Univ.AI

Santander Customer Satisfaction

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Motivation and About the Project

Customer satisfaction is the key idea for an Organization to succeed.
When your customers are satisfied, they believe in the brand and become loyal. This loyalty increases sales and profitability.
The motivation comes from here that it’s a Goal for every organization and the “Santander Customer Satisfaction” is one of best challenging problem for our research.
Here we have anonymized dataset containing a large number of numeric variables. The "TARGET" column is the variable to predict. It equals one for unsatisfied customers and 0 for satisfied customers. The task is to predict the probability that each customer in the test set is an unsatisfied customer.

Data and Labels

1. Here the dataset has anonymous column with numeric data
2. Data set contains many unnamed columns
3. Unnamed columns make feature extraction tedious
4. Exploratory data analysis on the training set can reveal latent features which contribute to the Target column

References

James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). An introduction to statistical learning (Vol. 112, p. 18). New York: springer.

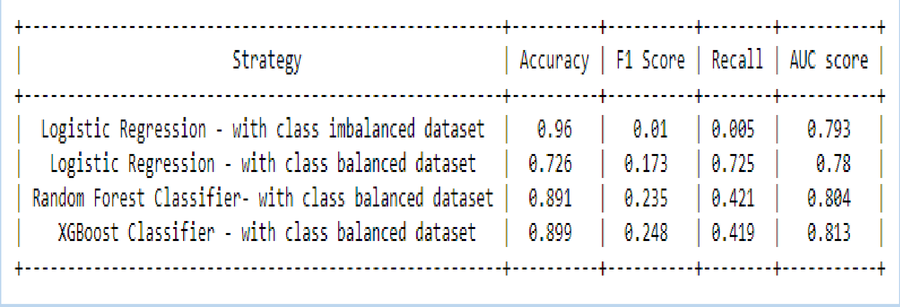
Model

We build a machine learning algorithm using the training data set and predict the total satisfied and unsatisfied customers in the Santander test data.

For initial set of experiment we have used Logistic Regression as a base model.

Here “Random Forrest” and “XG Boost” is used to build a machine learning model.

Results



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|                       Strategy                        | Accuracy | F1 Score | Recall | AUC score |
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|  Logistic Regression - with class imbalanced dataset  |   0.96   |   0.01   | 0.005  |   0.793   |
|   Logistic Regression - with class balanced dataset   |  0.726   |  0.173   | 0.725  |    0.78   |
| Random Forest Classifier- with class balanced dataset |  0.891   |  0.235   | 0.421  |   0.804   |
|   XGBoost Classifier - with class balanced dataset    |  0.899   |  0.248   | 0.419  |   0.813   |
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Conclusion and Future Work

Accuracy score is not the best score to evaluate the performance of a model.

For imbalanced dataset ROC-AUC score and F1 score are better metrics to evaluate the model.

From these metrics, we find that XGBoost Classifier is the best model followed by Random Forest and Logistic Regression trained on the Santander Dataset.

For future work

1. Other models can be trained and ensembled in different combinations with each other to get better results.

2. We can use Bayesian optimization to find the best hyper-parameters for each of the model.

3. We can also try implementing deep learning models to the problem.