


## Project Development Phase Model Performance Test

Date	10 November 2022
Team ID	PNT2022TMID37289
Project Name	Car resale value prediction
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	<b>Regression Model:</b> MAE -0.098 MSE -0.313 RMSE -0.313 R2 score -0.597	 <pre> RMSE: 0.31362502409359  MSE: 0.31362502409359  MAE: 0.09836065573770492  R2 SCORE: 0.5978021978021978  In [ ]: Import statsmodels and so on model = sm.OLS(y_test, X_test).fit() #(var model) summary print(model.summary())  OLS Regression Results ===== Dep. Variable:    selling_price    R-squared:        0.598 Model:            OLS             Adj. R-squared:    0.585 Method:           Least Squares   F-statistic:      72.248 Date:            Mon, 14 Nov 2022   Prob (F-statistic): 7.79e-27 Time:            12:29:12          Log-Likelihood:   -105.78 No. Observations: 81             AIC:              379.4 Df Residuals:     80             BIC:              383.4 Df Model:          1 Covariance Type:  nonconstant  =====                const      selling_price      1 const            1.417e+06      0.464      0.268      0.206      0.150      0.132 selling_price    -2.72e+05      1.14e+05      -2.250      0.992      -6.82e+04      -1.42e+05 intercept        -0.888e+05      1.548      -0.878      0.954      -1.175      1.000 No. of years      -0.222e+05      0.001      -2.945      0.003      -0.280      -0.072 Fuel_Type_gasol    0.074e+05      1.883      0.000      0.999      0.000      0.000 Fuel_Type_petrol    0.188e+05      0.000      0.707      0.000      0.242      0.000 seller_type_individual -1.417e+05      0.000      0.000      0.999      0.000      0.000 Transmission_manual -1.790e+05      0.000      -3.702      0.000      -3.884      -0.007  ===== Durbin-Watson:      2.074 Jarque-Bera (JB):    2.337 Prob(Misc):          0.209 Jarque-Bera (JB):    2.074 Skew:                0.372 Kurtosis:            3.325 Cond. No.:           3.73e+05           </pre>

2.	Tune the Model	<p>Hyperparameter Tuning - Validation Method -</p> <p>1 ) Learning Rate: [0.01, 0.03, 0.05, 0.07]</p> <p>2) Boosting Type: ['gbdt','dart','goss','rf']</p> <p>3) Number of Estimators:[50,75,100]</p> <p>Validation Method: Grid Search Cross Validation</p> <p>Best Parameters: Learning Rate — 0.07 Boosting Type — 'gbdt' Number of Estimators - 100</p>	<pre> Rf_configs={     "name": 'RandomForestRegressor',     "name": "grid",     "metric": {         "name": "adj_r2",         "goal": "maximize"     },     "parameters": {         "learning_rate": {             "values": [0.01, 0.03, 0.05, 0.07]         },         "objective": {             "values": ['root_mean_squared_error']         },         "boosting_type": {             "values": ['gbdt', 'dart', 'goss', 'rf']         },         "reg_sqrt": {             "values": [True]         },         "metric": {             "values": ['rmse']         },         "n_estimators": {             "values": [50, 75, 100]         },         "random_state": {             "values": [4]         }     } } </pre>
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