Tanzania Water Wells Analysis

Access to clean water for all.

Summary

The goal of this project was to be able to predict if a well in Tanzania needed repair or did not need repair in order for WaterAid to focus their efforts on repairing the wells that needed repair.

Ultimately, we achieved a model that predicted if a well needed repair or not with **82%** accuracy using the features in our data.

Outline

- Business Problem
- Data
- Methods
- Results
- Conclusions

Business Problem

- There are several wells in Tanzania; some which are functional not needing repair and others that need repair.
- WaterAid wants to know well functionality by knowing which wells need repair and which do not.
- Achieved through building models that will predict this using data.

Data

- The dataset used was obtained from Drivendata
- The dataset contained data on 59,400 wells.
- Contained 40 features.

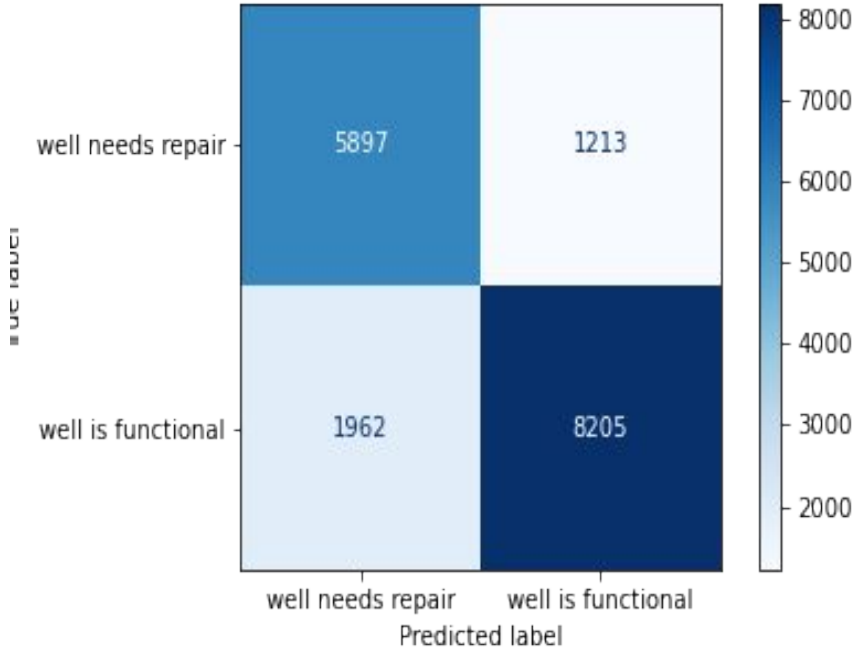
Methods

- Filling in missing values.
- Feature Engineering.
- Removing redundant features.
- Splitting data into training and test sets.

Modeling

- Nine models built.
- Over 500 iterations performed.
- Primary focus on Accuracy.
- Data set aside for testing model performance.

Evaluation



	Metrics
Accuracy	0.816229
Precision	0.807022
Recall	0.871204
F1-Score	0.837886

Evaluation

- Accuracy is 0.816 which is approximately **82%.**
- Only **18%** of the wells were wrongly classified.
- Precision is 0.801 which is approximately **81%.**
- Only **19%** of wells predicted to be functional(no repair) actually needed repair.
- Model performs well in other aspects as well.

Recommendations

- Model use only in the specified context.
- Collection of more and relevant features to improve model performance.
- Use of other information sources in conjunction with model.

Future Improvements

- Collection of more and relevant features.
- More computing resources.
- Explore more and different models.
- More EDA and Data Cleaning.

Thank You!

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