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الهيئة السعودية للبيانات والذكاء الاصطناعي
Saudi Data & AI Authority

is it phishing?

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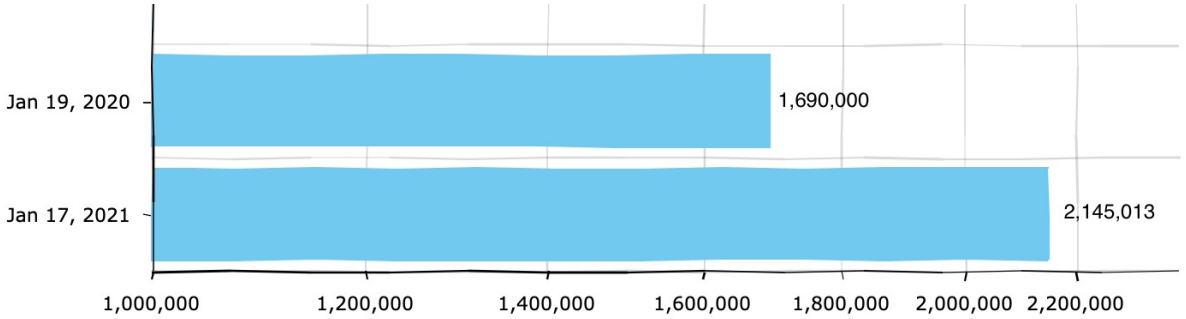
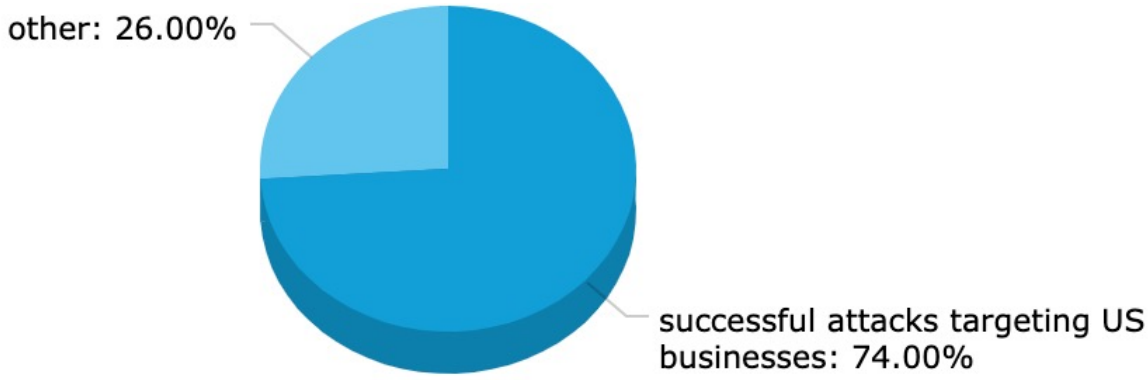
INTRODACTION AND SOME STATISTICE

- According to Google Safe Browsing; Google has registered 2,145,013 phishing sites as of Jan 17, 2021. This is up from 1,690,000 on Jan 19, 2020 (up 27% over 12 months).



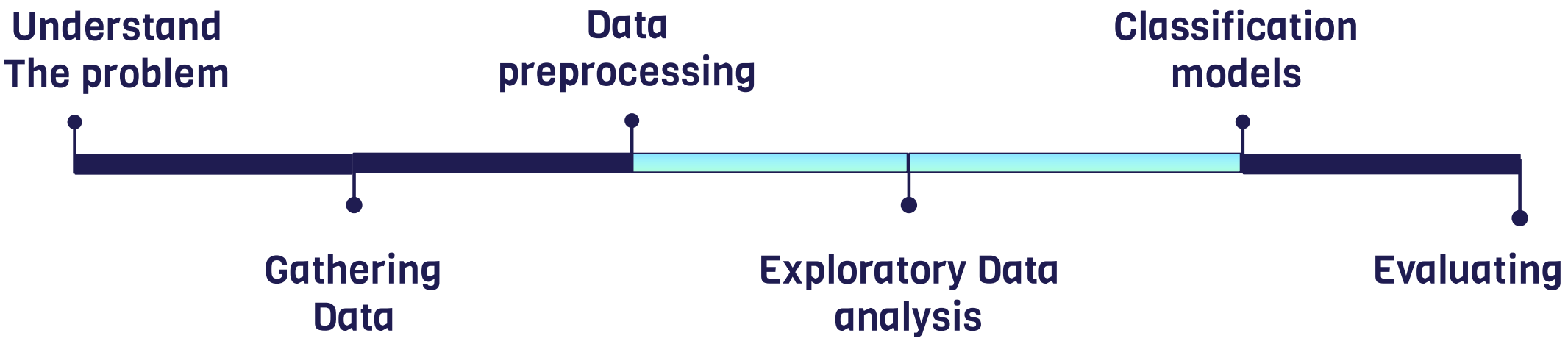
INTRODACTION AND SOME STATISTICE



INTRODACTION AND SOME STATISTICE

- IBM found that customers' personally identifiable information (PII) was both the most commonly compromised type of data and the costliest.

METHODOLOGY



DATA SET

- Public source from Declaration on Scientific paper named 'Phishing URL Classification using Machine Learning'

- Size

10000 records

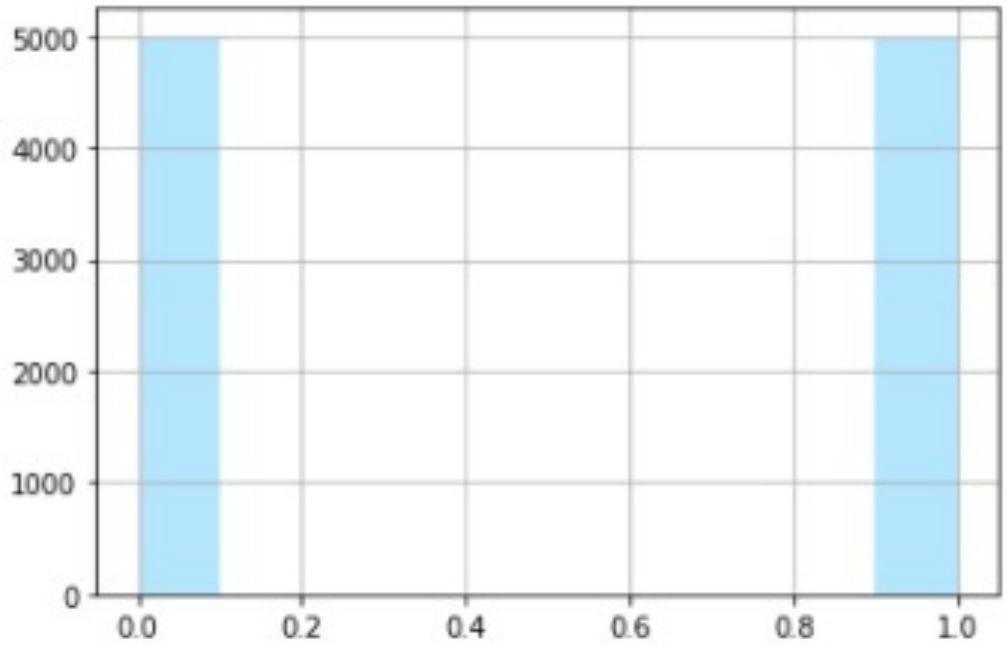
15 columns

- Target

1 : Phishing

0 : Benign

EXAPLORTY DATA ANALYISI

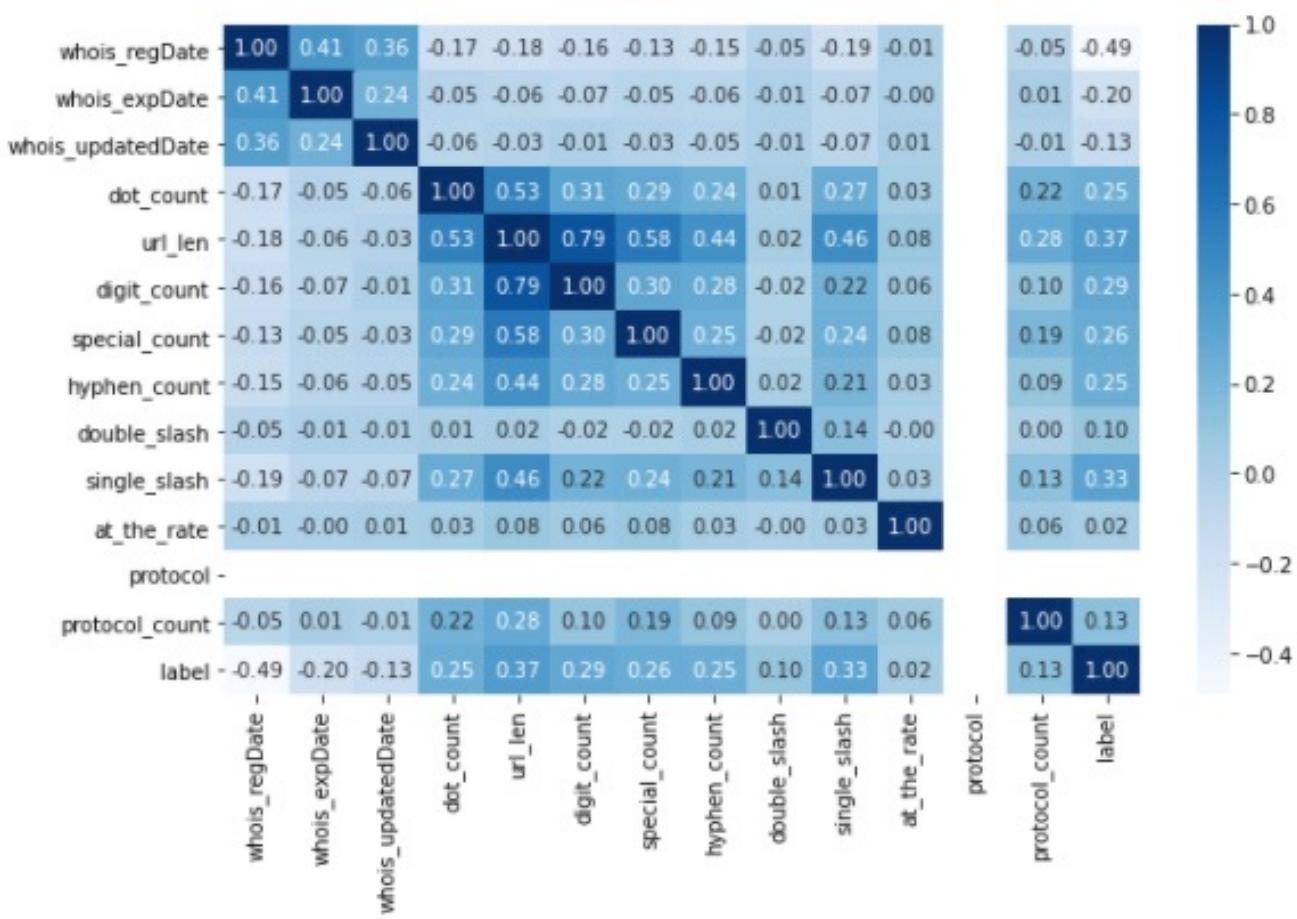


Target :

- 0 is benign
- 1 is Phishing

EXAPLORTY DATA ANALYISI

correlation between the Target and features, and between each features



Data Preparation

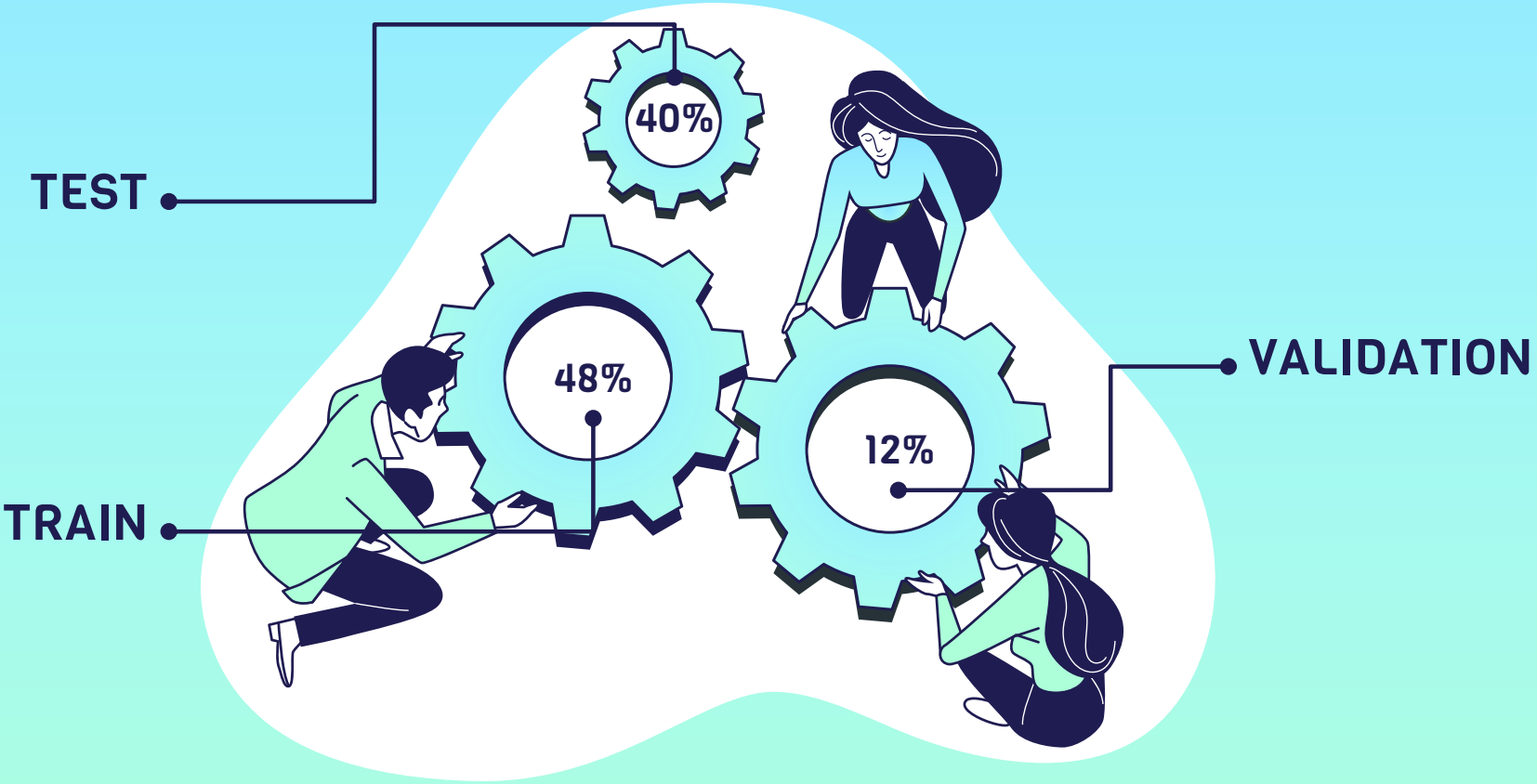
Data Cleaning :

- Find and drop null values.
- Find duplicated.

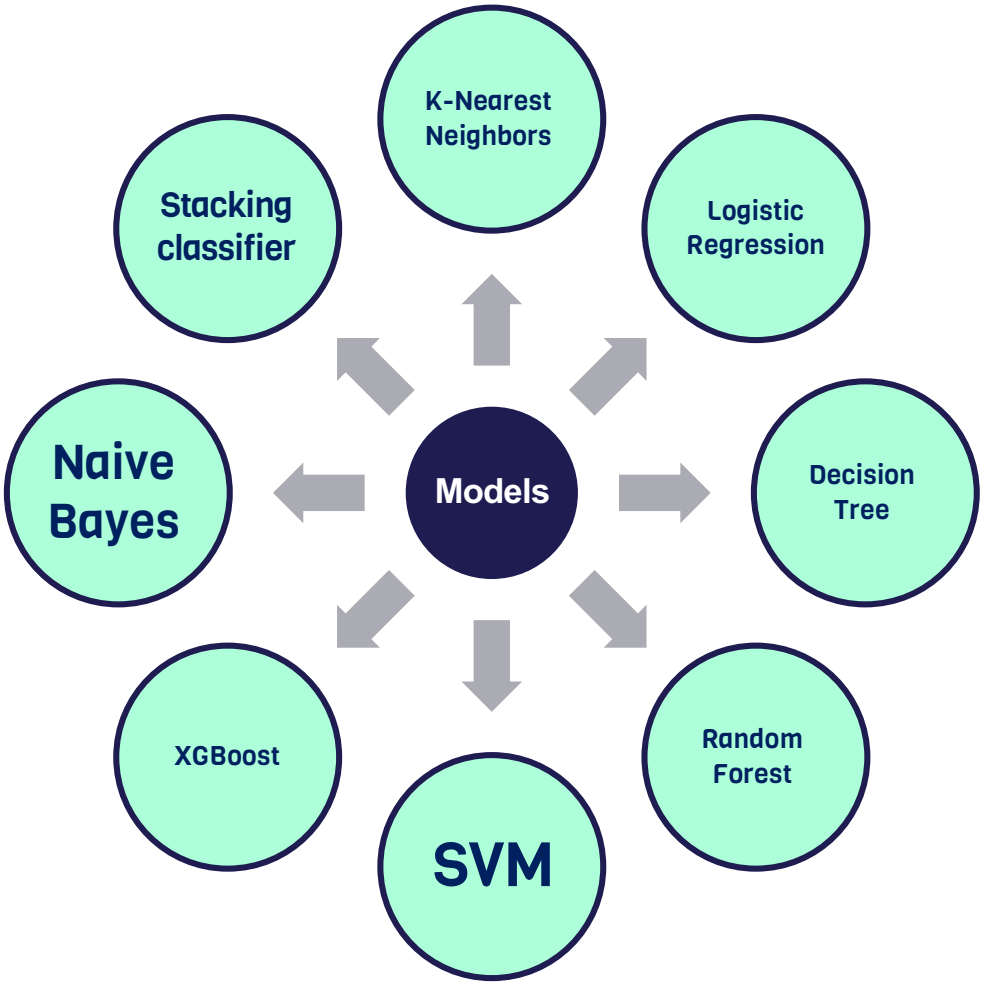
Feature Engineering :

- we can see that 'protocol' column has no values but 0 in it so we will drop it.
- The scale of at_the_rate column is deferent than the other columns.

Splitting the data



MODELLING

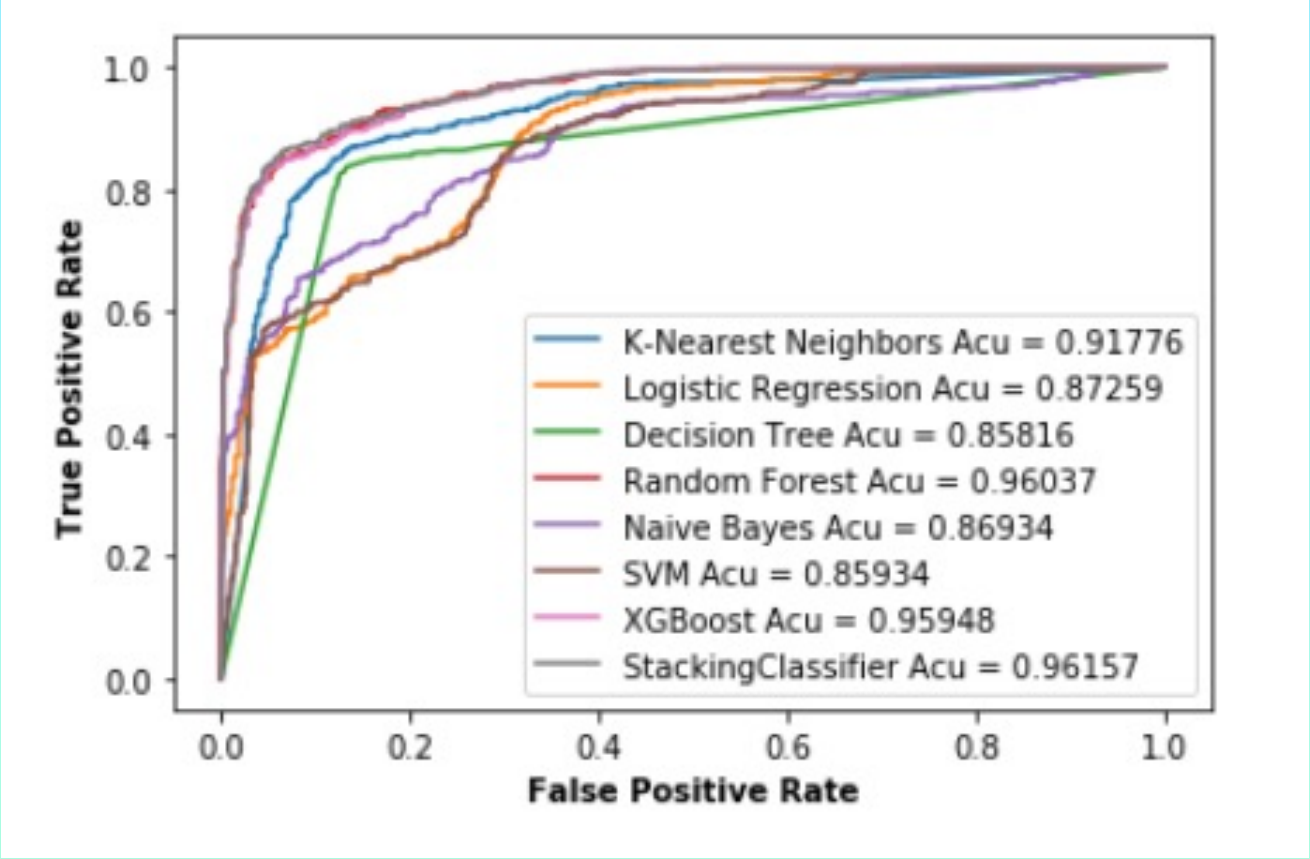

K-Nearest Neighbors
Logistic Regression
Decision Tree
Random Forest
SVM
XGBoost
Naive Bayes
Stacking classifier
Models

EVALUATING

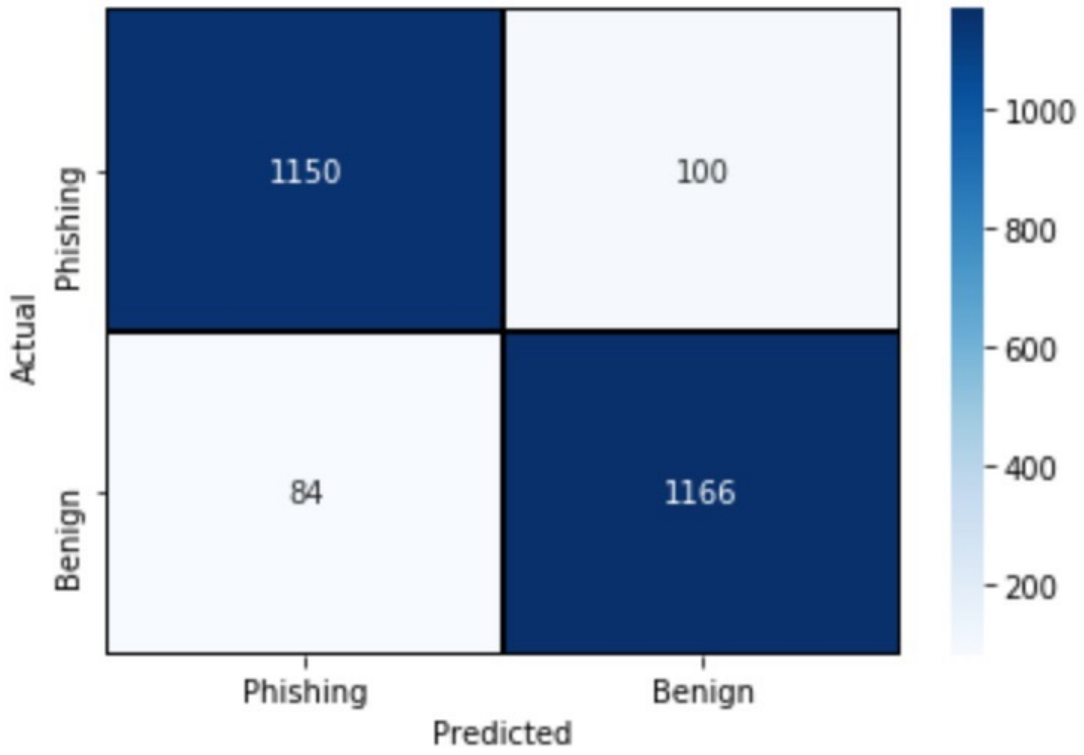
Table showing all confusion matrix values of the models.

	Model	Accuracy	Recall	Precision	F1 score
0	KNN	0.860833	0.873355	0.855072	0.864117
1	Logistic Regression	0.755833	0.789474	0.744186	0.766161
2	Decision Tree	0.851667	0.837171	0.865646	0.851171
3	Random Forest	0.884167	0.881579	0.888889	0.885219
4	Naive Bayes	0.744167	0.523026	0.949254	0.674443
5	SVM	0.775833	0.856908	0.741110	0.794813
6	XGBoost	0.877500	0.875000	0.882255	0.878613
7	StackingClassifier	0.889167	0.891447	0.889984	0.890715

ROC CURVE


True Positive Rate
False Positive Rate
0.0
0.2
0.4
0.6
0.8
1.0
K-Nearest Neighbors Acu = 0.91776
Logistic Regression Acu = 0.87259
Decision Tree Acu = 0.85816
Random Forest Acu = 0.96037
Naive Bayes Acu = 0.86934
SVM Acu = 0.85934
XGBoost Acu = 0.95948
StackingClassifier Acu = 0.96157

Best model for our project (Random Forest)



RF Accuracy 0.93 =
RF F1 score 0.93 =

Flask API

- Save the Model in pkl file
- Create fanction which take URL and extract its features
- Build website using Flask API
- http://127.0.0.1:5000/

Conclusion

- Our model solve the problem of classifing URLs with accuricy(0.93) and F1(0.93)
- By comparing our results with the results of the previous work; our accuracy is better where theirs is 0.87

FUTUER WORK

- Improve the website
- Improving the Model until F1= 0.96
- Create ourown Dataset

THANKS!