

## Finding the best working machine learning regression method using R<sup>2</sup> value

1. Multiple Linear Regression R<sup>2</sup> value = 0.9177
2. Support Vector Machine

#	Hyper parameter(c=)	R <sup>2</sup> value(kernel=)			
		Linear	RBF	Poly	Sigmoid
1	10	0.0194	0.0006	0.0017	0.0028
2	100	0.1894	0.0119	0.0233	0.0332
3	500	0.6861	0.0630	0.1150	0.1634
4	1000	0.8583	0.1229	0.2213	0.2957
5	2000	0.9092	0.2228	0.3777	0.5081
6	3000	0.9181	0.3206	0.5012	0.6840

3. Decision Tree

#	Criterion	Max Features	Splitter	R <sup>2</sup> value
1	squared_error	None	best	0.4194
2			random	-0.42669
3		Sqrt	best	-3.0810
4			random	0.7038
5		Log2	best	-1.2971
6			random	-2.1923
7	absolute_error	None	best	0.1610
8			random	-0.3504
9		Sqrt	best	-4.2129
10			random	-1.4782
11		Log2	best	0.1756
12			random	-1.3543
13	friedman_mse	None	best	0.4272
14			random	-0.42669
15		Sqrt	best	-0.9251
16			random	-3.2651
17		Log2	best	0.4516
18			random	0.1610

4. Random Forest

#	criterion	max_features	n_estimators	R <sup>2</sup> value
1	poisson	log2	50	0.5991
2			75	0.6255
3			100	0.6715
4		sqrt	50	0.6254
5			75	0.6281
6			100	0.7099
7	squared_error	log2	50	0.6951
8			75	0.6822
9			100	0.7584
10		sqrt	50	0.5748
11			75	0.7432
12			100	0.7203

13	absolute_error	log2	50	0.6518
14			75	0.6895
15			100	0.6467
16		sqrt	50	0.7138
17			75	0.7547
18			100	0.7416
19	friedman_mse	log2	50	0.5836
20			75	0.7389
21			100	0.6439
22		sqrt	50	0.7300
23			75	0.6195
24			100	0.6606