Model Development Phase Template

Date	21 June 2024
Team ID	TMID739685
Project Title	Startup prophet
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:

```
#RANDOM FOREST MODEL
from sklearn.ensemble import RandomForestClassifier
rf=RandomForestClassifier()
rf.fit(x_bal,y_bal)
rftest=rf.predict(x_test)
rftrain=rf.predict(x_train)
print(confusion_matrix(rftest,y_test))
print(confusion_matrix(rftrain,y_train))
print(classification_report(rftest,y_test))
print(classification_report(rftrain,y_train))
```

```
#LOGISTIC REGRESSION
from sklearn.linear_model import LogisticRegression
lr=LogisticRegression()
lr.fit(x_bal,y_bal)
y_pred=lr.predict(x_test)
```

```
from sklearn.metrics import confusion_matrix,accuracy_score,classification_report
print(confusion_matrix(y_test,y_pred))
print(classification_report(y_test,y_pred))
```

```
#SUPPORT VECTOR MACHINE
from sklearn.svm import SVC
svm=SVC(kernel='rbf',C=2.0,random_state=42)
svm.fit(x_bal,y_bal)
y_predict=svm.predict(x_test)
```

```
print(confusion_matrix(y_test,y_predict))
print(classification_report(y_test,y_predict))
```

Model	Classification Report	F1 Score	Confusion Matrix
Random Forest	[[163 7] [7 182]] [[410 12] [17 396]] precision recall f1-score support 0 0.96 0.96 0.96 170 1 0.96 0.96 0.96 189 accuracy 0.96 359 macro avg 0.96 0.96 0.96 359 weighted avg 0.96 0.96 0.96 359 precision recall f1-score support 0 0.96 0.97 0.97 422 1 0.97 0.96 0.96 413 accuracy 0.97 835 macro avg 0.97 0.97 0.97 835 weighted avg 0.97 0.97 0.97 835	97%	[[163 7] [7 182]] [[410 12] [17 396]]

Model Validation and Evaluation Report:

Logistic Regression	[[136 34] [56 133]] precision recall f1-score support 0 0.71 0.80 0.75 170 1 0.80 0.70 0.75 189 accuracy 0.75 359 macro avg 0.75 0.75 0.75 359 weighted avg 0.75 0.75 0.75 359	75%	[[136 34] [56 133]]

SVM	[[135 35] [30 159]] precision recall f1-score support 0 0.82 0.79 0.81 170 1 0.82 0.84 0.83 189 accuracy 0.82 359 macro avg 0.82 0.82 0.82 359 weighted avg 0.82 0.82 0.82 359	82%	[[135 35] [30 159]]