Model Development Phase Template

Date	15 July 2024
Team ID	740087
Project Title	Space X Falcon 9 First Stage Landing Success Predictor
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:

Logistic Regression Model

```
[ ] lr=LogisticRegression()
    lr.fit(x_train,y_train)
    lr_pred=lr.predict(x_test)
```

```
[ ] lr_accuracy=accuracy_score(y_test,lr_pred)
    lr_precision=precision_score(y_test,lr_pred)
    lr_recall=recall_score(y_test,lr_pred)
    lr_f1_score=f1_score(y_test,lr_pred)
    lr_auc_score=roc_auc_score(y_test,lr.predict_proba(x_test)[:,1])
```

```
lr_accuracy
```

```
0.9444444444444444
```

Decision Tree Classifier model

```
[ ] dt=DecisionTreeClassifier()
    dt.fit(x_train,y_train)
    dt_pred=dt.predict(x_test)
```

```
dt_accuracy = accuracy_score (y_test, dt_pred)
dt_precision=precision_score (y_test, dt_pred)
dt_recall=recall_score(y_test, dt_pred)
dt_f1_score=f1_score(y_test, dt_pred)
dt_auc_score=roc_auc_score (y_test, dt.predict_proba (x_test) [:, 1])
```

KNN Classifier model

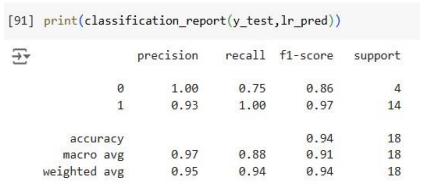
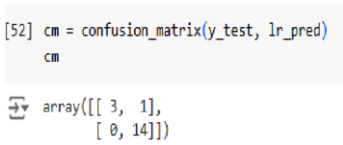
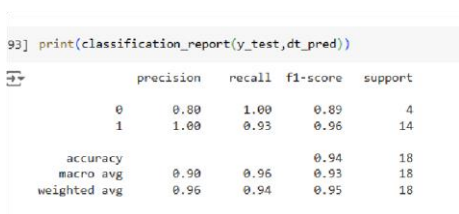
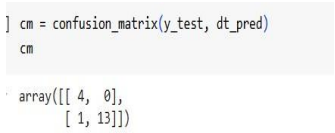
```
[ ]  knn = KNeighborsClassifier()
     knn.fit(x_train, y_train)
     knn_pred= knn.predict(x_test)
     knn_accuracy = accuracy_score (y_test, knn_pred)
     knn_precision= precision_score (y_test, knn_pred)
     knn_recall = recall_score (y_test, knn_pred)
     knn_f1_score=f1_score(y_test,knn_pred)
     knn_auc_score = roc_auc_score (y_test, knn.predict_proba (x_test) [:, 1])
```

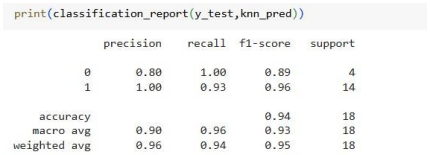
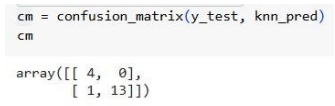
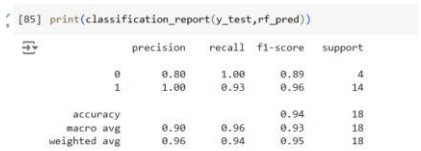
Random Forest Model

```
3] rf=RandomForestClassifier()
   rf.fit(x_train, y_train)
   rf_pred= rf.predict(x_test)
```

```
4] rf_accuracy = accuracy_score (y_test, rf_pred)
   rf_precision = precision_score (y_test, rf_pred)
   rf_recall = recall_score (y_test, rf_pred)
   rf_f1_score = f1_score (y_test, rf_pred)
   rf_auc_score =roc_auc_score (y_test, rf.predict_proba (x_test) [:, 1])
```

Model Validation and Evaluation Report:

Model	Classification Report	F1 Score	Confusion Matrix
Logistic Regression		96%	
Decision Tree		96%	

KNN		96%	
Random Forest		96%