

Model Development Phase Template

Date	20 June 2024
Team ID	739807
Project Title	Customer Acquisition cost estimation using machine learning.
Maximum Marks	4 Marks

Initial Model Training Code, Model Validation and Evaluation Report

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:

```
from sklearn.metrics import mean_squared_error, r2_score
from sklearn.model_selection import train_test_split
from sklearn import metrics
from sklearn.ensemble import RandomForestRegressor
rf = RandomForestRegressor()
rf.fit(train_X, train_y)
print('Attempting to fit Random Forest Regressor')
```

Model	Classification Report	F1 Score	Confusion Matrix
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Random Forest	<pre> from sklearn.metrics import mean_squared_error, r2_score from sklearn.model_selection import train_test_split from sklearn import metrics from sklearn.ensemble import RandomForestRegressor rf = RandomForestRegressor() rf.fit(train_X,train_y) print('Attempting to fit Random Forest Regressor') Attempting to fit Random Forest Regressor </pre>	99%	<pre> #testing with random value rf.predict([[20,57,0,400,12306,18520,939,735,0,0,0,1,1,1,1,1,2]]) array([[115.0421]]) </pre>
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Model Validation and Evaluation Report:

Random Forest	<pre> from sklearn.metrics import mean_squared_error, r2_score from sklearn.model_selection import train_test_split from sklearn import metrics from sklearn.ensemble import RandomForestRegressor rf = RandomForestRegressor() rf.fit(train_X,train_y) print('Attempting to fit Random Forest Regressor') Attempting to fit Random Forest Regressor </pre>	99%	<pre> #testing with random value rf.predict([[20,57,0,400,12306,18520,939,735,0,0,0,1,1,1,1,1,2]]) array([[115.0421]]) </pre>
Linear Regression	<pre> y_pred_val_lr = lr.predict(val_X) print('MAE on Validation set :',metrics.mean_absolute_error(val_y, y_pred_val_lr)) print("\n") print('MSE on Validation set :',metrics.mean_squared_error(val_y, y_pred_val_lr)) print("\n") print('RMSE on Validation set :',np.sqrt(metrics.mean_squared_error(val_y, y_pred_val_lr))) print("\n") print('R2 Score on Validation set :',metrics.r2_score(val_y, y_pred_val_lr)) print("\n") MAE on Validation set : 25.212882223695512 MSE on Validation set : 862.7559482129169 </pre>	20%	<pre> lr = LinearRegression() lr.fit(train_X,train_y) print('Attempting to fit Linear Regressor') Attempting to fit Linear Regressor </pre>