

Hyper Tuning Parameter and R_Score Assignment

Using Hyper Tuning Parameter in SVM, Decision Tree and Random forest regression algorithm and identify the best R_score value for this model.

1.MULTIPLE LINEAR REGRESSION (R2_SCORE): **0.93%**

2.SUPPORT VECTOR MACHINE:

S.no	Hyper Parameter	Linear (r value)	RBF (r value)	Poly (r value)	Sigmoid (r value)
1	C0.01	-0.0575	-0.0576	-0.0574	-0.0574
2	C10	-0.0397	-0.0568	-0.0537	-0.0547
3	C100	0.1064	-0.0507	-0.0198	-0.0304
4	C1000	0.7802	0.0067	0.2662	-0.0304
5	C2000	0.8776	0.0675	0.4809	0.3970

Using Hyper Tuning Parameter(**Linear and C2000**) in SVM the best R2_Score value is **0.87%**

3.DECISION TREE:

S.NO	CRITERION	MAX_FEATURES	SPLITTER	R VALUE
1	squared_error	sqrt	best	0.7464
2	squared_error	sqrt	random	0.8601
3	squared_error	log2	best	0.2347
4	squared_error	log2	random	0.4853
5	friedman_mse	sqrt	best	0.5235
6	friedman_mse	sqrt	random	-0.5653
7	friedman_mse	log2	best	0.7199
8	friedman_mse	log2	random	-0.4088
9	absolute_error	sqrt	best	-0.1563
10	absolute_error	sqrt	random	0.5345
11	absolute_error	log2	best	-0.368
12	absolute_error	log2	random	0.8364
13	poisson	sqrt	best	0.7679
14	poisson	sqrt	random	-0.3625
15	poisson	log2	best	0.5715
16	poisson	log2	random	-0.6321

Using Hyper Tuning Parameter(**Default value:"criterion=squared_error, splitter= best"**) in decision tree, the best R2_score is **0.92%**

4.RANDOM FOREST:

S.NO	CRITERION	MAX_FEATURES	R VALUE
1	squared_error	sqrt	0.7591
2	squared_error	log2	0.7592

3	friedman_mse	sqrt	0.7592
4	friedman_mse	log2	0.7592
5	absolute_error	sqrt	0.7869
6	absolute_error	log2	0.7869
7	poisson	sqrt	0.7732
8	poisson	log2	0.7732

Using Hyper Tuning Parameter(Default value:"criterion=squared_error, max_feature=int") in Random forest, the best R2_score is 0.94%

Conclusion:

For this model, I have chosen the **Random forest regression** algorithm as it gives the best R2_Score value(0.94%) among all types of regression.