and neck. The giraffe has a light brown coat with dark brown, irregularly shaped spots. Its long neck is visible, and it is looking slightly to the right. The background is a soft, out-of-focus yellowish-brown color.

Thank you