Business Problem: Marketing Campaign

Find the best strategies to improve for the next marketing campaign. How can the financial institution have a greater effectiveness for future marketing campaigns? In order to answer this, we have to analyze the last marketing campaign the bank performed and identify the patterns that will help us find conclusions in order to develop future strategies.

Within the financial service industry, optimizing targeting for marketing is a key issue, under a growing pressure to increase profits and reduce costs. The 2008 financial crisis dramatically changed the business of banks. In particular, many banks were pressured to increase capital requirements (e.g., by capturing more long term deposits). Under this context, the use of a decision support system (DSS) based on a data-driven model to predict the result of a telemarketing phone call to sell long term deposits is a valuable tool to support client selection decisions of bank campaign managers.

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

A financial institution would like to promote their Term deposit by telemarketing phone calls. Within a campaign, the human agents execute phone calls to a list of clients to sell the deposit (outbound) or, if meanwhile the client calls the contact-center for any other reason, he is asked to subscribe the deposit (inbound). Thus, the result is a binary unsuccessful or successful contact.

Data Description

Data is included in the file

FinalProjectTrain.csv

Each row represents a customer, each column contains following customer's attributes

1 - **age:**
2 - **job:** type of job
3 - **marital:** marital status
4 - **education**
5 - **default:** has credit in default?
6 - **housing:** has housing loan?
7 - **loan:** has personal loan?
8 - **balance:** Balance of the individual.

9 - **contact:** contact communication type
10 - **month:** last contact month of year
11 - **day:** last contact day of the week

12 - **campaign:** number of contacts performed during this campaign and for this client (numeric, includes last contact)
13 - **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)
14 - **previous:** number of contacts performed before this campaign and for this client (numeric)
15 - **poutcome:** outcome of the previous marketing campaign (categorical: 'failure','nonexistent','success')

Output variable (desired target):
16 - **y** - has the client subscribed a term deposit? (binary: 'yes','no')

Tasks

1. Conduct the exploratory data analysis
2. Find the best logistic regression models
3. Find the best SVM models
4. Find the best decision trees models
5. Find the best Random forest models
6. Find the best GBDT models
7. Find the best MLP models
8. Summarize and interpret above model results, provide actionable recommendation to improve marketing campaigns
9. Make a project presentation

Group Assignment

Name	Group
Wu,Jennifer	1
Wang,Yitong	1
Jin,Hao	1
Cheng,Qingyin	1
Xu,Zhixing	1
Li,Yanqing	1
Xie,Shuchen	1
Zhang,Harry	2
Chen,Yijie	2
Ma,Rico	2
Wu,Karen	2
Teo,Phionna	2
Huang,Yu-tung	2
Luo,Ivy	2
Hu,Yi	3
Wu,Ray	3
Huang,Yu Jung	3
Kim,Jiyoung	3
Li,Rui	3
Xu,Zhipeng	3
Wang,Yalun	3
Fang,Jason	4
Lu,Wenlei	4
Yao,Guan Hua	4
Chen,Sandra	4
Qiu,Wayne	4
Zhang,Xujie	4
Gong,Xinye	4