Project Development Phase
Model Performance Test

Date	12-November-2022
Team ID	PNT2022TMTD36897
Project Name	Project - Web Phishing Detection
Maximum Marks	10 Marks

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values
1.	Metrics	**Random Forest Classifier Accuracy score-96.653**
2.	Tune the Model	**Hyperparameter Tuning - Validation Method -**

1. METRICS

Classification Report:

```
[ ]  #classification report of Randomm Forest model
     print(metrics.classification_report(y_test,y_test_rf))
```

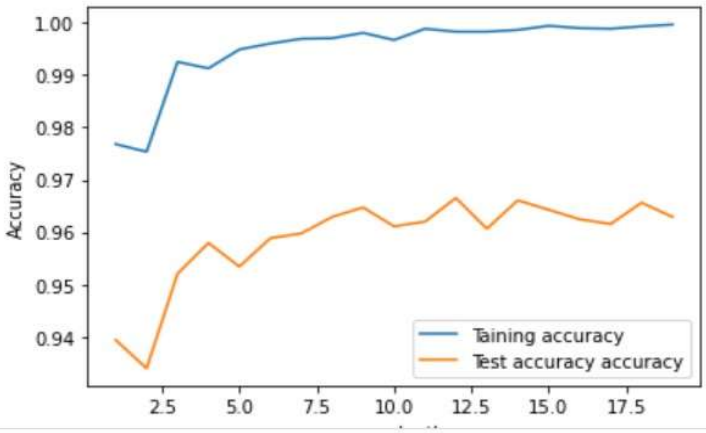
```
                precision    recall  f1-score   support

            -1       0.98      0.95      0.96      1014
             1       0.96      0.98      0.97      1197

      accuracy                           0.97      2211
     macro avg       0.97      0.97      0.97      2211
  weighted avg       0.97      0.97      0.97      2211
```

Performance:

```
training_accuracy=[]
test_accuracy=[]
depth=range(1,20)
for n in depth:
  rf_test=RandomForestClassifier(n_estimators=n)
  rf_test.fit(x_train,y_train)
  training_accuracy.append(rf_test.score(x_train,y_train))
  test_accuracy.append(rf_test.score(x_test,y_test))
plt.figure(figsize=None)
plt.plot(depth,training_accuracy,label="Taining accuracy")
plt.plot(depth,test_accuracy,label="Test accuracy accuracy")
plt.ylabel("Accuracy")
plt.xlabel("max_depth")
plt.legend();
```



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2. Tune the model

[ ]

	ML Model	Accuracy	f1_score	Recall	Precision
0	Logistic Regression	91.814	92.567	94.496	94.496
1	Random Forest	96.653	96.942	100.000	100.000
2	XgbClassifier	94.754	95.207	96.714	96.714
3	Decision tree	95.206	95.605	100.000	100.000

[ ]
```
sorted_result=result.sort_values(by=['Accuracy', 'f1_score'],ascending=False).reset_index(drop=True)
sorted_result
```

	ML Model	Accuracy	f1_score	Recall	Precision
0	Random Forest	96.653	96.942	100.000	100.000
1	Decision tree	95.206	95.605	100.000	100.000
2	XgbClassifier	94.754	95.207	96.714	96.714
3	Logistic Regression	91.814	92.567	94.496	94.496