

**Project Development Phase**  
**Model Performance Test**

Date	4 November 2023
Team ID	<b>Team-592603</b>
Project Name	Smart Lender - Applicant Credibility Prediction For Loan Approval
Maximum Marks	10 Marks

## Random Forest Classifier:

Confusion Matrix:

```
[[60 30]
 [ 4 75]]
```

**Accuracy Score: 0.7988165680473372**

### Classification Report:

	precision	recall	f1-score	support
0	0.94	0.67	0.78	90
1	0.71	0.95	0.82	79
accuracy			0.80	169
macro avg	0.83	0.81	0.80	169
weighted avg	0.83	0.80	0.80	169

Best parameters for Random Forest: {'max\_depth': None, 'min\_samples\_split': 2, 'n\_estimators': 200}

Training Accuracy after Tuning: 1.0

Validation Accuracy after Tuning: 0.8047337278106509

## Decision Tree Classifier:

Confusion Matrix:

```
[[71 19]
 [13 66]]
```

**Accuracy Score: 0.8106508875739645**

### Classification Report:

	precision	recall	f1-score	support
0	0.85	0.79	0.82	90
1	0.78	0.84	0.80	79
accuracy			0.81	169
macro avg	0.81	0.81	0.81	169
weighted avg	0.81	0.81	0.81	169

Best parameters for Decision Tree: {'max\_depth': None, 'min\_samples\_split': 2}

Training Accuracy after Tuning: 1.0

Validation Accuracy after Tuning: 0.8047337278106509

## K-Nearest Neighbors (KNN) Classifier:

Confusion Matrix:

```
[[59 31]
 [10 69]]
```

**Accuracy Score: 0.757396449704142**

### Classification Report:

	precision	recall	f1-score	support
0	0.86	0.66	0.74	90
1	0.69	0.87	0.77	79
accuracy			0.76	169
macro avg	0.77	0.76	0.76	169

**weighted avg    0.78    0.76    0.76    169**

Best parameters for KNN: {'n\_neighbors': 7, 'weights': 'distance'}

Training Accuracy after Tuning: 1.0

Validation Accuracy after Tuning: 0.7751479289940828

## **XGBoost Classifier:**

Confusion Matrix:

[[64 26]

[ 6 73]]

**Accuracy Score: 0.8106508875739645**

### **Classification Report:**

	precision	recall	f1-score	support
0	0.91	0.71	0.80	90
1	0.74	0.92	0.82	79
accuracy			0.81	169
macro avg	0.83	0.82	0.81	169
weighted avg	0.83	0.81	0.81	169

Best parameters for XGBoost: {'learning\_rate': 0.01, 'max\_depth': 3, 'n\_estimators': 50}

**Training Accuracy after Tuning: 0.7953216374269005**

**Validation Accuracy after Tuning: 0.7455621301775148**