

R² Values arrived based on the csv file “50_Startups” with the split ratio of 70:30 for train and test:

1. Multi linear regression = 0.935868
2. Support Vector Machine regression values are given below with different hyper parameters are given below:

Sl.No.	Hyper parameter	Linear	RBF	Poly	Sigmoid
1	1	-0.06226	-0.064172632	-0.06381	-0.05696
2	10	-0.04476	-0.063541922	-0.05993	-0.06121
3	100	0.118459	-0.057264429	-0.02277	-0.03511
4	1000	0.803606	0.005279861	0.293451	0.224029
5	5000	0.909598	0.233075129	0.80933	0.725757
6	10000	0.916027	0.403423224	0.809288	0.860355

3. Decision tree regression values based on different hyper parameter values:

Sl.No.	criterion	splitter	max_features	R2 value
1	default	default	default	0.907978
2	squared_error	best	None	0.911122
3	squared_error	random	None	0.755888
4	friedman_mse	best	None	0.90315
5	friedman_mse	random	None	0.934107
6	absolute_error	best	None	0.963241
7	absolute_error	random	None	0.825047
8	poisson	best	None	0.926896
9	poisson	random	None	0.95576
10	poisson	random	sqrt	0.86589
11	poisson	best	sqrt	0.861418
12	absolute_error	best	sqrt	-0.87701
13	absolute_error	random	sqrt	0.49118
14	friedman_mse	best	sqrt	0.793661
15	friedman_mse	random	sqrt	0.495829
16	squared_error	best	sqrt	-0.0782
17	squared_error	random	sqrt	0.964901
18	squared_error	random	log2	0.003413
19	squared_error	best	log2	0.728428

4. Overall figures:
 - a. Multi Linear regression = 0.935868
 - b. Support Vector Regression = 0.916027
 - c. Decision Tree Regression = 0.964901

I observed that when the same parameter is applied again and run the program, it gives different R2 score value.