

## Validating the $R^2$ values for Machine Learning Regression methods:

1. Multiple Linear Regression :  $R^2$  Value =0.9358

2. Support Vector Machine:

Hyper Parameter	Linear(rvalue)	poly(rvalue)	rbf(non-linear)	sigmoid(rvalue)
C=10	-0.0396	-0.0536	-0.0568	-0.0547
C=100	0.1064	-0.0198	-0.0568	-0.0304
C=500	0.5928	0.1146	-0.0243	0.0705
C=1000	0.7802	0.2661	0.0067	0.1850
C=2000	0.8767	0.4809	0.0675	0.3970
C=3000	0.8956	0.6370	0.1232	0.5913

The SVM Regression use  $R^2$  value (linear and hyper parameter(C=3000)) = 0.8956

3. Decision Tree:

criterion	splitter	R value
squared_error	best	0.9291
squared_error	random	0.9461
friedman_mse	best	0.9136
friedman_mse	radom	0.8016
absolute_error	best	0.9578
absolute_error	random	0.8460
poisson	best	0.9318
poisson	random	0.8839

The Decision Tree Regression use  $R^2$  value (criterion=absolute\_error and splitter=best) = 0.9578

