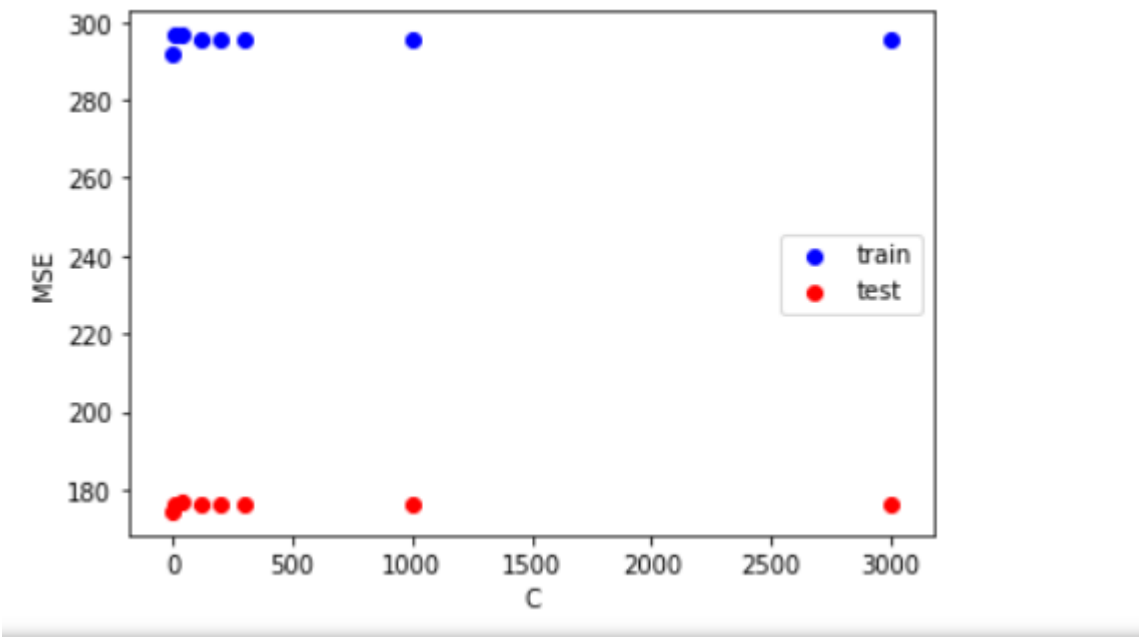
ELL-409 (Machine Intelligence and Learning) Assignment 3

Report Submitted by – Mihir Gupta , 2018PH10816

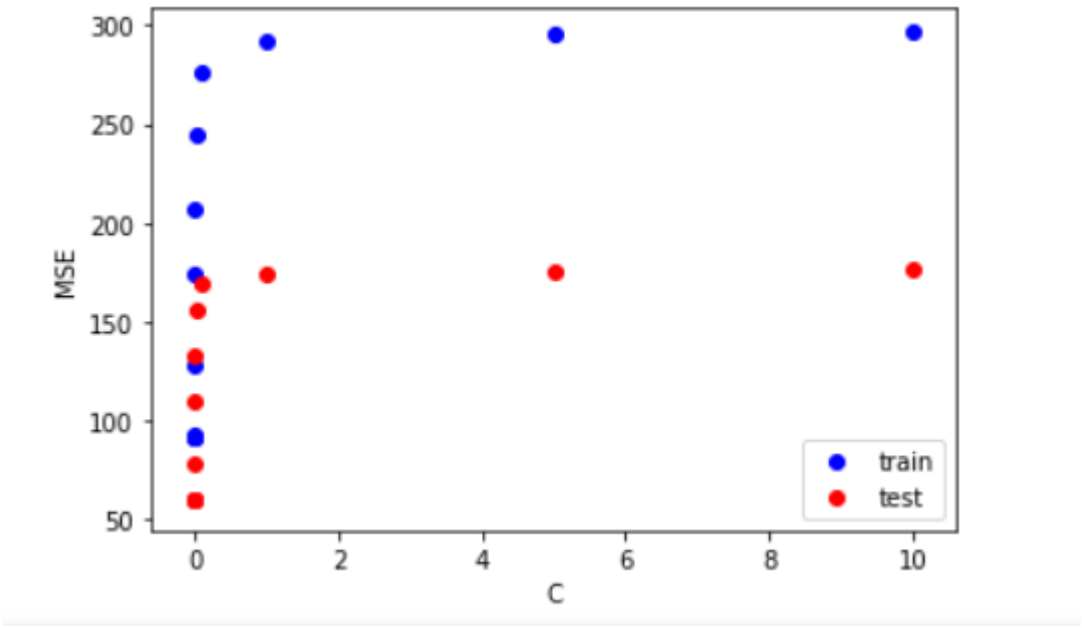
Varying C for Linear Kernel :

Cs = [1,10,40,120,200,300,1000,3000]

(Note : MSE is Mean Squared Error , train and test in figure represent errors on training data and testing data respectively)

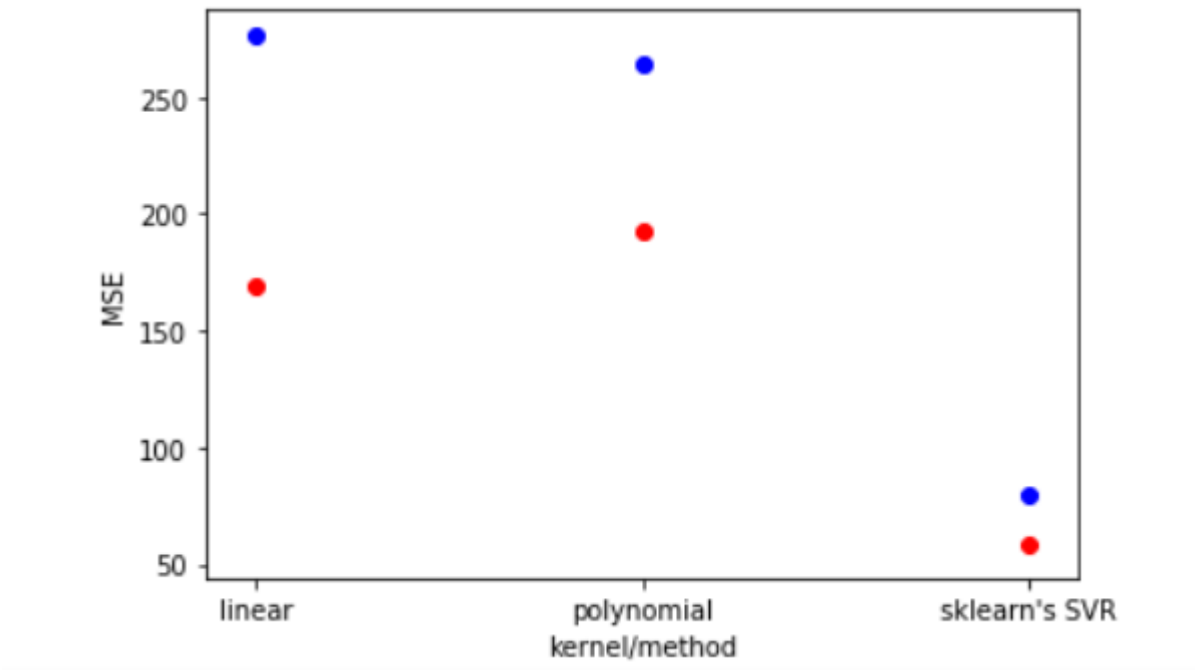


Cs = [0.00000000000000000001 , 0.0000000000000001
,0.000000000001,0.0000000001,0.00000001,0.000001,0.0001,0.001,0.01,0.1,1,5,10]

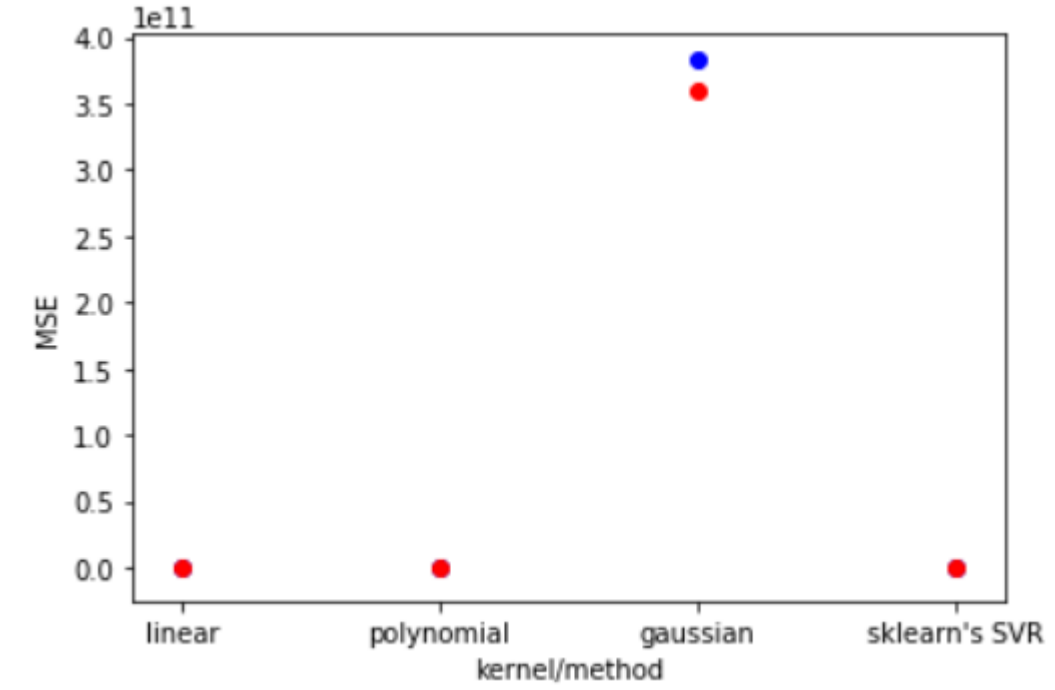


Comparing Different Kernels:

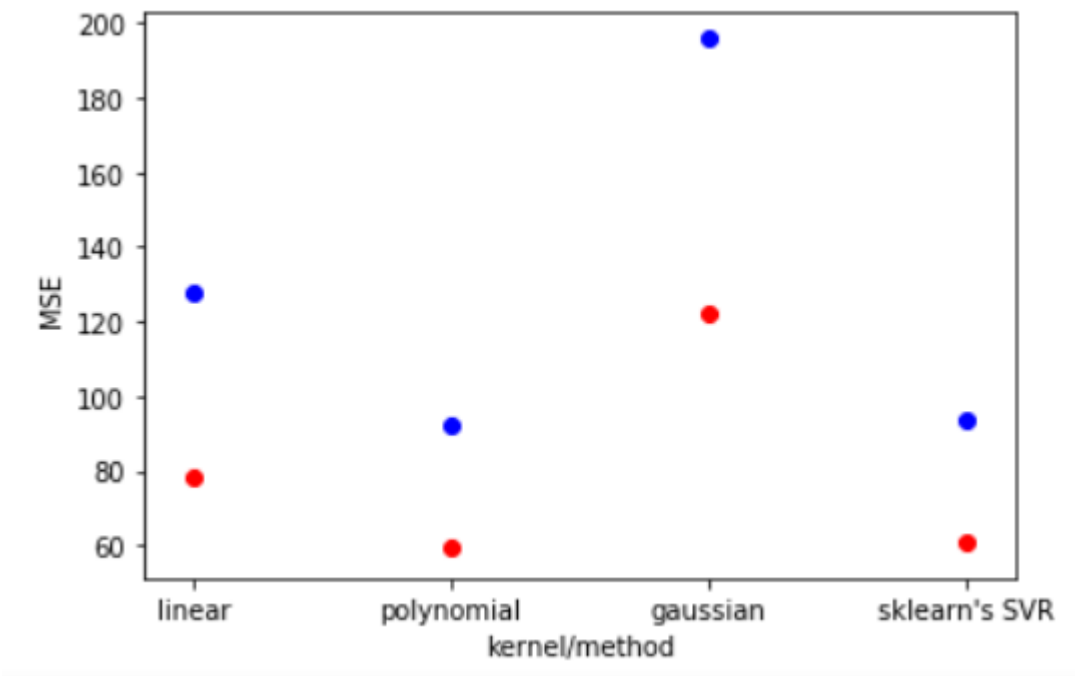
At C = 0.1 ,



(Note: polynomial kernel in the figures refers to quadratic kernel)


1e11
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
MSE
linear
polynomial
gaussian
sklearn's SVR
kernel/method

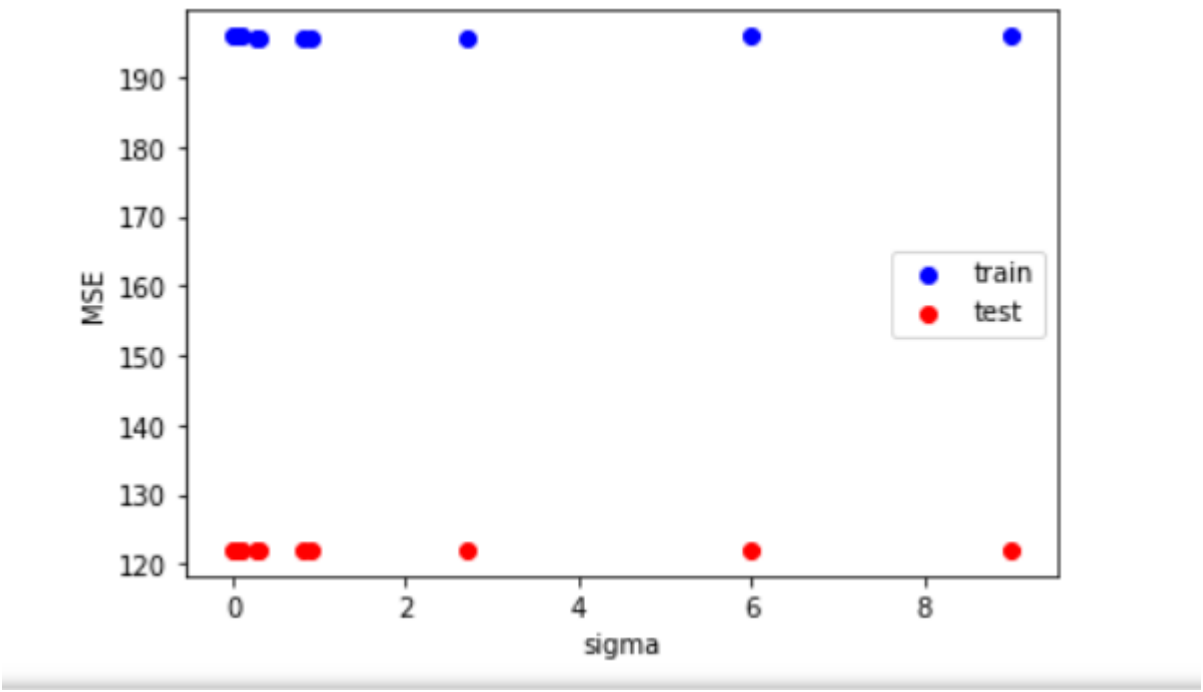
At C = 0.000001 ,



Varying Sigma of Gaussian Kernels :

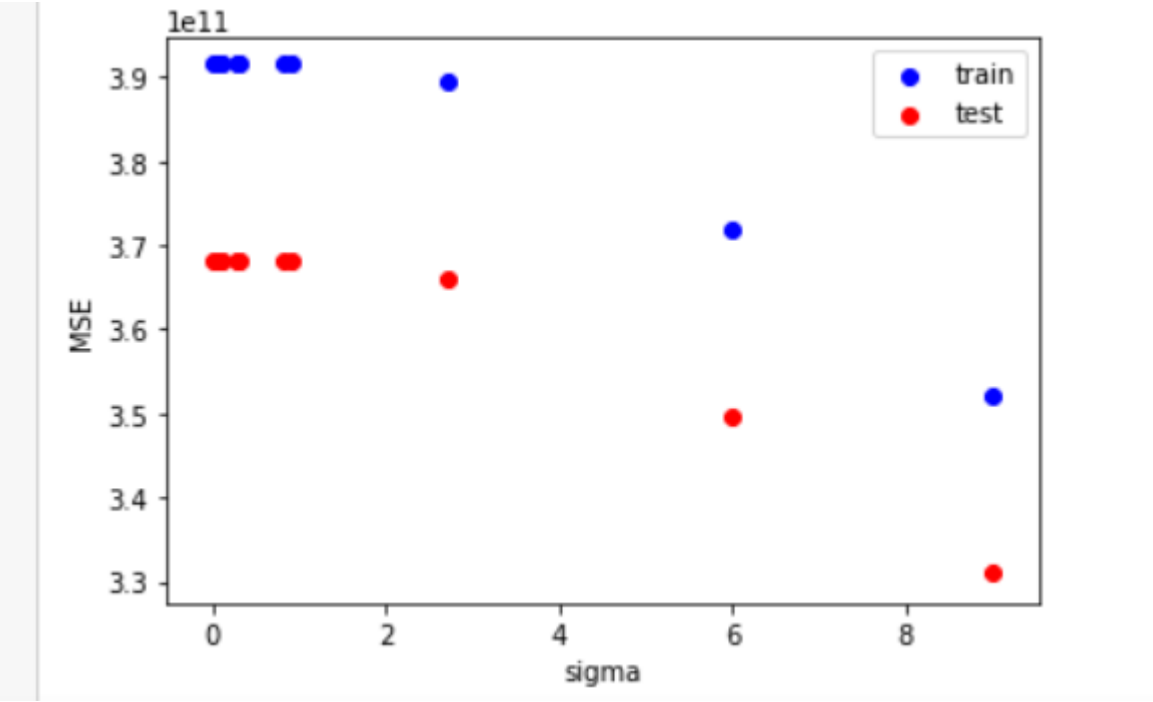
At C = 0.000001,

Sigmas= [0.01,0.03,0.09,0.27,0.81,0.1,0.3,0.9,2.7,6,9]

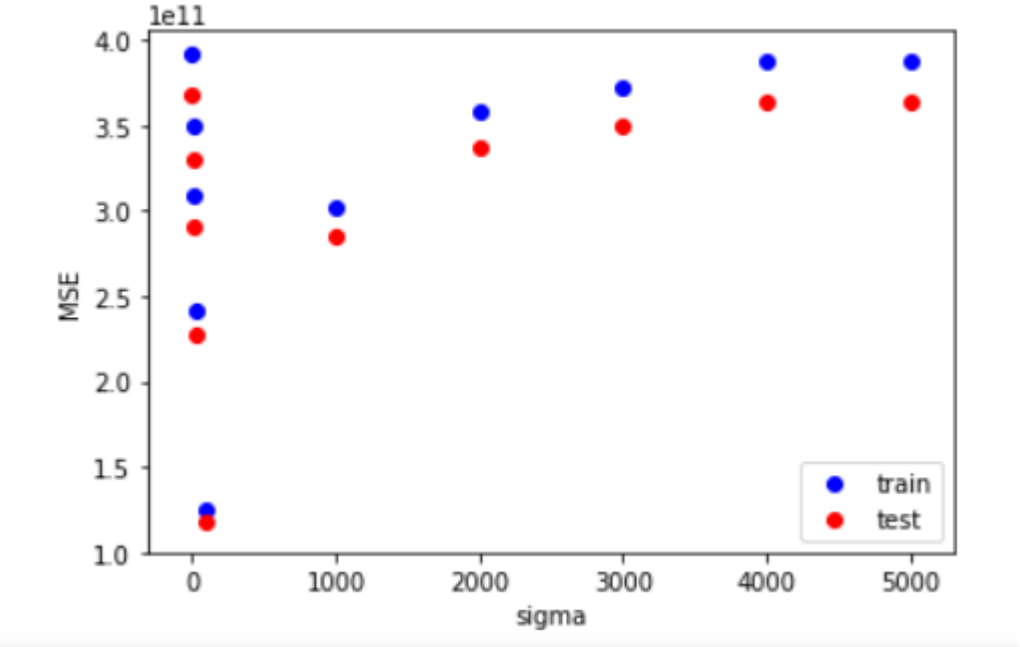


At C = 0.1

Sigmas= [0.01,0.03,0.09,0.27,0.81,0.1,0.3,0.9,2.7,6,9]

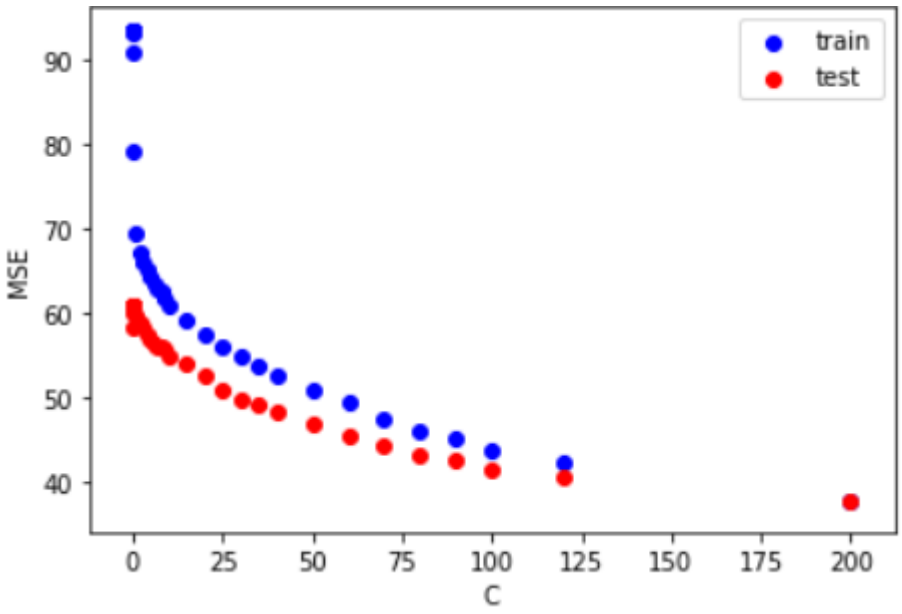


Sigmas = [1,10,20,30,100,1000,2000,3000,4000,5000] :

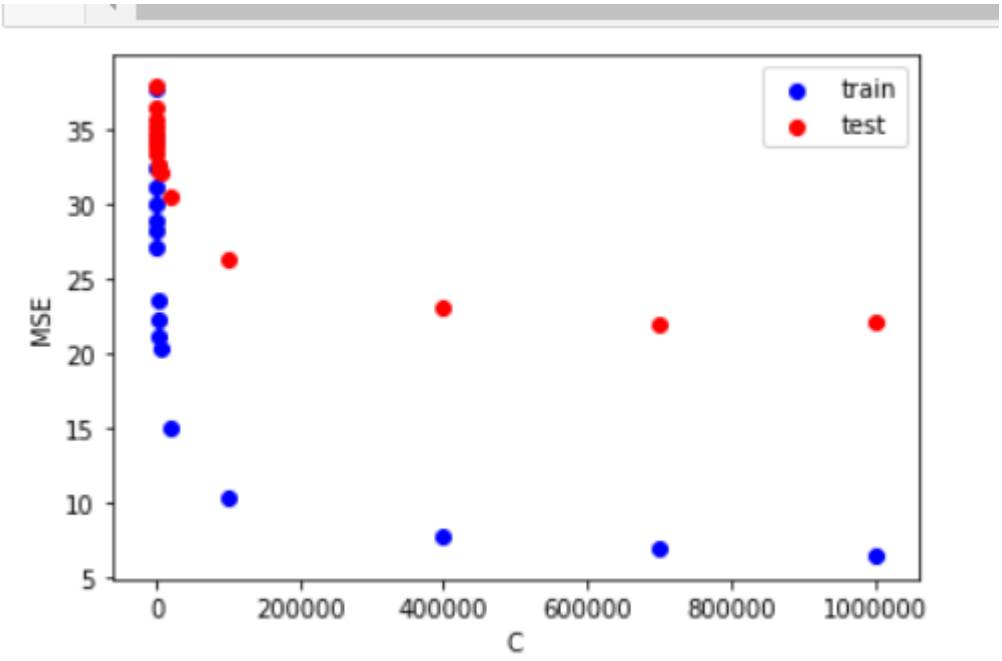


Varying C for sklearn's SVR:

Cs = [0.00000000000000000001 , 0.0000000000000001 ,0.000000000001,0.0000000001,0.00000001,0.000001,0.0001,0.001,0.01,0.1,1,2,3,4,5,6,7,8,9,10,15, 20,25,30,35,40,50,60,70,80,90,100,120,200]



Cs = [200,300,400,500,600,700,800,1000,2000,3000,4000,5000,20000,100000,400000,700000,1000000]


train
test
MSE
C
35
30
25
20
15
10
5
0
200000
400000
600000
800000
1000000