UHAI CLASSIFIER

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TIMELINE

Blue is the colour of the clear sky and the deep sea

Red is the colour of danger and courage

Black is the color of ebony and of outer space

Yellow is the color of gold, butter and ripe lemons

White is the color of milk and fresh snow

Blue is the colour of the clear sky and the deep sea

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |

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BACKGROUND AND OVERVIEW

- Uhai Classifier looks to predict functional and non-functional water pumps by looking at well distribution.

- The prediction enables us to gauge on the water supply and decide whether or not to install water pumps
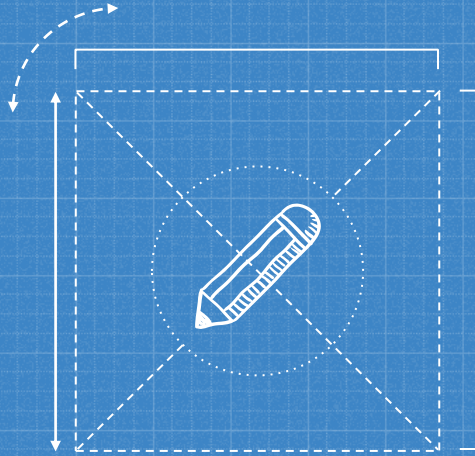
BIG CONCEPT

Bring the attention of your audience over a key concept using icons or illustrations

SOURCES AND DATA

Source

- Driven Data Organization

Final Model Includes:

- **52, 560 Observations**
- **19 Features**
- **2,022 False Positive Objects**
- **Gradient Boosting Ensemble Algorithmn**

DATA ANALYSIS

- Dropped columns with great percentage of missing values

- Removed duplicated observations

- Checked for similarity between columns

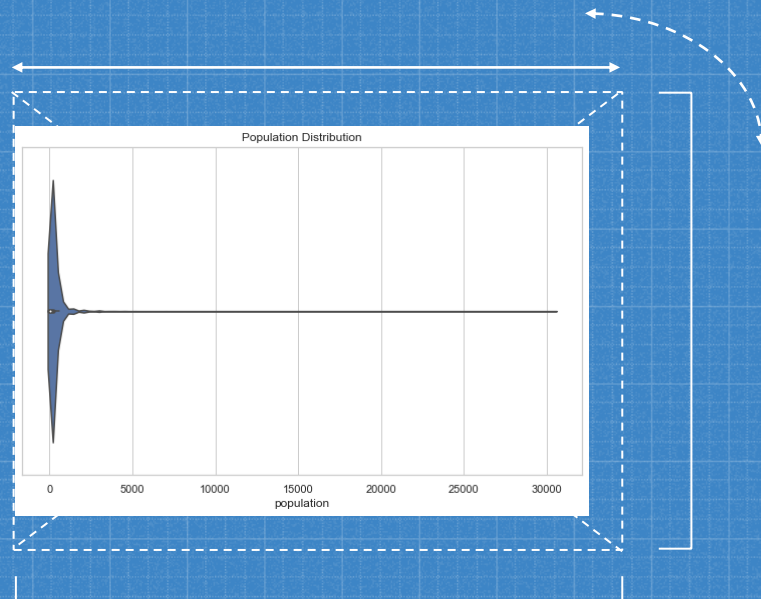- Fixed inconsistencies in column namings

- No outlier treatment done

DISTRIBUTION OF FUNCTIONAL WELS

- Most of the wells are functional.
- A small proportion of wells are functional but need repair

Status Group Distribution

functional — 54.5%

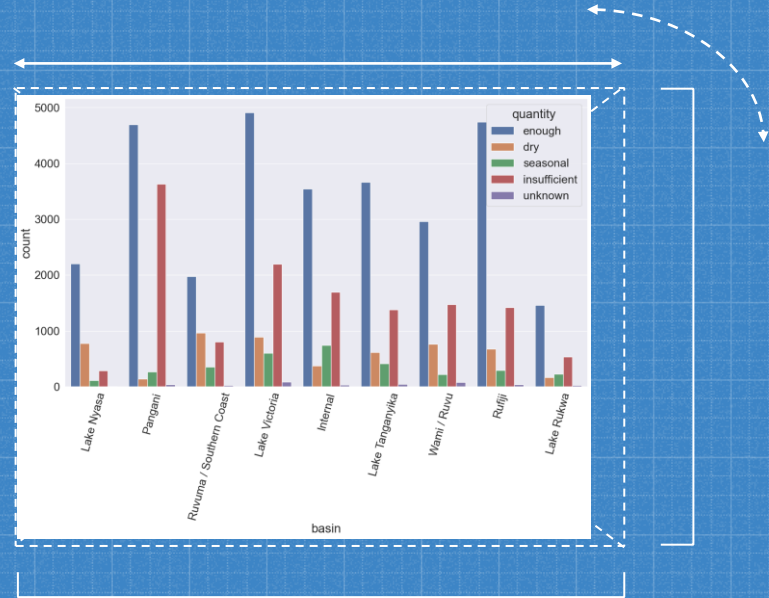functional needs repair — 7.1%

non functional — 38.4%
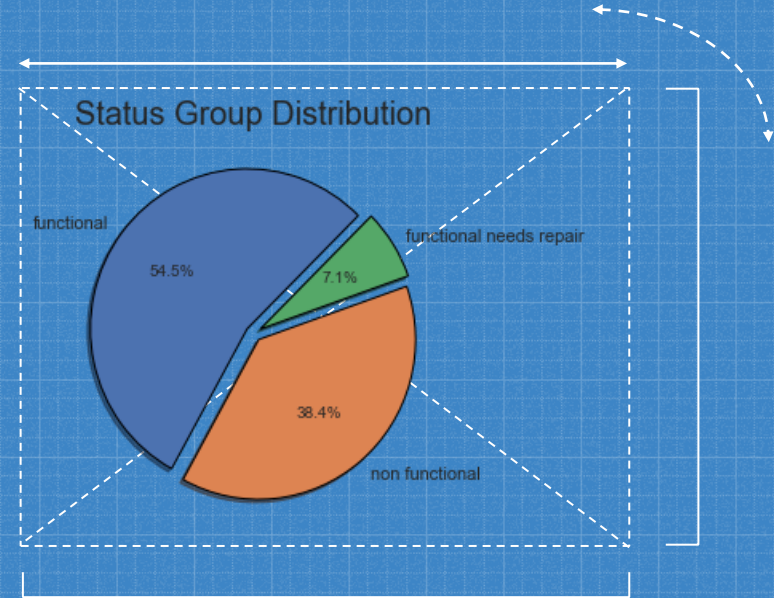
POPULATION AROUND WELS
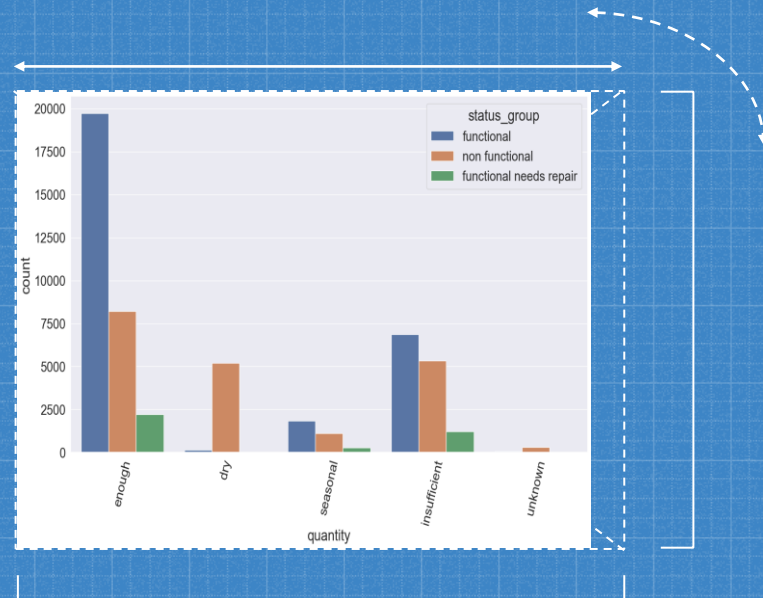
- Most individuals do not stay around water wells

BASIN VS QUANTITY

- The quantity of water is an important feature to prediction. Here we preview which water basins have the highest volume of water.

WATER QUANTITY VS FUNCTIONALITY

- Water sources with enough water have the most functional water pumps

- Dry water sources have non-functional water pumps

MODELLING

BASE MODEL
- K-Nearest Neighbors
- Test Results
- Precison = 65.69%
- Recall = 67.20%
- Accuracy = 67.20%
- RMSE = 0.62

FINAL MODEL
- Gradient Boosting
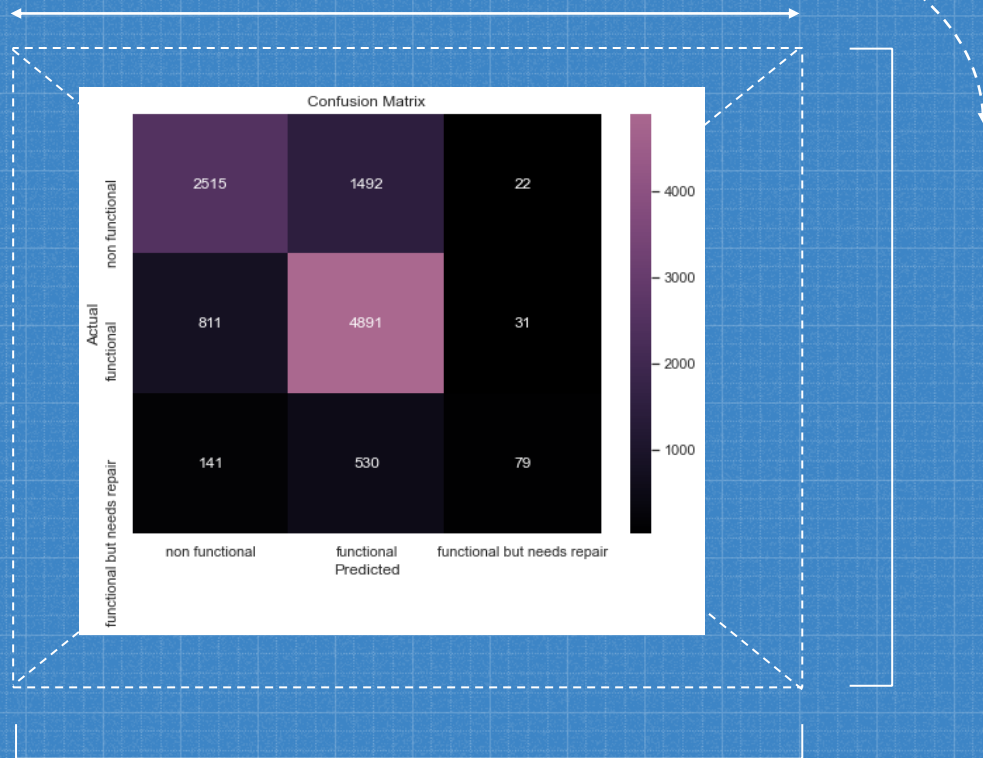- Test Results
- Precison = 70.70%
- Recall = 71.20%
- Accuracy = 71.20%
- RMSE = 0.58

- Recall focuses on model sensitivity
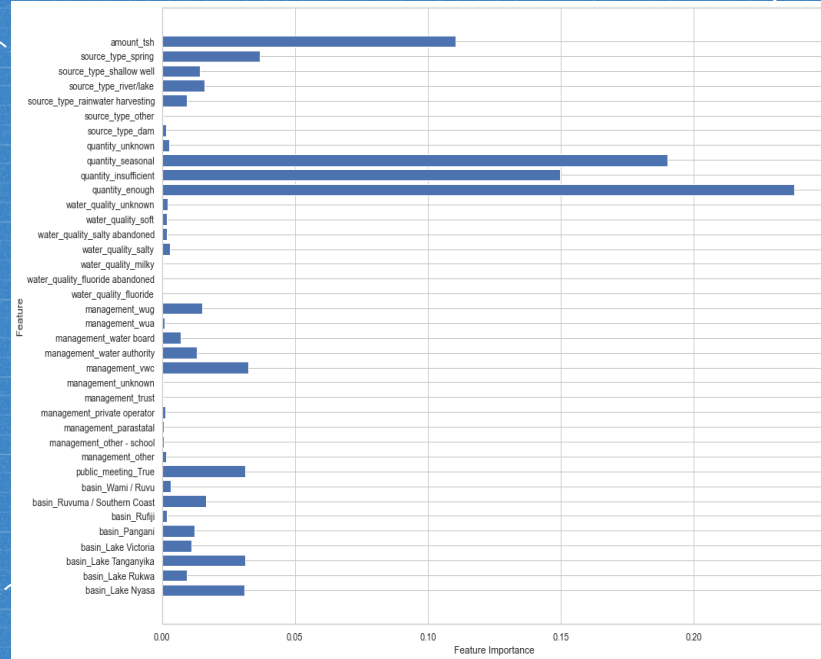- Root Mean Squared Error(RMSE) checks for the chance of error from our model

Final Model Confusion Matrix Display

- ## False Positive Predictions are 2, 022
- ## False Negative

FEATURE IMPORTANCE

▪ The
amount_tsh(wat
er pump
pressure) and
quantity are
the most
important
features.

Reccomendations & Conclusion

1. The UN-Habitat should partner with the government to ensure efficient pulling of funds such as to raise enough capital to push the initiative
2. When the UN-Habitat kicks the initiative they should look to contact DWE to do the water pump installations
3. Features such as amount_tsh(water pump pressure) and quantity are key indicators of water pump functionality, the organization should use those features to decide on whether a water pump is functional
4. Lake Victoria has the most non functional wells yet its one of the largest water bodies in the region. The UN Habitat should perform an excursion on the region to check on why so.

Conclusion

The model did well with continuous training but with more and updated data the model would be able to make better predictions

Thanks!

You can find me at:
Sharon Atieno on LinkedIn
 and on GitHub HERE