Model Development Phase Template

Date	18-JUNE-2024
Team ID	740028
Project Title	**Frappe Activity: Mobile Phone Activity Classification Using Machine Learning**
Maximum Marks	4 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include classification reports, accuracy, and confusion matrices for multiple models, presented through respective screenshots.

Initial Model Training Code:

```python
#AdaBoostClassifier
model.fit(x_train,y_train)
y_pred=model.predict(x_test)
p=precision_score(y_test,y_pred,average='micro')
r=recall_score(y_test,y_pred,average='micro')
a=accuracy_score(y_test,y_pred)
f=f1_score(y_test,y_pred,average='micro')
s={'precision':p,'Recall':r,'Accuracy':a,'F1 Score':f}
model_perform[name]=s
```

```python
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import RandomizedSearchCV

# Create a decision tree classifier object
dt_classifier = DecisionTreeClassifier()

random_search = RandomizedSearchCV(estimator=dt_classifier,
                                   param_distributions=param_grid,
                                   scoring='accuracy',
                                   cv=3,
                                   n_iter=100,
                                   random_state=42)
```

```python
print("Best Score:",random_search.score(x_test,y_test))
```
54]   Python

```python
print("Best Score:",random_search.score(x_test,y_test)
```
1]   Python

```python
from sklearn.ensemble import RandomForestClassifier

rf_final = RandomForestClassifier()
```
]   Python

```python
print("Best Score:",rf_final.score(x_test,y_test))
```
1   Python

```python
rf_final.fit(x_train,y_train)
```
                                                                       Python

Model	Classification Report	F1 Score
Decision Tree	<pre> precision recall f1-score support

           0   0.5028   0.5385   0.5201   15228
           1   0.5848   0.5074   0.5434   15011
           2   0.5945   0.6300   0.6118   15163

    accuracy   0.5588   45402
   macro avg   0.5607   0.5587   0.5584   45402
weighted avg   0.5606   0.5588   0.5584   45402</pre> | 55% |

Model Validation and Evaluation Report:

| Bagging | <pre>   precision   recall f1-score   support

           0   0.5028   0.5385   0.5201   15228
           1   0.5848   0.5074   0.5434   15011
           2   0.5945   0.6300   0.6118   15163

    accuracy   0.5588   45402
   macro avg   0.5607   0.5587   0.5584   45402
weighted avg   0.5606   0.5588   0.5584   45402</pre> | 55% |
| Random Forest | <pre>   precision   recall f1-score   support

           0   0.5028   0.5385   0.5201   15228
           1   0.5848   0.5074   0.5434   15011
           2   0.5945   0.6300   0.6118   15163

    accuracy   0.5588   45402
   macro avg   0.5607   0.5587   0.5584   45402
weighted avg   0.5606   0.5588   0.5584   45402</pre> | 55% |