Term Deposit

Overview

our client is a retail banking institution. Term deposits are a major source of income for a bank. A term deposit is a cash investment held at a financial institution. Your money is invested for an agreed rate of interest over a fixed amount of time, or term. The bank has various outreach plans to sell term deposits to their customers such as email marketing, advertisements, telephonic marketing and digital marketing. Telephonic marketing campaigns still remain one of the most effective way to reach out to people. However, they require huge investment as large call centers are hired to actually execute these campaigns. Hence, it is crucial to identify the customers most likely to convert beforehand so that they can be specifically targeted via call. You are provided with the client data such as : age of the client, their job type, their marital status, etc. Along with the client data, you are also provided with the information of the call such as the duration of the call, day and month of the call, etc. Given this information, your task is to predict if the client will subscribe to term deposit.

File structure

Column	Description
ID	Unique client ID
age	Age of the client
job	Type of job
marital	Marital status of the client
education	Education level
default	Credit in default
balance	average yearly balance
housing	Housing loan
loan	Personal loan
contact	Type of communication
month	Contact month
day_of_week	Day of week of contact
duration	Contact duration
campaign	number of contacts performed during this campaign to the client
pdays	number of days that passed by after the client was last contacted
previous	number of contacts performed before this campaign
poutcome	outcome of the previous marketing campaign
Subscribed (target)	has the client subscribed a term deposit?

Business Requirements

You can support the business in various ways including and not limited to :

1. How does the average yearly balance vary based on the client's job type?
2. Is there a relationship between the client's education level and their decision to subscribe?
3. Do clients with a personal loan tend to subscribe more or less frequently compared to those without a loan?
4. Are there any notable differences in the contact duration for subscribed and non-subscribed clients?
5. Develop a sample dynamic dashboard to keep track of the subscription rate "you can add as many KPI's as you want that serve your task"
6. Apply Data cleaning ,exploratory data analysis and feature engineering before fitting the model
7. Develop a machine learning model that can be used to classify if certain client will subscribe a term of deposit or not
8. Evaluate your model using appropriate metric and discuss why you used this metric
9. Discuss which more important the precision of the model or the recall
10. Apply hyperparameter tuning on your model and compare between model performance before and after tuning

Note : your code should be clean , commented and understood

Deliverable Layout

You are expected to deliver your key insights and recommendation in the form of a presentation that covers the following aspects – when applicable -:

• A single group ZIP file that meets the DWH part and report requirements

• Business challenge: Introduce why this is analysis important and what kind of problem we are trying to solve

 • Analysis Scope: Define analysis base, inclusion and exclusion criteria, time frame and data included.

• Analysis and Insights: Present any interesting insights, patterns, behaviors, visualizations extracted from data.

 • Recommendations: Suggest actions the business can take to improve decisions making process.

modeling : the model you used and evaluation of this model and any preprocessing/ feature engineering you used