Project Development Phase
Model Performance Test

Date	19 November 2022
Team ID	PNT2022TMID00056
Project Name	Early Detection of Chronic Kidney Disease using Machine Learning
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	**Regression Model:**
		MAE - 0.075
		MSE - 0.075
		RMSE - 0.27386
		R2 score - 0.65811
			`import sklearn.metrics as metrics`
			`mae = metrics.mean_absolute_error(y_test, y_pred)`
			`mse = metrics.mean_squared_error(y_test, y_pred)`
			`rmse = np.sqrt(mse)`
			`r2 = metrics.r2_score(y_test,y_pred)`
			
			`print("Results of sklearn.metrics:")`
			`print("MAE:",mae)`
			`print("MSE:", mse)`
			`print("RMSE:", rmse)`
			`print("R-Squared:", r2)`
			
			`Results of sklearn.metrics:`
			`MAE: 0.075`
			`MSE: 0.075`
			`RMSE: 0.27386127875258304`
			`R-Squared: 0.6581196581196581`

		Classification Model:
		Confusion Matrix
			`confusion_mat = confusion_matrix(y_test,y_pred)`
			`confusion_mat`
			
			`array([[48,  6],`
			`[ 0, 26]], dtype=int64)`

		Accuracy Score
		
		Classification Report
			`accuracy_score(y_test,y_pred)`
			`0.925`
			
			`from sklearn.metrics import classification_report`
			`print(classification_report(y_test, y_pred))`
			
			precision recall f1-score support
			
			0 1.00 0.89 0.94 54
			1 0.81 1.00 0.90 26
			
			accuracy 0.93 80
			macro avg 0.91 0.94 0.92 80
			weighted avg 0.94 0.93 0.93 80

2.	Tune the Model	Hyperparameter Tuning - GridSearch CV with best score 0.9175	`from sklearn.model_selection import GridSearchCV`
			`c_space = np.logspace(-5, 8, 15)`
			`param_grid = {'C': c_space}`
			`logreg = LogisticRegression()`
			`logreg_cv = GridSearchCV(logreg, param_grid, cv = 5)`
			`logreg_cv.fit(x, y)`
			`print("Tuned Logistic Regression Parameters: {}".format(logreg_cv.best_params_))`
			`print("Best score is {}".format(logreg_cv.best_score_))`
			
			`Tuned Logistic Regression Parameters: {'C': 268.2695795279727}`
			`Best score is 0.9175000000000001`