

## Hyper Tuning Parameter

### Assignment to find R2 Square Value

#### 1. Multiple Linear Regression

from sklearn.linear\_model import LinearRegression

Sl.No	copy_X	fit_intercept	R2 Score
1	TRUE	TRUE	<b>0.9358</b>
2	FALSE	FALSE	0.7389

#### 2. Support Vector Machine (SVM)

Epsilon Support Vector Regression - SVR

from sklearn.svm import SVR

Sl.No	C (Regularisation parameter)	R2 Score			
		kernel is ' rbf '	kernel is ' linear '	kernel is ' poly '	kernel is ' sigmoid '
1	1	-0.05740	-0.05569	-0.05710	-0.05721
2	10	-0.05681	-0.03964	-0.05367	-0.05472
3	100	-0.05073	0.10647	-0.01980	-0.03045
4	1000	0.00677	0.78028	0.26616	0.18507
5	10000	0.37190	0.92400	0.81296	<b>0.85353</b>

**Note** - kernel value given as 'precomputed' & 'callable' parameters not supporting

### 3. Decision Tree

DecisionTreeRegressor

from sklearn.tree import DecisionTreeRegressor

Sl.No	criterion	splitter	max_features	R2 Score
1	<i>squared_error also known as mse - mean squared error</i>	best		0.8996
2		random		0.8511
3		best	sqrt	0.5552
4		random	sqrt	0.4186
5		best	log2	0.6673
6		random	log2	0.8842
7	<i>friedman_mse also known as mean squared error with Friedman's</i>	best		0.9263
8		random		0.8579
9		best	sqrt	0.0331
10		random	sqrt	0.3265
11		best	log2	0.6260
12		random	log2	-0.9209
13	<i>absolute_error also known as mae - mean absolute error</i>	best		<b>0.9494</b>
14		random		0.8821
15		best	sqrt	-0.5509
16		random	sqrt	0.2991
17		best	log2	0.6599
18		random	log2	0.5885

**Note -**

- *squared error parameter given as mse*
- *absolute\_error parameter given as mae*
- *criterion value 'poisson' parameter not supporting*