Predicting Term Deposit Subscription by a client

# Abstract:

Marketing campaigns are characterized by focusing on the customer needs and their overall satisfaction. Nevertheless, there are different variables that determine whether a marketing campaign will be successful or not. There are certain variables that we need to take into consideration when making a marketing campaign.

A Term deposit is a deposit that a bank or a financial institution offers with a fixed rate (often better than just opening a deposit account) in which your money will be returned back at a specific maturity time.

## Problem Statement:

Predict if a customer subscribes to a term deposits or not, when contacted by a marketing agent, by understanding the different features and performing predictive analytics

## Dataset Information:

The data is related with direct marketing campaigns of a Portuguese banking institution. The marketing campaigns were based on phone calls. Often, more than one contact to the same client was required, in order to assess if the product (bank term deposit) would be ('yes') or not ('no') subscribed.

The dataset consists of several predictor variables and one target variable, Outcome. Predictor variables includes the age, job, marital status, and so on

# Variable Description:

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| --- | --- |
| Column | Description |
| age | Age of the client |

|  |  |
| --- | --- |
| job | Type of job (categorical: 'admin.','blue-collar', 'entrepreneur', 'housemaid', 'management', 'retired','self-employed', 'services', 'student', 'technician', 'unemployed', 'unknown') |
| marital | Marital status (categorical: 'divorced','married','single','unknown'; note: 'divorced' means divorced or widowed) |
| education | (categorical: 'basic.4y', 'basic.6y' ,'basic.9y', 'high.school', 'illiterate', 'professional.course', 'university.degree','unknown') |
| default | has credit in default? (categorical: 'no','yes','unknown') |
| housing | has a housing loan? (categorical: 'no','yes','unknown') |
| loan | has a personal loan? (categorical: 'no','yes','unknown') |
| contact | contact communication type (categorical: 'cellular','telephone') |
| month | last contact month of year (categorical: 'jan', 'feb', 'mar', ..., 'nov', 'dec') |
| day\_of\_week | last contact day of the week (categorical: 'mon','tue','wed','thu','fri') |
| duration | last contact duration, in seconds |
| campaign | number of contacts performed during this campaign and for this client (numeric, includes last contact) |
| pdays | number of days that passed by after the client was last contacted from a previous campaign (numeric; 999 means client was not previously contacted) |
| previous | number of contacts performed before this campaign and for this client |
| poutcome | outcome of the previous marketing campaign (categorical: 'failure','nonexistent','success') |
| emp.var.rate | employment variation rate - quarterly indicator (numeric) |
| cons.price.idx | consumer price index - monthly indicator |
| cons.conf.idx | consumer confidence index - monthly indicator |

|  |  |
| --- | --- |
| euribor3m | euribor 3 month rate - daily indicator |
| nr.employed | number of employees - quarterly indicator |
| y | has the client subscribed a term deposit? (binary: 'yes','no') |

**Scope:**

* Sentiment analysis in a variety of forms
* Data Pre-processing
* Training data using SVM
* Hyperparameter Tuning

# Learning Outcome:

The students will get a better understanding of how the variables are linked to each other and should be able to predict whether a client of a bank will subscribe to a term deposit or not such that banks can plan the different campaigns for different customers according to the patterns.