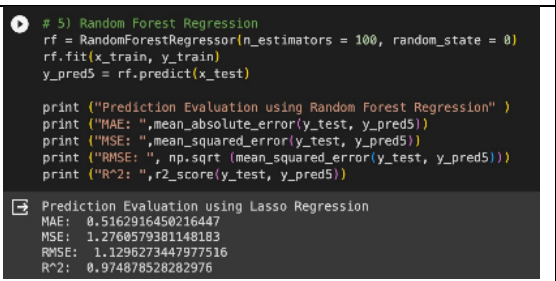
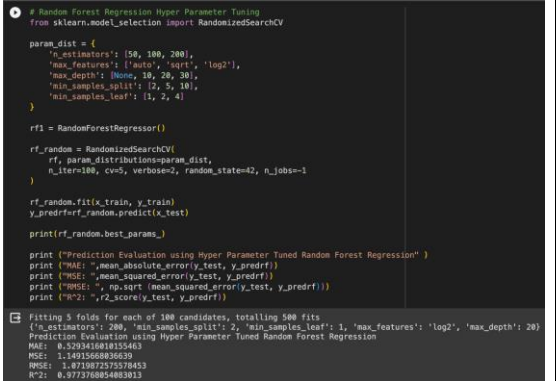


Project Development Phase Model Performance Test

Date	9 November 2023
Team ID	Team-592608
Project Name	ENVISIONING SUCCESS: Predicting University Scores Using Machine Learning
Maximum Marks	10 Marks

Model Performance Testing:

S.No.	Parameter	Values	Screenshot
1.	Metrics	Regression Model: MAE - 0.51629 MSE - 1.27606 RMSE - 1.12963 R2 score – 0.97488	 <pre># 5) Random Forest Regression rf = RandomForestRegressor(n_estimators = 100, random_state = 0) rf.fit(x_train, y_train) y_pred5 = rf.predict(x_test) print ("Prediction Evaluation using Random Forest Regression") print ("MAE: ",mean_absolute_error(y_test, y_pred5)) print ("MSE: ",mean_squared_error(y_test, y_pred5)) print ("RMSE: ", np.sqrt (mean_squared_error(y_test, y_pred5))) print ("R^2: ",r2_score(y_test, y_pred5))</pre> <p>Prediction Evaluation using Lasso Regression</p> <p>MAE: 0.5162916450216447 MSE: 1.2760579381148183 RMSE: 1.1296273447977516 R^2: 0.974878528282976</p>
2.	Tune the Model	Hyperparameter Tuning: MAE - 0.52934 MSE - 1.14916 RMSE - 1.07199 R2 score – 0.97738	 <pre>from sklearn.model_selection import RandomizedSearchCV param_dist = { 'n_estimators': [50, 100, 200], 'max_features': ['auto', 'sqrt', 'log2'], 'max_depth': [None, 20, 30, 40], 'min_samples_split': [2, 5, 10], 'min_samples_leaf': [1, 2, 4] } rf = RandomForestRegressor() rf_random = RandomizedSearchCV(rf, param_distributions=param_dist, n_iter=100, cv=5, verbose=2, random_state=42, n_jobs=-1) rf_random.fit(x_train, y_train) y_predrf = rf_random.predict(x_test) print(rf_random.best_params_) print ("Prediction Evaluation using Hyper Parameter Tuned Random Forest Regression") print ("MAE: ",mean_absolute_error(y_test, y_predrf)) print ("MSE: ",mean_squared_error(y_test, y_predrf)) print ("RMSE: ", np.sqrt (mean_squared_error(y_test, y_predrf))) print ("R^2: ",r2_score(y_test, y_predrf))</pre> <p>Fitting 5 folds for each of 800 candidates, totalling 5000 fits</p> <p>Best Parameters: {'n_estimators': 200, 'min_samples_split': 2, 'min_samples_leaf': 1, 'max_features': 'log2', 'max_depth': 20}</p> <p>Prediction Evaluation using Hyper Parameter Tuned Random Forest Regression</p> <p>MAE: 0.529341881035463 MSE: 1.1491568836639 RMSE: 1.071987257378453 R^2: 0.977376854883813</p>