

Project Proposal

Predicting and Improving Success Rate of Bank Telemarketing Using Machine Learning

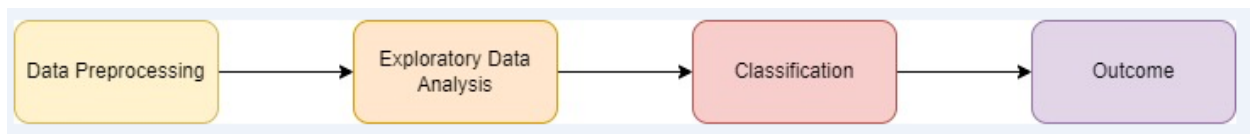
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Summary:

In the problem set, a Portuguese financial institution's direct marketing activities (phone calls) are discussed in relation to the Bank Marketing Data Set. Predicting whether a consumer will subscribe to a term deposit is the categorization term(variable y). Utilizing the provided dataset, we will do Exploratory Data Analysis and Classification, deriving the variables that have a significant impact on whether the client chooses to purchase the bank's offered Term Deposit or not.

Proposed Plan:

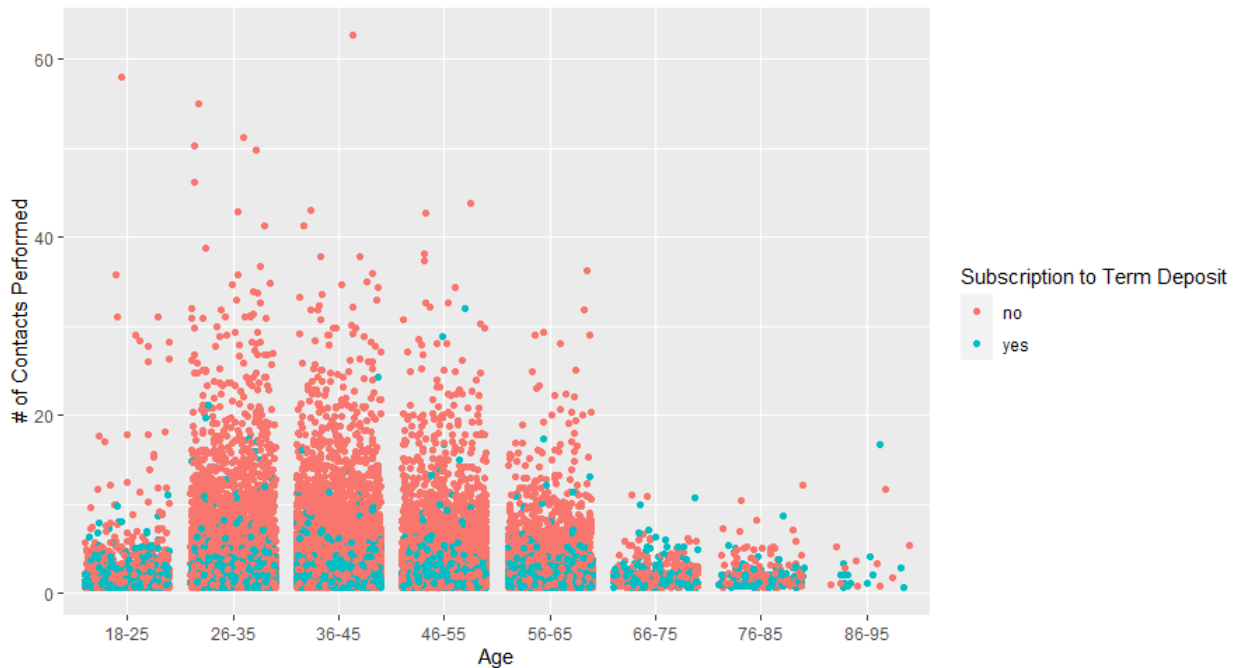
The Proposed Solution will be based on the given Pipeline :



- **Data Preprocessing:** On the given dataset, We will identify and handle missing values, encode the categorical data points, scale the features with high variance, and remove features with excessive collinearity between them.
- **Exploratory Data Analysis:** Finding relationships between various aspects and analyzing data sets to highlight their key qualities using statistical graph plots and other data visualization techniques are the objectives of our EDA on the dataset.
- **Classification:** Fitting dataset with various classification algorithms (Decision Trees, Random Forest, K-Nearest Neighbors, and Logistic Regression) on the dataset to do classification and providing the classified model with the best F1 Score and ROC Curve.

- Outcome: Identifying the significant features and offering the most accurate model to forecast whether the client would opt to buy the bank's suggested term deposit or not.

Preliminary Results:



We may deduce from the plotted graph that the majority of clients who sign up for a Term Deposit do so within 10 contacts with the bank. This means that most of the bank contacts with the clients are not useful and can be streamlined further by the outcome of our project.

References:

1. Data Source : <https://archive.ics.uci.edu/ml/datasets/Bank+Marketing#>
2. [Moro et al., 2014] S. Moro, P. Cortez and P. Rita. A Data-Driven Approach to Predict the Success of Bank Telemarketing. Decision Support Systems, Elsevier, 62:22-31, June 2014