Research on Best Model Via R Score Value

1.MLR

Inference :

Best Model is created with r score Value = **0.9358680970046243**

2.SVMR

r score Value w/o HTP= -0.057418393916219834		
kernel	**C Value**	**r score**
linear	1000	0.7802839882154124
	2000	0.8767721687716041
	3000	**0.895674469433492**
poly	1000	0.26616370931646915
	2000	0.4810028155606567
	3000	0.6370064223754037
rbf	1000	0.0067683444800727965
	2000	0.06751554270553017
	3000	0.12322756620227582
sigmoid	1000	0.18506861974160804
	2000	0.39706528684272135
	3000	0.5913630209426107

Inference :

Model is created with low r score value.
Considerable r score value = **0.895674469433492** is created for the H.T.P --- **kernel = linear, c= 3000.**
Though there is a chance of improving the model's r score value by increasing C value beyond 3000, the predicted o/p value i.e profit shoots high to 8 figures which is quite not feasible.

3.Decision Tree

r score Value w/o HTP= 0.8972291974969963				
criterion	**splitter**	**r score (w/o max features)**	**max_ features**	**r score (with max_ features)**
squared_error	best	0.9214306220757318	**sqrt**	0.09798395941037275
			log2	0.5061408543602336
	random	0.6372581027214319	**sqrt**	0.41374230043571725
			log2	0.6836504444368285
absolute_error	best	0.9247519252928741	**sqrt**	0.9262950282088664
			log2	0.7780902559935522
	random	0.6268821377872036	**sqrt**	0.6013894721694882
			log2	0.20527425924684006
friedman_mse	best	0.8994752214576376	**sqrt**	0.6576345209785339
			log2	0.6287085882321803
	random	0.4088758524566112	**sqrt**	0.12467585310390261
			log2	0.446231683510638
poisson	**best**	**0.9457927379824442**	**sqrt**	0.35884420644991866
			log2	0.8015887460531157
	random	0.8979430864116503	**sqrt**	0.4561485309437918
			log2	0.9096872948752499

Inference :

Best model with high r score Value = **0.9457927379824442** is created for the HTP **--- criterion = poisson & splitter= best** without max features

4.Random Forest

criterion	n estimators	r score (w/o max features)	max_ features	r score (with max_ features)
squared_error	50	0.9419810900432116	**sqrt**	0.6830022367685868
			log2	
	100	0.9447360977699076	**sqrt**	0.7591504499484151
			log2	
absolute_error	50	0.9401935247161504	**sqrt**	0.7222351871476136
			log2	
	100	0.9459097460494243	**sqrt**	0.7870726821715768
			log2	
friedman_mse	50	0.9396740716717181	**sqrt**	0.6902211615063268
			log2	
	100	0.9430421895648843	**sqrt**	0.7580139406450639
			log2	
poisson	**50**	**0.9461748447682533**	**sqrt**	0.720862466757838
			log2	
	100	0.9411213280886008	**sqrt**	0.7717642068103981
			log2	

Inference :

Best model with high r score Value = **0.9461748447682533** is created for the HTP--- **criterion = poisson & n estimators = 50** without max features

Summary

Algorithm	HTP (w/o max features)	Best r score
MLR	-	0.9358680970046243
SVM	kernel = linear, c= 3000	0.895674469433492
DT	criterion = poisson & splitter= best	0.9457927379824442
RF	criterion = poisson & n estimators = 50	0.9461748447682533

Result Analysis:

For the given dataset **RF algorithm for HTP criterion = poisson & n estimators = 50** suits the best.

Appendix:

Abbreviations	Expansion
MLR	Multiple Linear Regression
SVM	Support Vector Machine
DT	Decision Tree
RF	Random Forest
HTP	Hyper Tuning Parameters