Model Development Phase Template

Date	15 March 2024
Team ID	LTVIP2024TMID25001
Project Title	Customer Segmentation 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:

Random ForestClassifer:

KNN Classifier:

Decision Tree Classifier:

```
from sklearn.ensemble import RandomForestClassifier
from sklearn import tree
import xgboost

 rand_model = RandomForestClassifier()
 tree_model = tree. DecisionTreeClassifier()
 xgb_model = xgboost.XGBClassifier()

rand_model.fit(x_train,y_train)
tree_model.fit(x_train,y_train)
xgb_model.fit(x_train,y_train)
```

```
pred = rand_model.predict(x_train)
pred1 = tree_model.predict(x_train)
pred2 = xgb_model.predict(x_train)
```

```
print(metrics.accuracy_score (pred, y_train))
print(metrics.accuracy_score(pred1,y_train))
print(metrics.accuracy_score(pred2,y_train))
```

```
from sklearn.metrics import accuracy_score
from xgboost import XGBClassifier
from sklearn.tree import DecisionTreeClassifier
from sklearn.ensemble import RandomForestClassifier
from sklearn.neighbors import KNeighborsClassifier
```

```
dt = DecisionTreeClassifier()
rf = RandomForestClassifier()
knn = KNeighborsClassifier()
xg = XGBClassifier()
```

```
dt.fit(x_train,y_train)
rf.fit(x_train,y_train)
knn.fit(x_train,y_train)
xg.fit(x_train,y_train)
```

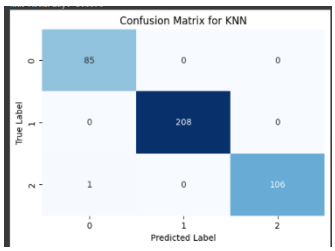
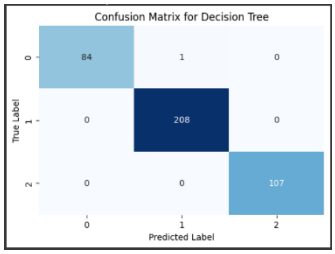
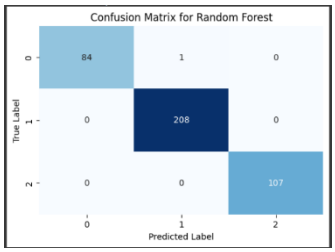
Show hidden output

```
pred1=dt.predict(x_train)
pred2=rf.predict(x_train)
pred3=knn.predict(x_train)
pred4=xg.predict(x_train)
```

XGB_MODEL:

```
xgb_model = xgboost.XGBClassifier()
xgb_model.fit(x_train,y_train)
```

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix
KNN	KNN Classification Report: precision recall f1-score support 0 0.99 1.00 0.99 85 1 1.00 1.00 1.00 208 2 1.00 0.99 1.00 107 accuracy 1.00 400 macro avg 1.00 1.00 1.00 400 weighted avg 1.00 1.00 1.00 400 KNN Accuracy: 0.9975	Accuracy:0.9975	
Decision Tree	Decision Tree Classification Report: precision recall f1-score support 0 1.00 0.99 0.99 85 1 1.00 1.00 1.00 208 2 1.00 1.00 1.00 107 accuracy 1.00 400 macro avg 1.00 1.00 1.00 400 weighted avg 1.00 1.00 1.00 400 Decision Tree Accuracy: 0.9975	Accuracy:0.9975	
Random Forest	Random Forest Classification Report: precision recall f1-score support 0 1.00 0.99 0.99 85 1 1.00 1.00 1.00 208 2 1.00 1.00 1.00 107 accuracy 1.00 400 macro avg 1.00 1.00 1.00 400 weighted avg 1.00 1.00 1.00 400 Random Forest Accuracy: 0.9975	Accuracy:0.9975	
XGBoost	XGBoost Classification Report: precision recall f1-score support 0 1.00 0.99 0.99 85 1 1.00 1.00 1.00 208 2 1.00 1.00 1.00 107 accuracy 1.00 400 macro avg 1.00 1.00 1.00 400 weighted avg 1.00 1.00 1.00 400 XGBoost Accuracy: 0.9975	Accuracy :0.9975