

# *Marketing Campaign Outcome*

Presenting The Results

# Problem Statement

Predict if the client would subscribe to a term deposit based on marketing campaign.

# Data

The data consists of records of roughly 41000 clients and 21 features. There are 20 predictors and 1 target that describes whether the client will subscribe or not

Feature	Feature_Type	Description
y	binary	has the client subscribed a term deposit? ('yes','no')

# Evaluation metric

The evaluation metric for this project is **auc\_roc\_score**.

- False positive - predicted subscribe to a term deposit, but actually not subscribed.
- False negative - predicted not subscribe to term deposit, but actually subscribed

# Models

The models used yielded the following results below.

Modelling Method	Precision	Recall	AUC_ROC
Logistic Regression	<ul style="list-style-type: none"><li>0 - 0.91</li><li>1 - 0.60</li></ul>	<ul style="list-style-type: none"><li>0 - 0.97</li><li>1 - 0.34</li></ul>	65.24 %
Random Forest Classifier	<ul style="list-style-type: none"><li>0 - 0.93</li><li>1 - 0.63</li></ul>	<ul style="list-style-type: none"><li>0 - 0.96</li><li>1 - 0.47</li></ul>	71.69 %
XGBClassifier	<ul style="list-style-type: none"><li>0.93</li><li>0.62</li></ul>	<ul style="list-style-type: none"><li>0.96</li><li>0.51</li></ul>	<b>73.46 %</b>

# Models – Hyperparameter Tuning

The models used yielded the following results below.

Modelling Method	Precision	Recall	AUC_ROC
Logistic Regression	<ul style="list-style-type: none"><li>• 0 - 0.98</li><li>• 1 - 0.38</li></ul>	<ul style="list-style-type: none"><li>• 0 - 0.81</li><li>• 1 - 0.89</li></ul>	91.33 %
Random Forest Classifier	<ul style="list-style-type: none"><li>• 0 - 0.98</li><li>• 1 - 0.44</li></ul>	<ul style="list-style-type: none"><li>• 0 - 0.86</li><li>• 1 - 0.85</li></ul>	93.59 %
XGBClassifier	<ul style="list-style-type: none"><li>• 0.97</li><li>• 0.48</li></ul>	<ul style="list-style-type: none"><li>• 0.89</li><li>• 0.77</li></ul>	95.47%

# Final Result

- From the above observations and plots it can be inferred that the best performing model was XGBoost giving an AUC\_ROC score of 95.47 %.

# Insights & Decision

- Customers to be targeted
  - Age : 30 – 50
  - Education : university, high school, professional courses
  - Job : admin, blue-collar, technician
- Campaign targets
  - Customers who were not targeted before
  - Customers successful in previous campaigns
  - Plan campaigns from may through august