Hyper turning Parameter

for ML Algorithm

Dataset = 50_Startup

1. Multiple Linear Regression - R^2 value = 0.935

2. Support Vector Machine

C-Support Vector Classification.

C: float, default=1.0

Kernel: {'linear', 'poly', 'rbf', 'sigmoid', 'precomputed'} or callable, default='rbf'

S. No	Hyper parameter 'c'	Linear R ² value	rbf R ² value	Poly R ² value	Sigmoid R ² value
1	10	-9774	-0.057	-7.853	-0.052
2	100	-7624	-0.057	-7.853	-0.018
3	1000	-2028	-0.059	-7.372	-0.322
4	2000	-2795	-0.055	-2.446	-1.729
5	3000	-2381	-0.050	-4.164	-3.489

Here R² value is not upto mark.

This model is **Not Good** for this data.

3. Decision Tree

Criterion: {"squared_error", "friedman_mse", "absolute_error", "poisson"},

default="squared_error"

Splitter: {"best", "random"}, default="best"

max_features: int, float or {"sqrt", "log2", "auto"}, default=None

No	s.	Criterion	Splitter	max_features	R ² value
2 squared_error best 0.234 3 squared_error best sqrt 0.234 4 squared_error best Log2 0.638 5 squared_error best auto 0.903 6 squared_error random 0.473 8 squared_error random Log2 0.216 9 squared_error random auto 0.281 10 friedman_mse best sqrt 0.926 11 friedman_mse best best 0.925 12 friedman_mse random sqrt 0.746 16 friedman_mse random Log2 0.458 17					
3 squared_error best Log2 0.638 5 squared_error best auto 0.903 6 squared_error random 0.845 7 squared_error random Log2 0.216 9 squared_error random 0.221 10 friedman_mse best Log2 0.236 11 friedman_mse best Log2 0.458 17 friedman_mse random Log2 0.458 18 <td></td> <td></td> <td></td> <td></td> <td></td>					
4 squared_error best Log2 0.638 5 squared_error random 0.903 6 squared_error random 0.845 7 squared_error random Log2 0.216 9 squared_error random Log2 0.216 9 squared_error random Log2 0.226 10 friedman_mse best 0.926 11 friedman_mse best Log2 -0.236 12 friedman_mse best auto 0.925 13 friedman_mse best auto 0.921 14 friedman_mse random 0.904 15 15 friedman_mse random Log2 0.458 17 friedman_mse random Log2 0.458 17 friedman_mse random Log2 0.458 17 friedman_mse random Log2 0.561 18 absolute_e			best		
5 squared_error best auto 0.903 6 squared_error random 0.845 7 squared_error random Log2 0.216 9 squared_error random auto 0.281 10 friedman_mse best 0.926 11 friedman_mse best Journal of the company of the comp					
6 squared_error random 0.845 7 squared_error random sqrt 0.473 8 squared_error random Log2 0.216 9 squared_error random auto 0.281 10 friedman_mse best 0.926 11 friedman_mse best Log2 -0.236 12 friedman_mse best Log2 -0.236 13 friedman_mse best auto 0.921 14 friedman_mse random 0.904 0.904 15 friedman_mse random sqrt 0.746 16 friedman_mse random Log2 0.458 17 friedman_mse random auto 0.861 18 absolute_error best sqrt 0.560 20 absolute_error best sqrt 0.560 21 absolute_error best auto 0.934 23				Log2	
7 squared_error random sqrt 0.473 8 squared_error random Log2 0.216 9 squared_error random auto 0.281 10 friedman_mse best 0.926 11 friedman_mse best Log2 -0.236 12 friedman_mse best auto 0.921 13 friedman_mse best auto 0.921 14 friedman_mse random 0.904 0.904 15 friedman_mse random Log2 0.458 16 friedman_mse random Log2 0.458 17 friedman_mse random Log2 0.458 17 friedman_mse random auto 0.861 18 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error random sqrt 0.713		squared_error	best	auto	
8 squared_error random Log2 0.216 9 squared_error random auto 0.281 10 friedman_mse best 0.926 11 friedman_mse best sqrt 0.925 12 friedman_mse best Log2 -0.236 13 friedman_mse best auto 0.921 14 friedman_mse random 0.904 15 friedman_mse random sqrt 0.746 16 friedman_mse random Log2 0.458 17 friedman_mse random auto 0.861 18 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random Log2 0.629 25 absolute_error random Log2 0.629		squared_error	random		
9 squared_error random auto 0.281 10 friedman_mse best 0.926 11 friedman_mse best sqrt 0.925 12 friedman_mse best Log2 -0.236 13 friedman_mse best auto 0.921 14 friedman_mse random 0.904 15 friedman_mse random Log2 0.458 16 friedman_mse random Log2 0.458 17 friedman_mse random auto 0.861 18 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error random sqrt 0.713 24	7	squared_error	random	sqrt	0.473
10 friedman mse best 0.926 11 friedman mse best sqrt 0.925 12 friedman mse best Log2 -0.236 13 friedman mse best auto 0.921 14 friedman mse random 0.904 15 friedman mse random sqrt 0.746 16 friedman mse random Log2 0.458 17 friedman mse random 0.861 18 absolute error best 0.935 19 absolute error best sqrt 0.560 20 absolute error best auto 0.941 22 absolute error random sqrt 0.713 24 absolute error	8	squared_error	random	Log2	0.216
11 friedman_mse best sqrt 0.925 12 friedman_mse best Log2 -0.236 13 friedman_mse best auto 0.921 14 friedman_mse random 0.904 15 friedman_mse random sqrt 0.746 16 friedman_mse random Log2 0.458 17 friedman_mse random auto 0.861 18 absolute_error best 0.935 19 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random 0.934 23 absolute_error random Log2 0.629 25 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26	9	squared_error	random	auto	0.281
12 friedman mse best Log2 -0.236 13 friedman mse best auto 0.921 14 friedman mse random 0.904 15 friedman mse random sqrt 0.746 16 friedman mse random Log2 0.458 17 friedman mse random auto 0.861 18 absolute error best 0.935 19 absolute error best sqrt 0.560 20 absolute error best Log2 0.561 21 absolute error best auto 0.941 22 absolute error random sqrt 0.713 24 absolute error random Log2 0.629 25 absolute error random auto 0.925 26 poisson best sqrt 0.896 28 poisson best sqrt 0.926 30	10	friedman mse	best		0.926
13 friedman_mse best auto 0.921 14 friedman_mse random 0.904 15 friedman_mse random sqrt 0.746 16 friedman_mse random Log2 0.458 17 friedman_mse random auto 0.861 18 absolute_error best 0.935 19 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random sqrt 0.713 24 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best sqrt 0.896 28 poisson best auto 0.926 30 <td>11</td> <td>friedman mse</td> <td>best</td> <td>sqrt</td> <td>0.925</td>	11	friedman mse	best	sqrt	0.925
14 friedman mse random 0.904 15 friedman mse random sqrt 0.746 16 friedman mse random Log2 0.458 17 friedman mse random auto 0.861 18 absolute error best 0.935 19 absolute error best sqrt 0.560 20 absolute error best Log2 0.561 21 absolute error best auto 0.941 22 absolute error random sqrt 0.713 24 absolute error random sqrt 0.713 24 absolute error random auto 0.925 25 absolute error random auto 0.925 26 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.879 31	12	friedman mse	best	Log2	-0.236
15 friedman_mse random sqrt 0.746 16 friedman_mse random Log2 0.458 17 friedman_mse random auto 0.861 18 absolute_error best 0.935 19 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random 0.934 23 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random sqrt 0.847 32	13	friedman mse	best	auto	0.921
16 friedman_mse random Log2 0.458 17 friedman_mse random auto 0.861 18 absolute_error best 0.935 19 absolute_error best Log2 0.560 20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random 0.934 23 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.847 31 poisson random Log2 0.156	14	friedman mse	random		0.904
17 friedman_mse random auto 0.861 18 absolute_error best 0.935 19 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random sqrt 0.713 23 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best 0.712 27 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random o.847 32 poisson random Log2 0.156	15	friedman mse	random	sqrt	0.746
18 absolute_error best 0.935 19 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random 0.934 23 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random Log2 0.156	16	friedman mse	random	Log2	0.458
19 absolute_error best sqrt 0.560 20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random 0.934 23 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	17	friedman_mse	random	auto	0.861
20 absolute_error best Log2 0.561 21 absolute_error best auto 0.941 22 absolute_error random 0.934 23 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	18	absolute_error	best		0.935
21 absolute_error best auto 0.941 22 absolute_error random 0.934 23 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best sqrt 0.896 27 poisson best sqrt 0.896 28 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	19	absolute_error	best	sqrt	0.560
22 absolute_error random 0.934 23 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best 0.712 27 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	20	absolute_error	best	Log2	0.561
23 absolute_error random sqrt 0.713 24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best 0.712 27 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	<mark>21</mark>	absolute_error	<mark>best</mark>	<mark>auto</mark>	0.941
24 absolute_error random Log2 0.629 25 absolute_error random auto 0.925 26 poisson best 0.712 27 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	22	absolute_error	random		0.934
25 absolute_error random auto 0.925 26 poisson best 0.712 27 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	23	absolute_error	random	sqrt	0.713
26 poisson best 0.712 27 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	24	absolute_error	random	Log2	0.629
27 poisson best sqrt 0.896 28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	25	absolute_error	random	auto	0.925
28 poisson best Log2 0.701 29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	26	poisson	best		0.712
29 poisson best auto 0.926 30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	27	poisson	best	sqrt	0.896
30 poisson random 0.879 31 poisson random sqrt 0.847 32 poisson random Log2 0.156	28	poisson	best	Log2	0.701
31 poisson random sqrt 0.847 32 poisson random Log2 0.156	29	poisson	best	auto	0.926
32 poisson random Log2 0.156	30	poisson	random		0.879
1	31	poisson	random	sqrt	0.847
33 poisson random auto 0.933	32	poisson	random	Log2	0.156
	33	poisson	random	auto	0.933

Here **R² value** is upto mark.

This model (absolute_error, best, auto) is **Good** for this data.