

Project Development Phase Model Performance Test

Date	27 june 2025
Team ID	LTVIP2025TMID38854
Project Name	traffictelligence: advanced traffic volume estimation with 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 - 212.34 MSE - 595287.64 RMSE - 771.55 R² Score - 0.8494	<pre> # Step 6: Evaluate using R^2 score print("Linear Regression R2: ", metrics.r2_score(y_test, p1)) print("Decision Tree R2: ", metrics.r2_score(y_test, p2)) print("Random Forest R2: ", metrics.r2_score(y_test, p3)) print("SVR R2: ", metrics.r2_score(y_test, p4)) print("XGBoost R2: ", metrics.r2_score(y_test, p5)) # Step 7: (Optional) RMSE for Random Forest mse = metrics.mean_squared_error(y_test, p3) rmse = np.sqrt(mse) print("Random Forest RMSE: ", rmse) Linear Regression R2: 0.133090922407227 Decision Tree R2: 0.730942556798879 Random Forest R2: 0.84942835690942 SVR R2: 0.3860867240004463 XGBoost R2: 0.8413432240486145 Random Forest RMSE: 771.5484641756389 </pre>
2.	Tune the Model	Hyperparameter Tuning: Used default RandomForestRegressor with n_estimators=100. Validation Method: Used 80:20 train-test split with random_state=0	<pre> from sklearn import ensemble from sklearn import svm import xgboost lin_reg = linear_model.LinearRegression() DTree = tree.DecisionTreeRegressor() Rand = ensemble.RandomForestRegressor() svr = svm.SVR() XGB = xgboost.XGBRegressor() [20]: lin_reg.fit(x_train, y_train) DTree.fit(x_train, y_train) Rand.fit(x_train, y_train) svr.fit(x_train, y_train) XGB.fit(x_train, y_train) [20]: XGBRegressor XGBRegressor(base_score=None, booster=None, callbacks=None, colsample_bylevel=None, colsample_bynode=None, colsample_bytree=None, device=None, early_stopping_rounds=None, enable_categorical=False, eval_metric=None, feature_types=None, feature_weights=None, gamma=None, grow_policy=None, learning_rate=None, max_delta_step=None, </pre>