Water Pump Functionality Prediction in Tanzania

BY

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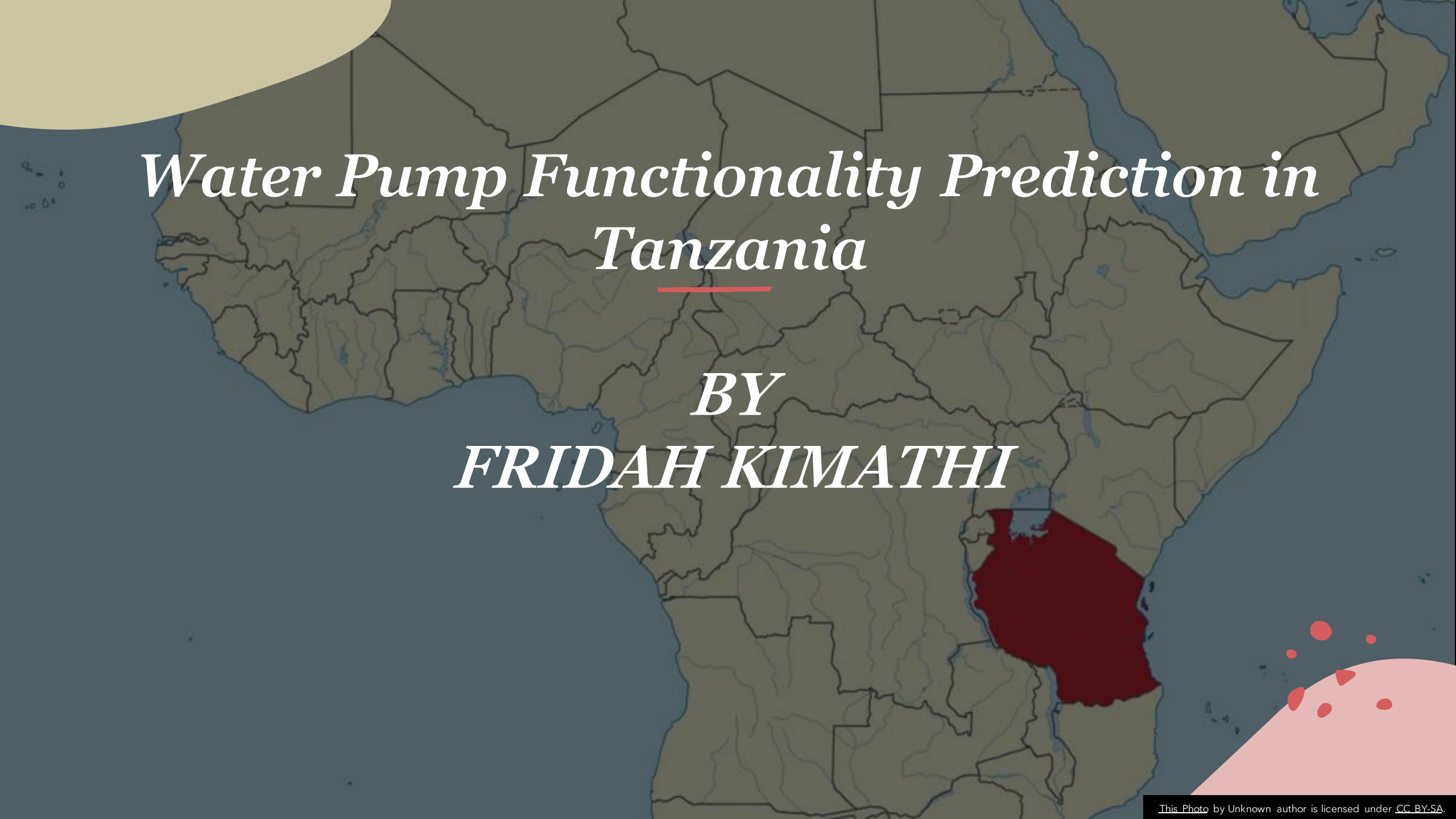


OVERVIEW

The project aims to develop a model to classify the functionality status of water pumps in Tanzania using data sourced by Taarifa and the Ministry of water.

BUSINESS PROBLEM

Tanzania is facing a water crisis

57 million people struggle to access clean water

The Tanzanian government is trying to resolve crisis by regular maintenance/repair of water pumps

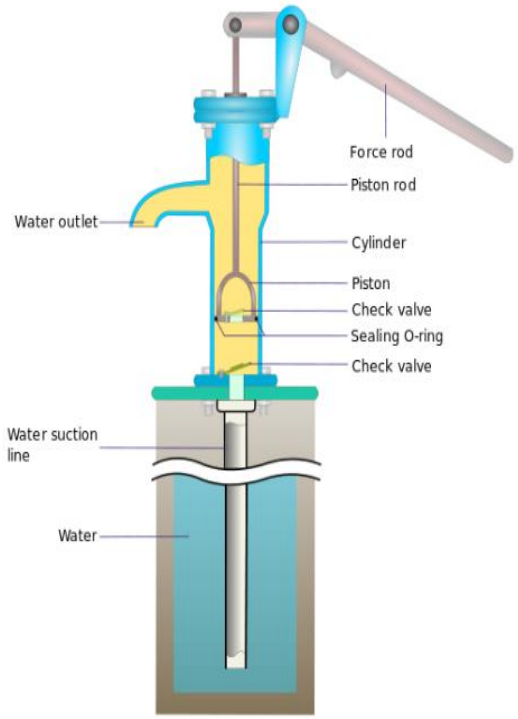
Its engineers are finding it difficult to achieve this objectives due to lack of information on non-functional/failing pumps

DATA

The data used in this project is from the Pump it Up: Data Mining the Water Table competition hosted by DrivenData, originally sourced by Taarifa and the Tanzanian Ministry of Water

Pump it Up: Data Mining the Water Table

HOSTED BY DRIVENDATA

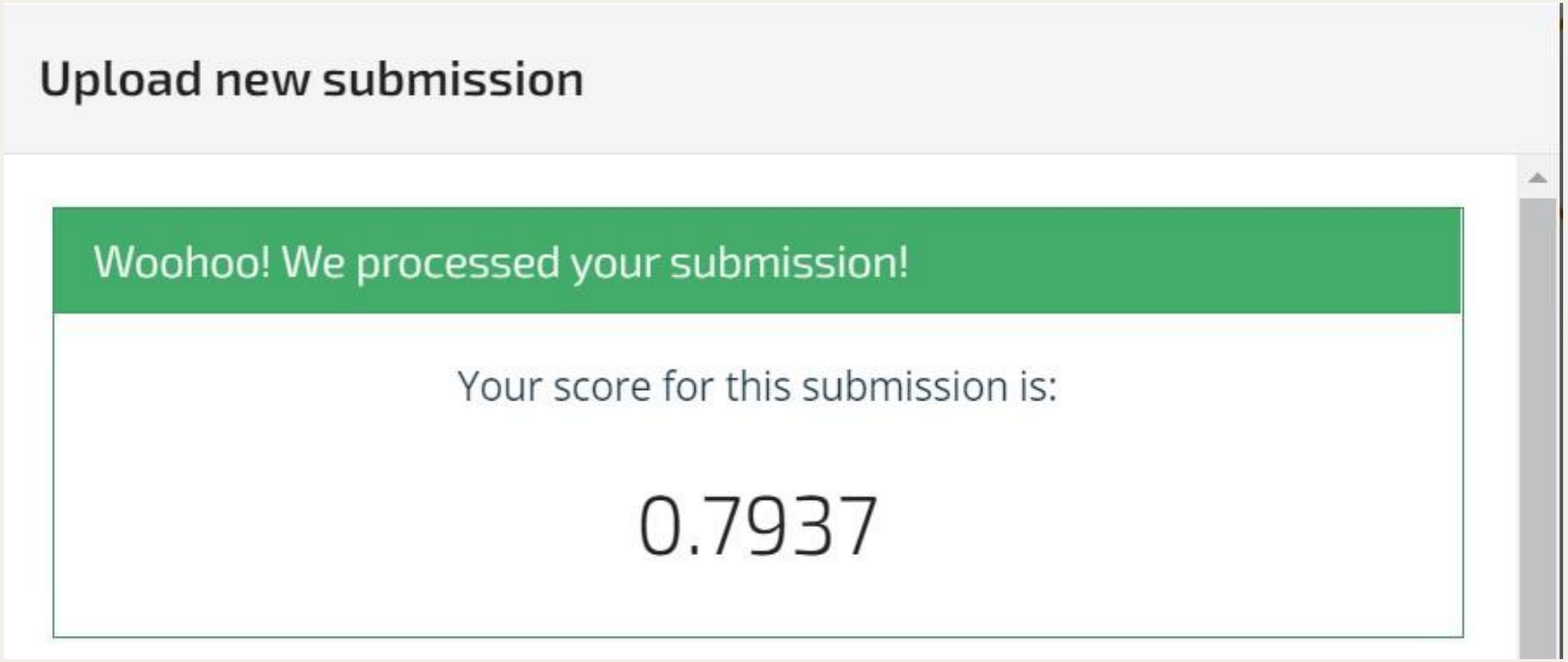


MODELLING

	Model	Train Accuracy Score(%)	Test Accuracy Score(%)
0	Baseline Decision Tree	100.0	75.0
1	Second Decision Tree	100.0	75.0
2	Baseline Random Forest Classifier	0.0	0.0
3	Baseline Gradient Boost	99.0	70.0
4	XGBoost Classifier	86.0	77.0
5	Random Forest Classifier-Grid Search	98.0	80.0
6	XGBoost Classifier-Grid Search	95.0	79.0
7	Final Model-Random Forest Classifier	98.0	80.0

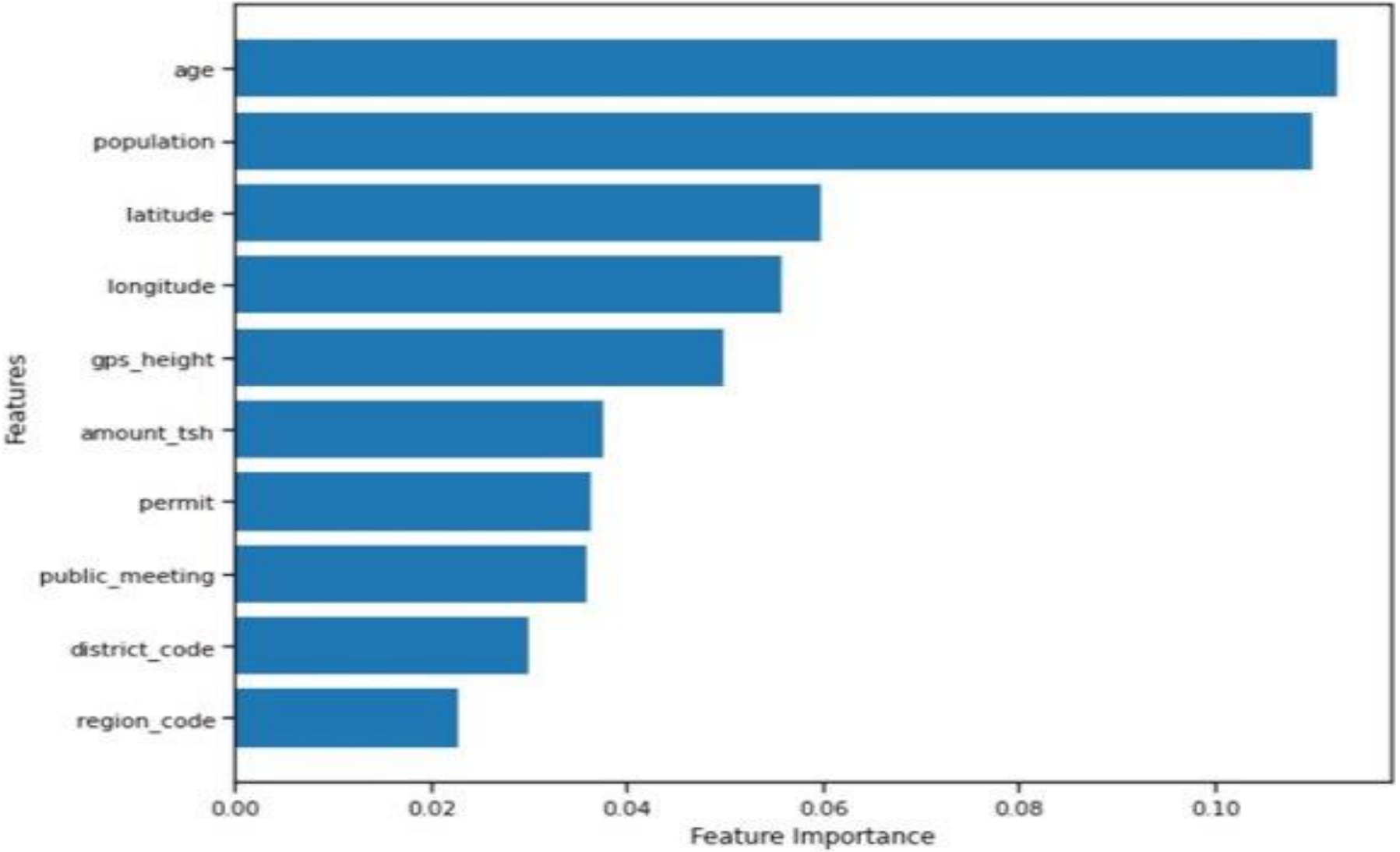
EVALUATION

- The accuracy score of the model is 0.7937.



EVALUATION

The top 10 most important features are:



LIMITATIONS

The overall data used was not up to date and was not reliably gathered.

It contained a lot of placeholders in important features such as 'population' and 'amount_tsh'.

Hence the results obtained are not particularly accurate.

RECOMMENDATION

Work with the local government to ensure more accurate gathering of data

Data collected should highlight more on non functional pumps or those in need of repairs

Data collected could highlight functional pumps that are unlikely to fail


THANK YOU