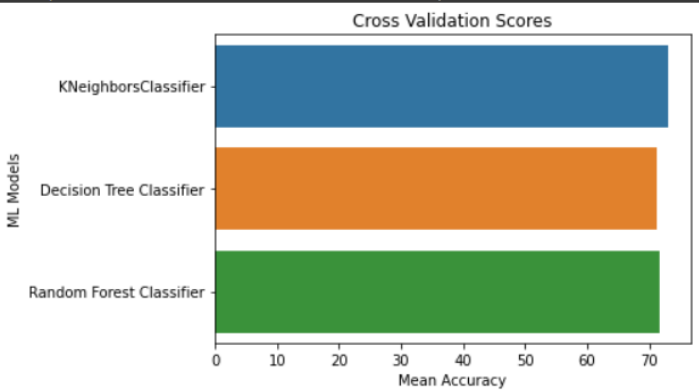


Project Development Phase Model Performance Test

Date	19 November 2022
Team ID	PNT2022TMID04221
Project Name	Project – Statistical Machine Learning Approaches to Liver Disease Prediction
Maximum Marks	10 Marks

Model Performance Testing:

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

S. No.	Parameter	Values	Screenshot																														
1.	Metrics	Classification Model: Confusion Matrix -, Accuracy Score- & Classification Report -	<pre>[108] model1 = RandomForestClassifier(n_estimators=20) model1.fit(x_train_smote, y_train_smote) RandomForestClassifier(n_estimators=20) [109] confusion_matrix(y_test, model1.predict(X_test)) array([[97, 28], [33, 17]]) [110] print(f"Accuracy is {round(accuracy_score(y_test, model1.predict(X_test))*100,2)}") Accuracy is 65.14 print(classification_report(y_test,model1.predict(X_test)))</pre> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>1</td><td>0.75</td><td>0.78</td><td>0.76</td><td>125</td></tr><tr><td>2</td><td>0.38</td><td>0.34</td><td>0.36</td><td>50</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.65</td><td>175</td></tr><tr><td>macro avg</td><td>0.56</td><td>0.56</td><td>0.56</td><td>175</td></tr><tr><td>weighted avg</td><td>0.64</td><td>0.65</td><td>0.65</td><td>175</td></tr></tbody></table>		precision	recall	f1-score	support	1	0.75	0.78	0.76	125	2	0.38	0.34	0.36	50	accuracy			0.65	175	macro avg	0.56	0.56	0.56	175	weighted avg	0.64	0.65	0.65	175
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2.	Tune the Model	Hyperparameter Tuning - Validation Method -	<pre>/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning Text(0.5, 1.0, 'Cross Validation Scores')</pre>  <table><thead><tr><th>ML Models</th><th>Mean Accuracy</th></tr></thead><tbody><tr><td>KNeighborsClassifier</td><td>~72</td></tr><tr><td>Decision Tree Classifier</td><td>~70</td></tr><tr><td>Random Forest Classifier</td><td>~71</td></tr></tbody></table>	ML Models	Mean Accuracy	KNeighborsClassifier	~72	Decision Tree Classifier	~70	Random Forest Classifier	~71																						
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ROC vs PR Curve

```
from matplotlib import pyplot as plt
from sklearn.datasets import make_classification
from sklearn.linear_model import LogisticRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import plot_roc_curve, plot_precision_recall_curve
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(14, 5))
plot_roc_curve(model1, X_test, y_test, ax=ax1)
plot_precision_recall_curve(model1, X_test, y_test, ax=ax2)
ax1.set_title("ROC curve")
ax2.set_title("Precision-Recall curve")
fig.suptitle("Comparison of ROC and P-R curves")
plt.show()
```

```
/usr/local/lib/python3.7/dist-packages/sklearn/utils/deprecation.py:87: FutureWarning: Function plot_roc_curve is deprecated;
warnings.warn(msg, category=FutureWarning)
/usr/local/lib/python3.7/dist-packages/sklearn/utils/deprecation.py:87: FutureWarning: Function plot_precision_recall_curve is
warnings.warn(msg, category=FutureWarning)
```

