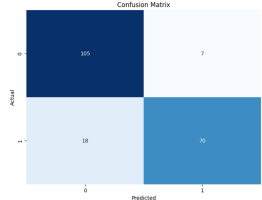
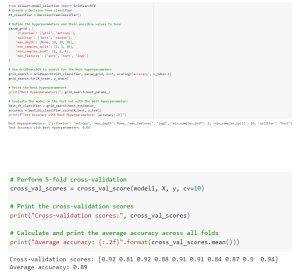


Project Development Phase Model Performance Test

Date	10 November 2023
Team ID	EXT2023TMID591615
Project Name	Car Purchase Prediction Model
Maximum	15 Marks

Model Performance Testing:

Project team shall fill the following information in the model performance testing template.

S.No	Parameter	Values	Screenshot
1.	Metrics	Classification Model: Decision Tree Confusion Matrix Accuracy Score Classification Report	 <p>DecisionTree's Accuracy: 0.875</p> <pre> Train Set Classification Report: precision recall f1-score support 0 0.95 0.98 0.96 486 1 0.97 0.92 0.94 314 accuracy: 0.96 macro avg: 0.96 0.95 0.95 800 weighted avg: 0.96 0.96 0.96 800 Test Set Classification Report: precision recall f1-score support 0 0.85 0.94 0.89 112 1 0.91 0.88 0.85 88 accuracy: 0.88 macro avg: 0.88 0.87 0.87 200 weighted avg: 0.88 0.88 0.87 200 </pre>
2.	Tune The Model	Hyperparameter Tuning: Grid Search CV Validation Method: 5 fold cross validation.	 <pre> # Import necessary libraries from sklearn.tree import DecisionTreeClassifier from sklearn.model_selection import GridSearchCV from sklearn.metrics import accuracy_score # Define the parameter grid param_grid = { 'max_depth': [None, 10, 20, 30, 40, 50], 'min_samples_split': [2, 5, 10, 20, 30, 40, 50], 'min_samples_leaf': [1, 2, 5, 10, 20, 30, 40, 50] } # Create the DecisionTreeClassifier object dtc = DecisionTreeClassifier() # Create the GridSearchCV object grid_search = GridSearchCV(dtc, param_grid, cv=5) # Fit the model to the training data grid_search.fit(X_train, y_train) # Print the best parameters print("Best parameters found: %s" % grid_search.best_params_) # Print the best score print("Best score: %s" % grid_search.best_score_) # Perform 5-fold cross-validation cross_val_scores = cross_val_score(grid_search.best_estimator_, X, y, cv=5) # Print the cross-validation scores print("Cross-validation scores: ", cross_val_scores) # Calculate and print the average accuracy across all folds print("Average accuracy: {:.2f}".format(cross_val_scores.mean())) Cross-validation scores: [0.92 0.81 0.92 0.88 0.91 0.91 0.84 0.87 0.9 0.94] Average accuracy: 0.89 </pre>