Model Development Phase Template

Date	15 June 2024
Team ID	740003
Project Title	Disease Prediction 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:

Paste the screenshot of the model training code

```
[71] # Split the new data into training, validation, and testing sets
     X1_train, X1_val, y1_train, y1_val = train_test_split(X_new, y, test_size=0.3, random_state=42)
     x1_test=x_test.drop(to_drop,axis=1)
```

```
[89] from sklearn.svm import SVC
     svm1=SVC(C=1)
     svm1.fit(X1_train,y1_train)
     y_pred_svc = svm1.predict(X1_val)
     y_pred = svm1.predict(X1_val)
     yt_pred = svm1.predict(X1_train)
     y_pred1 = svm1.predict(x1_test)
     print('the Training Accuracy of the algorithm is',accuracy_score(y1_train,yt_pred))
     print('the Validation Accuracy of the algorithm is',accuracy_score(y1_val,y_pred))
     print('the Testing Accuracy of the algorithm is',accuracy_score(y_test,y_pred1))
```

```
[73]  # Train a Random Forest Classifier and calculate accuracy
      rfc = RandomForestClassifier(random_state=42)
      rfc.fit(X1_train, y1_train)
      y_pred_rfc = rfc.predict(X1_val)


[74]  y_pred = rfc.predict(X1_val)
      yt_pred = rfc.predict(X1_train)
      y_pred1 = rfc.predict(x1_test)
```

```
[75]  knn=KNeighborsClassifier()
      knn.fit(X1_train, y1_train)
      y_pred_knn = knn.predict(X1_val)
```

```
      y_pred = rfc.predict(X1_val)
      yt_pred = rfc.predict(X1_train)
      y_pred1 = rfc.predict(x1_test)
```

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix
SVM	the Training Accuracy of the algorithm is 0.9930313588850174 the Validation Accuracy of the algorithm is 0.9959349593495935 the Testing Accuracy of the algorithm is 1.0	100%	[[32 0 0 ... 0 0 0] [0 39 0 ... 0 0 0] [0 0 41 ... 0 0 0] ... [0 0 0 ... 36 0 0] [0 0 0 ... 0 37 0] [0 0 0 ... 0 0 39]]
Random Forest	the Training Accuracy of the algorithm is 0.9930313588850174 the Validation Accuracy of the algorithm is 0.9959349593495935 the Testing Accuracy of the algorithm is 1.0	100%	[[32 0 0 ... 0 0 0] [0 39 0 ... 0 0 0] [0 0 41 ... 0 0 0] ... [0 0 0 ... 36 0 0] [0 0 0 ... 0 37 0] [0 0 0 ... 0 0 39]]

| knn | the Training Accuracy of the algorithm is 0.9930313588850174
the Validation Accuracy of the algorithm is 0.9959349593495935
the Testing Accuracy of the algorithm is 1.0 | 100% | [[32 0 0 ... 0 0 0]
 [0 39 0 ... 0 0 0]
 [0 0 41 ... 0 0 0]
 ...
 [0 0 0 ... 36 0 0]
 [0 0 0 ... 0 37 0]
 [0 0 0 ... 0 0 39]] |