Machine Learning Methods Using r2 values
Title:-   Insurance_charges_prediction
Stage 1
Domain Selection-Machine Learning.
Stage 2
Learning Selection-supervised Learning.
Stage 3
Numerics Data-Regression

Total Number of Columns-6
Total Number of Rows-1338

Categorical Column
Ordinal data-Yes/No

1.Multiple Linear Regression -**r2_values**(0.7894)

2.Support vector Machine

S.No	Hyper Parameter	Linear (r value)	rbf(Non-Linear)(r value)	POLY(r Value)	SIGMOID(r value)
1.	C=10	0.4624	-0.0322	0.0387	0.0393
2.	C=100	0.6288	0.3200	0.6179	0.5276
3.	C=500	0.7631	0.6642	0.8263	0.4446
4.	C=1000	0.7649	0.8102	0.8566	0.2874
5.	C=2000	0.7414	0.8547	0.8605	-0.5939
6.	C=3000	0.7440	0.8663	0.8598	-2.1244

The SVM regression R2 value is C=3000 rbf(Non-Linear) r value=0.8663

3.DECISION TREE

SL.NO	criterion	*max_features*	*splitter*	R value
1.	friedman_mse	auto	best	0.6988
2.	friedman_mse	auto	random	0.7068
3.	friedman_mse	sqrt	random	0.6055
4.	friedman_mse	sqrt	best	0.6601
5.	friedman_mse	*log2*	random	0.7344
6.	friedman_mse	*log2*	best	0.7793

Best Value of Decision Tree is by using friedman_mse as a criterion and *log2 as a max_features and* best as a *splitter and R value is* 0.7793

4.RANDOM FOREST

SL.NO	criterion	max_features	*n_estimators*	R_Value
1.	friedman_mse	sqrt	10	0.8300
2.	friedman_mse	sqrt	30	0.8414
3.	friedman_mse	*log2*	10	0.8300
4.	friedman_mse	*log2*	100	0.8469

Best Value of Random Forest R value is criterion=friedman_mse,max_features=*log2,n_estimators=100,*R_Value=0.8469

Final Machine Learning Best Methods of Regression

RANDOM FOREST R2 value(friedman_mse, *log2,100)* **R_Value=0.8469**