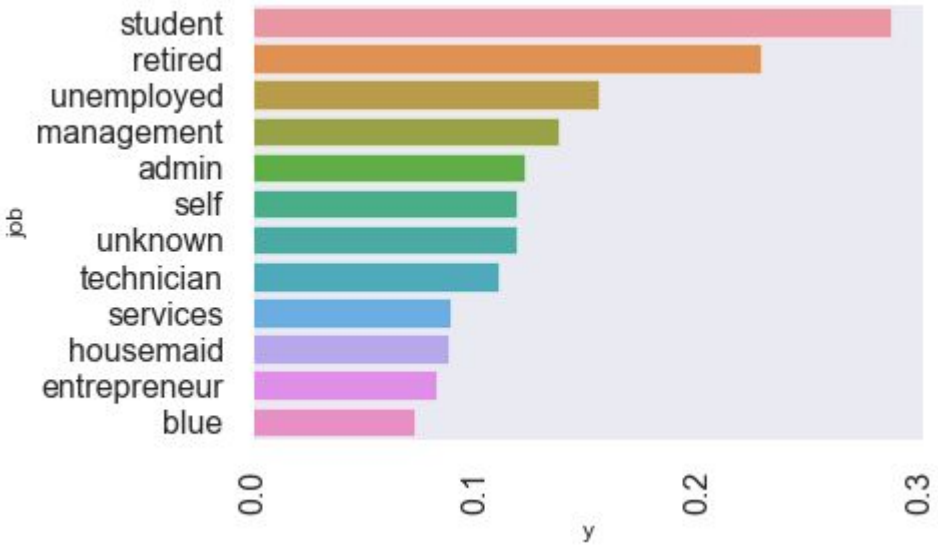
Understanding Term Deposit Subscriptions

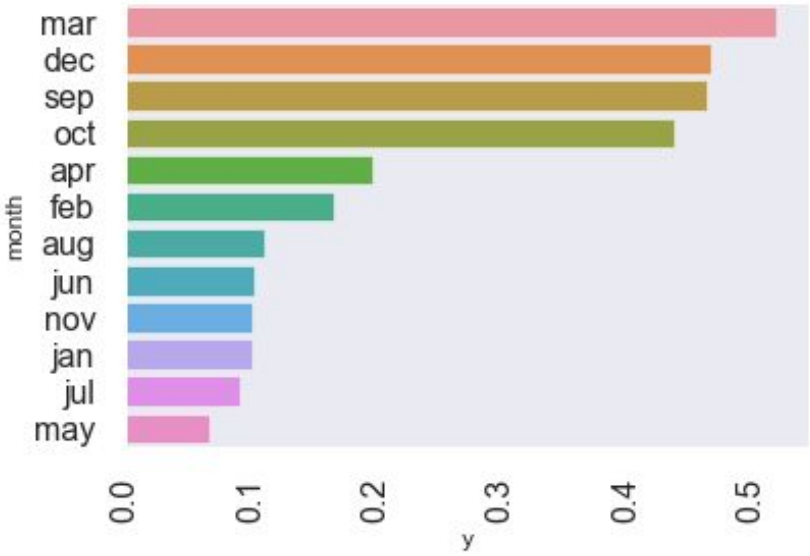
FlatIron School- Module 3 Final Project

Purpose and Process

Can we use our gathered data to determine whether or not our customers will subscribe to a term deposit?

EDA


student
retired
unemployed
management
admin
self
unknown
technician
services
housemaid
entrepreneur
blue
job
0.0
0.1
0.2
0.3
y


mar
dec
sep
oct
apr
feb
aug
jun
nov
jan
jul
may
month
0.0
0.1
0.2
0.3
0.4
0.5
y

Basic Models

Random Forest

Accuracy: 88.96 %

F1: 0.2921

Decision Tree

Accuracy: 83.24 %

F1: 0.3081

Logistic Regression

Accuracy: 89.32 %

F1: 0.2657

Support Vector Machine

Accuracy: 89.42 %

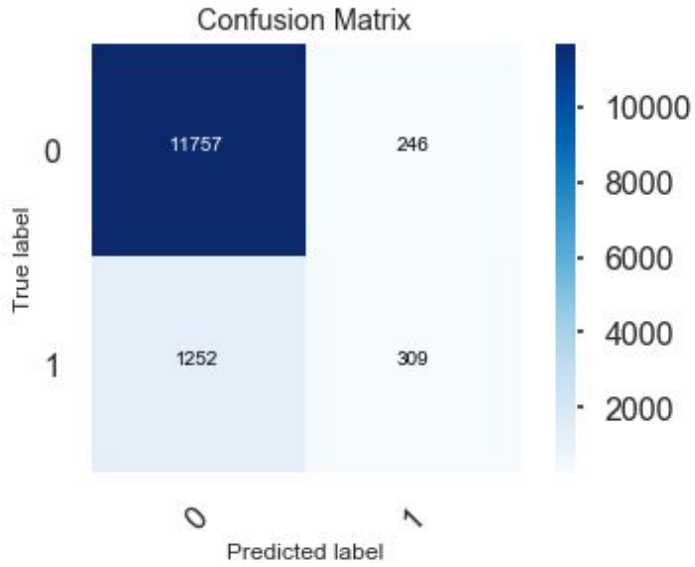
F1: 0.2968

XGBoost

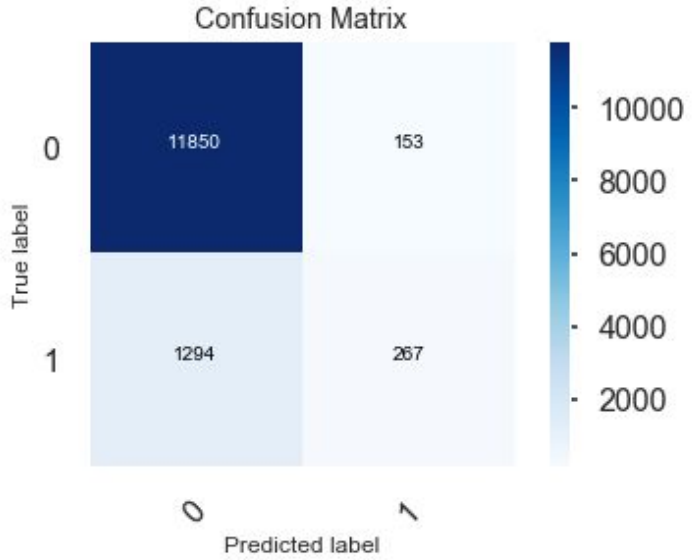
Accuracy: 89.33 %

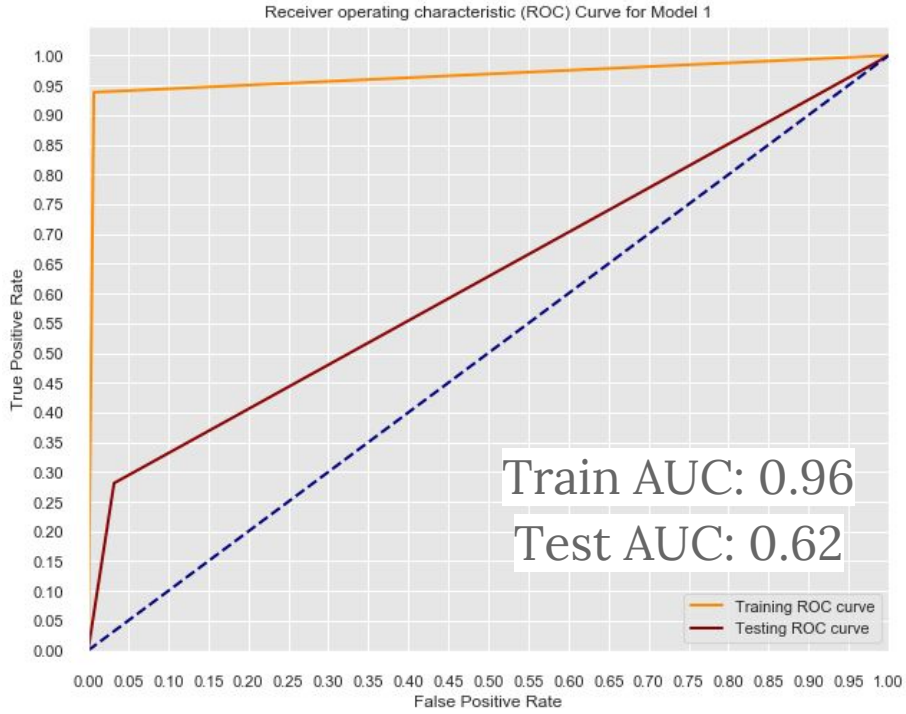
F1: 0.2696

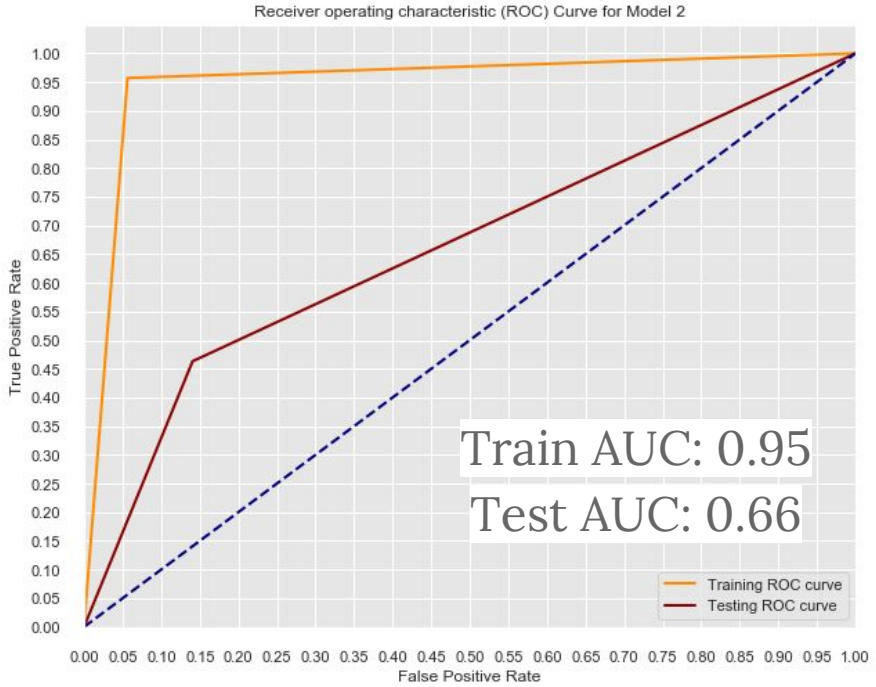
```
Random Forest Testing Performance
--------------
Accuracy: 88.96%
AUC is: 0.59
F1: 0.2921
```

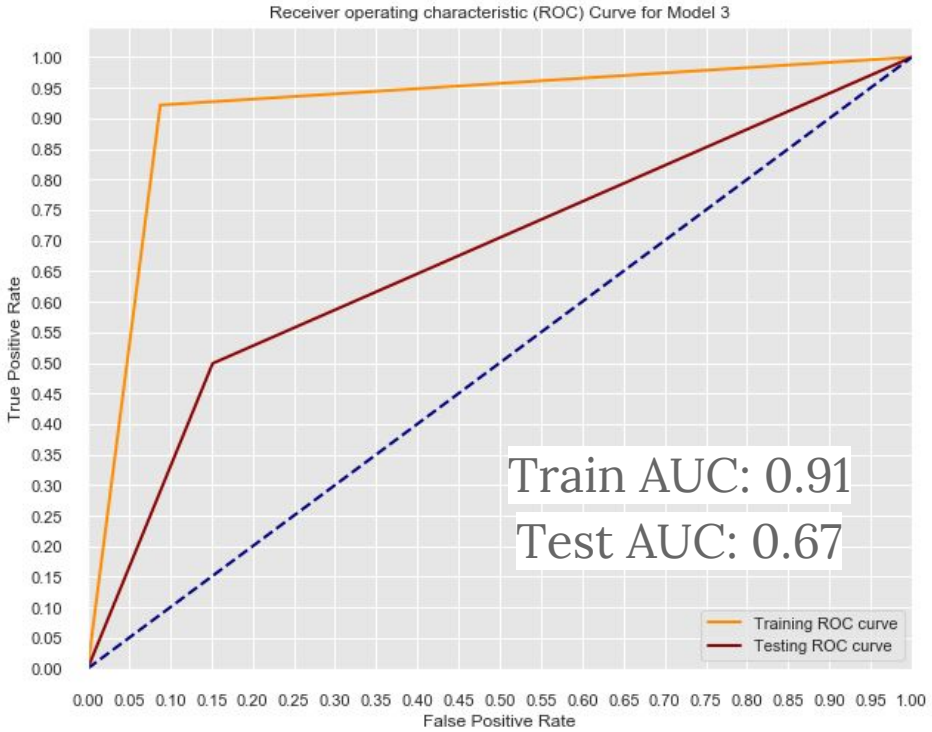


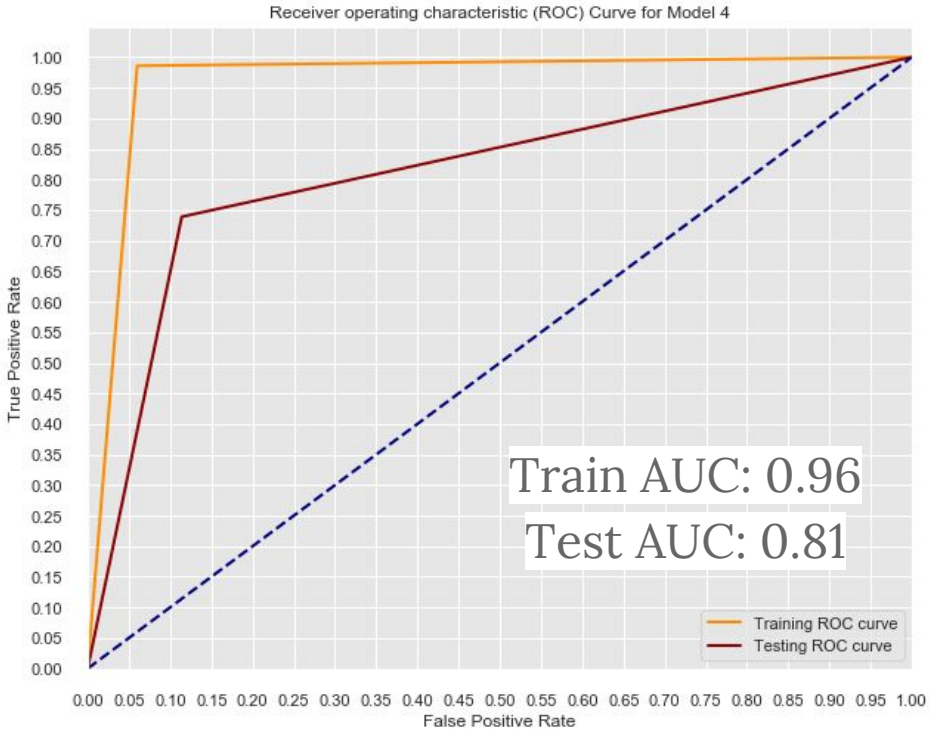

```
XGboost Testing Performance
--------------
Accuracy: 89.33%
AUC is: 0.58
F1: 0.2696
```



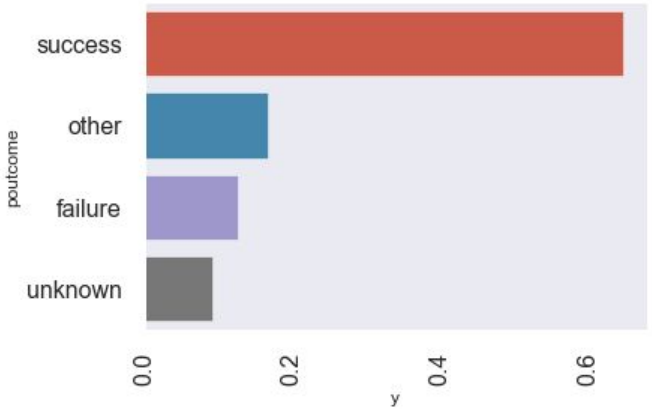

Receiver operating characteristic (ROC) Curve for Model 1
True Positive Rate
False Positive Rate
Train AUC: 0.96
Test AUC: 0.62
Training ROC curve
Testing ROC curve


Receiver operating characteristic (ROC) Curve for Model 2
True Positive Rate
False Positive Rate
Train AUC: 0.95
Test AUC: 0.66
Training ROC curve
Testing ROC curve


Receiver operating characteristic (ROC) Curve for Model 3
True Positive Rate
False Positive Rate
Train AUC: 0.91
Test AUC: 0.67
Training ROC curve
Testing ROC curve


Receiver operating characteristic (ROC) Curve for Model 4
True Positive Rate
False Positive Rate
Train AUC: 0.96
Test AUC: 0.81
Training ROC curve
Testing ROC curve

Interpret


success
other
failure
unknown
poutcome
0.0
0.2
0.4
0.6
y

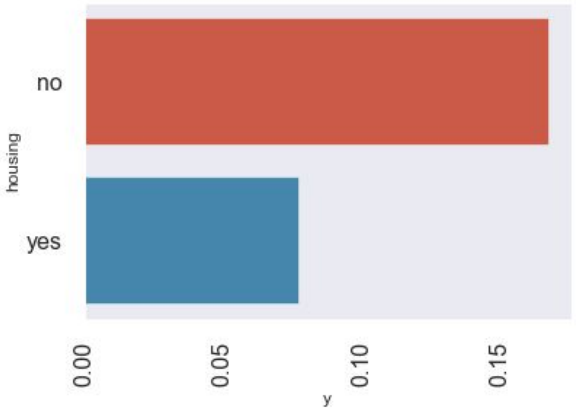

no
yes
housing
0.00
0.05
0.10
0.15
y

Figure importance for XGBoost Model 1
poutcome_success
housing
contact_cellular
campaign
loan
contact_unknown
month_mar
marital_married
month_oct
month_apr
91.14070217250703
52.70573185004951
33.43788054791242
32.68305980951883
30.71004447675631
28.251420866621963
20.645381833823524
15.433900297532405
15.379863573111109
15.052447858437498
Features
0
20
40
60
80
100
F score

Thank You!

Any questions?