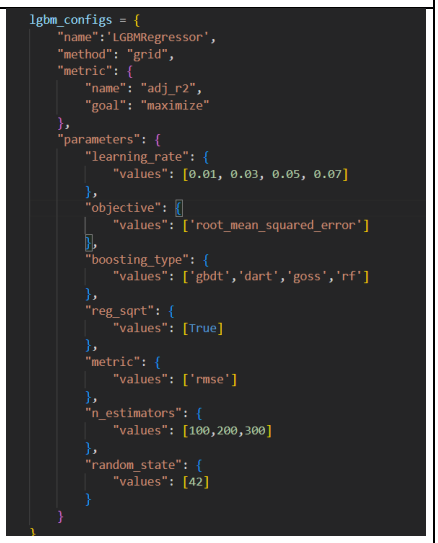
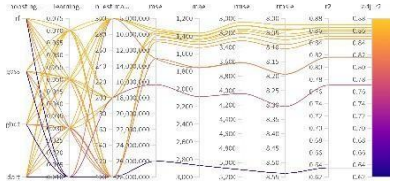
Project Development Phase
Model Performance Test

Date	10 November 2022
Team ID	PNT2022TMID39909
Project Name	Project – 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	**Regression Model:** LGBM Regressor MAE: 1327.55 MSE: 9492244.28 RMSE: 3080.95 RMSLE: 8.03 R2 Score: 0.8668 Adjusted R2 Score: 0.8668	
2.	Tune the Model	**Hyperparameter Tuning** 1) Learning Rate: [0.01, 0.03, 0.05, 0.07] 2) Boosting Type: ['gbdt','dart','goss','rf'] 3) Number of Estimators: [100,200,300] **Validation Method**: Grid Search Cross Validation **Best Parameters:** Learning Rate – 0.07 Boosting Type – 'gbdt' Number of Estimators - 300	 

Screenshots

1) Metrics

```
model = LGBMRegressor(boosting_type="gbdt",learning_rate=0.07,metric="rmse",n_estimators=300,objective="root_mean_squared_error",random_state=42,reg_sqrt=True)

model.fit(X_train, Y_train)

Y_pred = model.predict(X_test)

find_scores(Y_test, Y_pred, X_train)
```

```
/opt/conda/envs/Python-3.9/lib/python3.9/site-packages/sklearn/utils/validation.py:993: DataConversionWarning: A column-vector y was passed when a 1d array was exp
the shape of y to (n_samples, ), for example using ravel().
  y = column_or_1d(y, warn=True)

{'mae': 1327.549477341283,
 'mse': 9492244.283543464,
 'rmse': 3080.948601249859,
 'rmsle': 8.032992815968017,
 'r2': 0.8668348937732229,
 'adj_r2_score': 0.8668269262555739}
```

2) Tune the model

```
lgbm_configs = {
    "name":'LGBMRegressor',
    "method": "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": [100,200,300]
        },
        "random_state": {
            "values": [42]
        }
    }
}
```

3) Wandb sweep: