

## Project Development Phase Model Performance Test

Date	15 November 2022
Team ID	PNT2022TMD04094
Project Name	University Admit Eligibility Predictor
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	<p><b>Regression Model:</b> MAE - , 0.04555 MSE - , 0.00426 RMSE – 0.06527 , R2 score – 0.71683</p> <p><b>Classification Model:</b> Confusion Matrix - Accuracy Score- Classification Report -</p>	<p><b>Mean Squared Error (MSE)</b></p> <pre>In [25]: from sklearn.metrics import mean_squared_error, r2_score mse = mean_squared_error(pred_test,y_test)</pre> <pre>In [26]: mse</pre> <pre>Out[26]: 0.004260810050671112</pre> <p><b>Root Mean Squared Error (RMSE)</b></p> <pre>In [27]: rmse = np.sqrt(mse)</pre> <pre>In [28]: rmse</pre> <pre>Out[28]: 0.06527488070208257</pre> <p><b>R2 Score</b></p> <pre>In [29]: r2_score(pred_test, y_test)</pre> <pre>Out[29]: 0.7168318679092451</pre> <p><b>Mean Absolute Error (MAE)</b></p> <pre>In [32]: from sklearn.metrics import mean_absolute_error mean_absolute_error(pred_test, y_test)</pre> <pre>Out[32]: 0.0455524319663054</pre>  <table><tr><th></th><th>False</th><th>True</th></tr><tr><th>False</th><td>16</td><td>91</td></tr><tr><th>True</th><td>93</td><td>800</td></tr></table>		False	True	False	16	91	True	93	800
	False	True										
False	16	91										
True	93	800										

			<div><div><div>In [44]: Accuracy = metrics.accuracy_score(actual, predicted)</div><div>Accuracy</div></div><div><div>Out[44]: 0.816</div></div><div><div>Classification Report</div><div><div>In [56]: from sklearn.metrics import classification_report</div><div>print(classification_report(actual, predicted))</div></div><div><table><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr><tr><td>0</td><td>0.15</td><td>0.15</td><td>0.15</td><td>107</td></tr><tr><td>1</td><td>0.90</td><td>0.90</td><td>0.90</td><td>893</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.82</td><td>1000</td></tr><tr><td>macro avg</td><td>0.52</td><td>0.52</td><td>0.52</td><td>1000</td></tr><tr><td>weighted avg</td><td>0.82</td><td>0.82</td><td>0.82</td><td>1000</td></tr></table></div></div></div>		precision	recall	f1-score	support	0	0.15	0.15	0.15	107	1	0.90	0.90	0.90	893	accuracy			0.82	1000	macro avg	0.52	0.52	0.52	1000	weighted avg	0.82	0.82	0.82	1000
	precision	recall	f1-score	support																													
0	0.15	0.15	0.15	107																													
1	0.90	0.90	0.90	893																													
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macro avg	0.52	0.52	0.52	1000																													
weighted avg	0.82	0.82	0.82	1000																													
2.	Tune the Model	Hyperparameter Tuning - Validation Method –	<div><div>2.Stratified K-Fold</div><div><div>In [63]: from sklearn import datasets</div><div>from sklearn.tree import DecisionTreeClassifier</div><div>from sklearn.model_selection import StratifiedKFold, cross_val_score</div><div>X, y = datasets.load_iris(return_X_y=True)</div><div>clf = DecisionTreeClassifier(random_state=42)</div><div>sk_folds = StratifiedKFold(n_splits = 5)</div><div>scores = cross_val_score(clf, X, y, cv = sk_folds)</div><div>print("Cross Validation Scores: ", scores)</div><div>print("Average CV Score: ", scores.mean())</div><div>print("Number of CV Scores used in Average: ", len(scores))</div></div><div>Cross Validation Scores: [0.96666667 0.96666667 0.9 0.93333333 1. ]</div><div>Average CV Score: 0.9533333333333334</div><div>Number of CV Scores used in Average: 5</div></div>																														