Finding Best model based on accuracy and hyper tuning the parameters

PROBLEM STATEMENT: **HR - domain: Salary Prediction**

1. SIMPLE LINEAR REGRESSION:

Model accuracy = 0.9740993407213511 (r2_score)

PROBLEM STATEMENT: **Profit prediction for startups based on the investment rate in different departments**

1. MULTIPLE LINEAR REGRESSION

Model accuracy = 0.9358680970046243 (r2_score)

2. SUPPORT VECTOR MACHINE – REGRESSION

SL.NO	KERNEL TYPE	BEST ACCURACY MODEL REPORT FOR SVM - REGRESSION Problem Statement: Profit prediction for startups based on the investment rate in different departments							Remark
		MODEL ACCURACY							
		Before Standardization	After Standardization	Regularization Parameter					
				C=0.10	C=100	C=1000	C=2000	C=3000	
1	linear	0.964182235	-0.032873846	-0.035250704	0.197087605	0.838613538	0.912191313	0.9361975822364887	good model
2	rbf	-0.03527851	-0.035405016	-0.035504002	-0.024568494	0.06402279	0.139616928	0.208595928	poor model
3	poly	-0.028055981	-0.034804719	-0.035443959	0.033912742	0.494165719	0.712546662	0.732648177	poor model
4	sigmoid	-0.035509569	-0.035119596	-0.035475457	0.003563743645203621	0.28221984	0.501345216	0.6248447434415162	poor model
5	precomputed	Precomputed kernel type is not suitable for this dataset							

Best model:

Linear kernel type with accuracy: 0.964182234713478

3. DECISION TREE – REGRESSION

MODEL ACCURACY BEFORE HYPER TUNING PARAMETERS = 0.9103968927441213 (r2_score)

SL.NO	criterion	splitter	max_features	model accuracy
BEST ACCURACY MODEL REPORT FOR DECISION TREE - REGRESSION Problem Statement: Profit prediction for startups based on the investment rate in different departments				
1	squared_error	best	None	0.922979943
2	friedman_mse	best	None	0.894627024
3	absolute_error	best	None	0.865925655
4	poisson	best	None	0.919949059
5	squared_error	best	sqrt	0.775658783
6	friedman_mse	best	sqrt	0.771178363
7	absolute_error	best	sqrt	0.595995028
8	poisson	best	sqrt	0.749254538
9	squared_error	best	log2	0.642397099
10	friedman_mse	best	log2	0.844147648
11	absolute_error	best	log2	0.795328222
12	poisson	best	log2	0.558185539
13	squared_error	random	None	0.836494878
14	friedman_mse	random	None	0.864614099
15	absolute_error	random	None	0.889412835
16	poisson	random	None	0.892430605
17	squared_error	random	sqrt	0.819796564
18	friedman_mse	random	sqrt	0.51976595
19	absolute_error	random	sqrt	0.816672645
20	poisson	random	sqrt	0.74125826
21	squared_error	random	log2	0.418840624
22	friedman_mse	random	log2	0.74045325
23	absolute_error	random	log2	0.700267496
24	poisson	random	log2	0.687695992

Best model:

squared_error criterion with accuracy: 0.922979943062626