

Water pump distribution in Tanzania

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Business Objective

To build a model for the Govt of Tanzania that will help predict the status of a water pump based on certain input information.

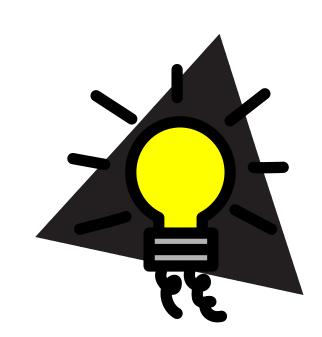
The water pump will be classified as follows:

- 1. Functional
- 2. Non-Functional
- 3. Functional needs repair

Dataset

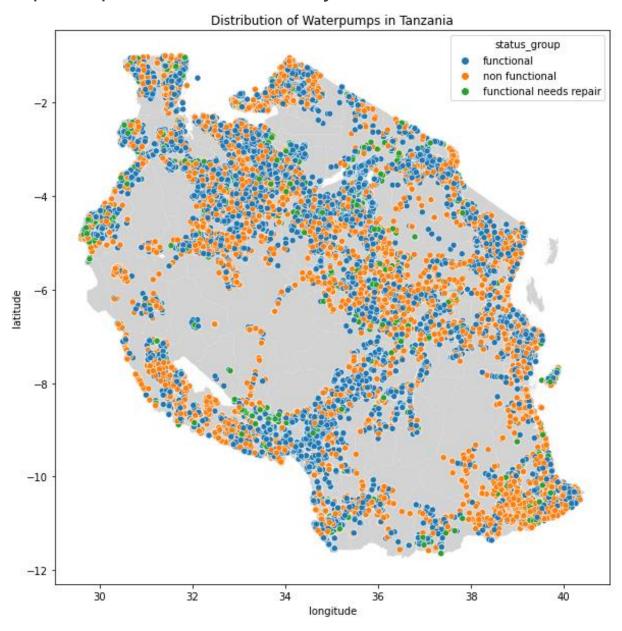
Dataset sourced from:

https://www.drivendata.org/competitions/7/pump-it-up-data-mining-the-water-table/page/23/





Water pump distribution by class



Process Steps

Perform EDA Optimize hyper parameters Use Ensemble methods













Compare baseline models and pick one for optimization

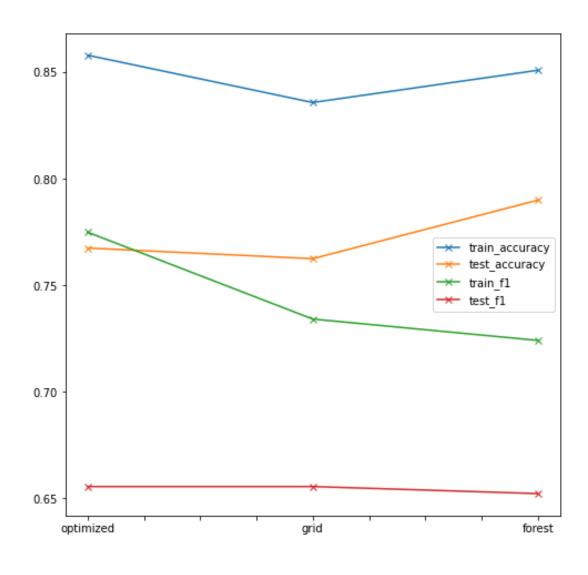
Feature Importance Output

Baseline models stats

Since this is a multi-classification problem, we will look at the F1-score, which combines both accuracy and recall.

	Logistic Regression	Decision Tree	KNN
F1 - Score	0.33	0.64	0.49

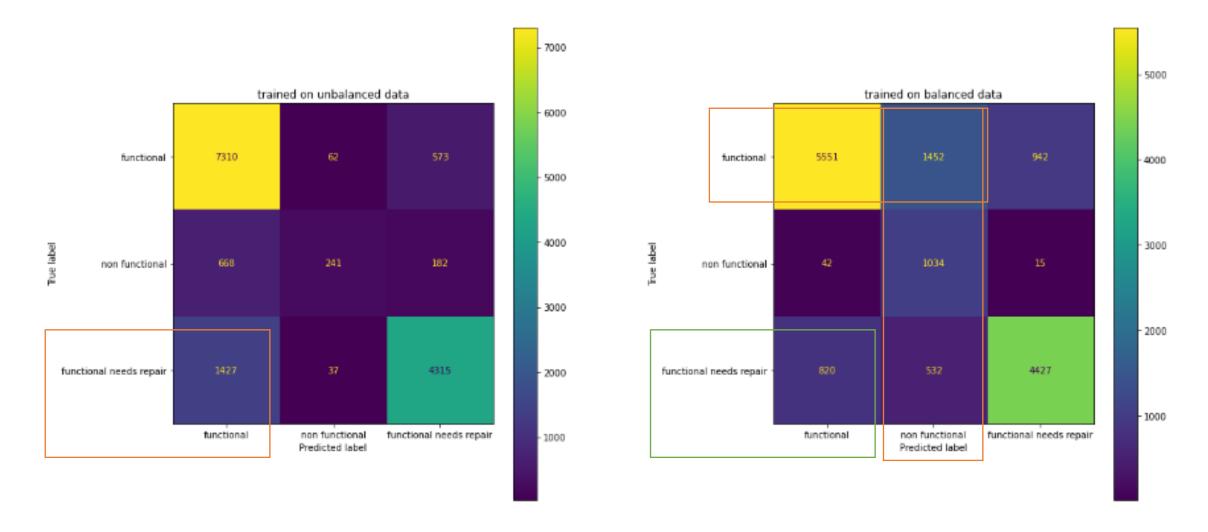
Compare Optimized, GridSearch and RandomForest models



Confusion Matrix – Random Forest

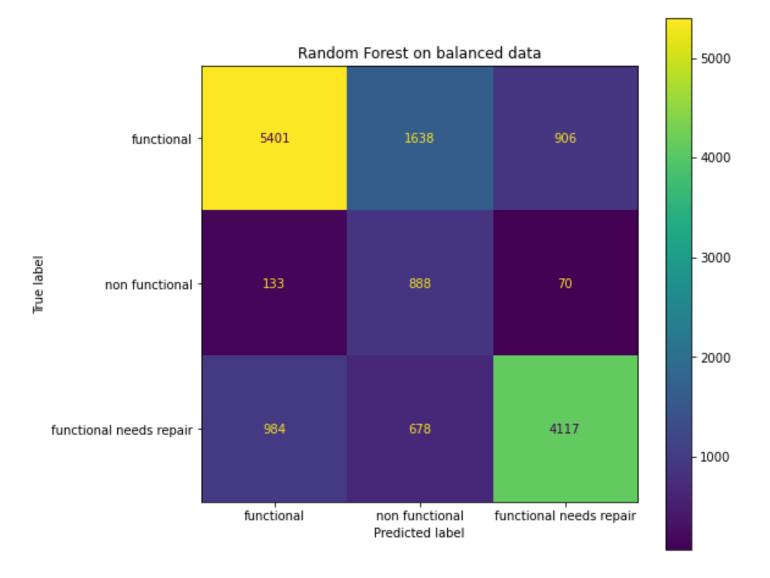


Balanced vs Unbalanced





Final Results



Next Steps

- Re-frame this as a binary classification problem i.e., functional vs non-functional and see if we can build a better model.
- Optimize balanced dataset models.



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