

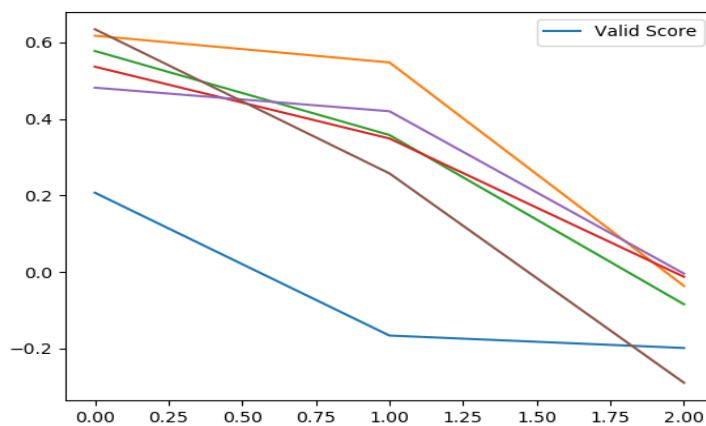
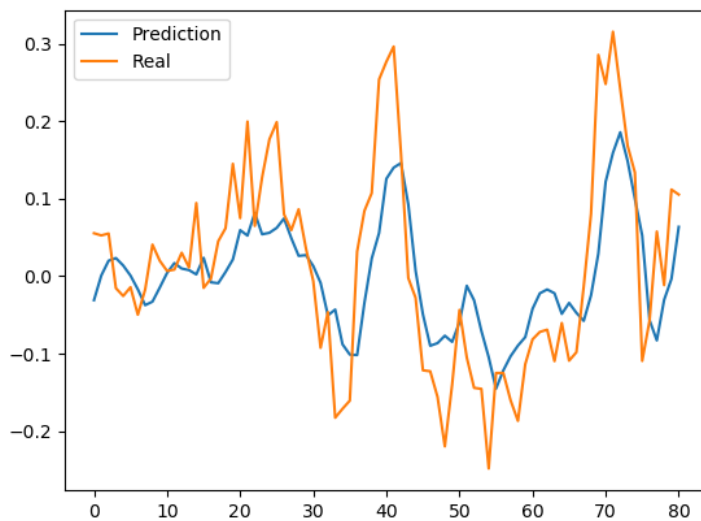
HOMEWORK-5

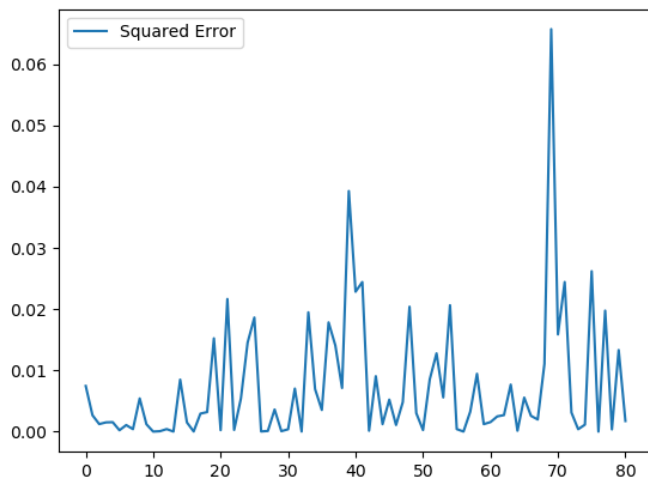
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OCTOBER-20, 2020

1. Linear Ridge Regression

we imported Ridge package from sklearn in order to train the predictor with 20% of the training data and given Y value. We kind of did this test for the rest of data and calculate mean square error of the prediction and repeat for the reasonable range of Y. we obtained below result as per the instruction given.

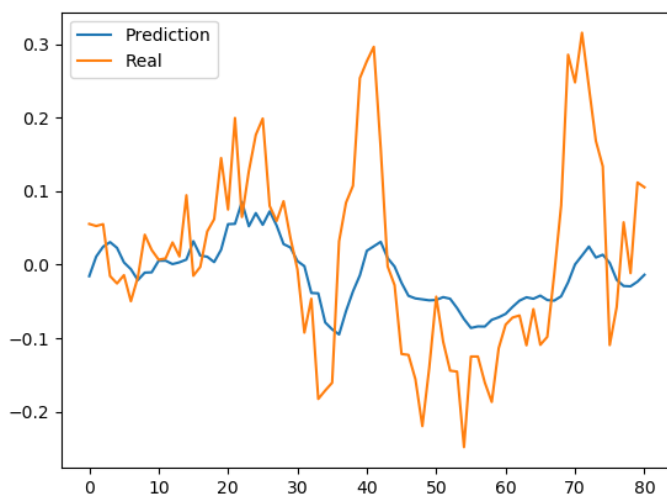


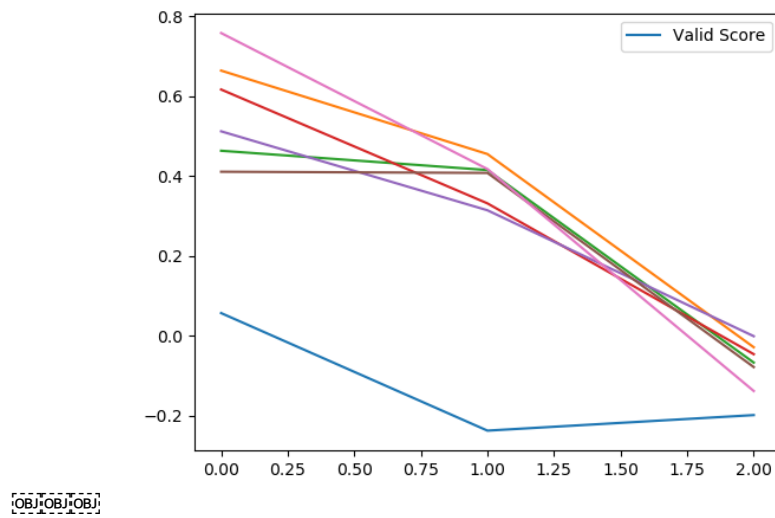


Valid score is [[0.20723976 0.61781108 0.57784609 0.53676237 0.48191075 0.63461671]
 [-0.1662228 0.54784619 0.35817135 0.34903504 0.42029824 0.2578131]
 [-0.19870604 -0.03653737 -0.08438979 -0.01259933 -0.00426959 -0.2896851]]

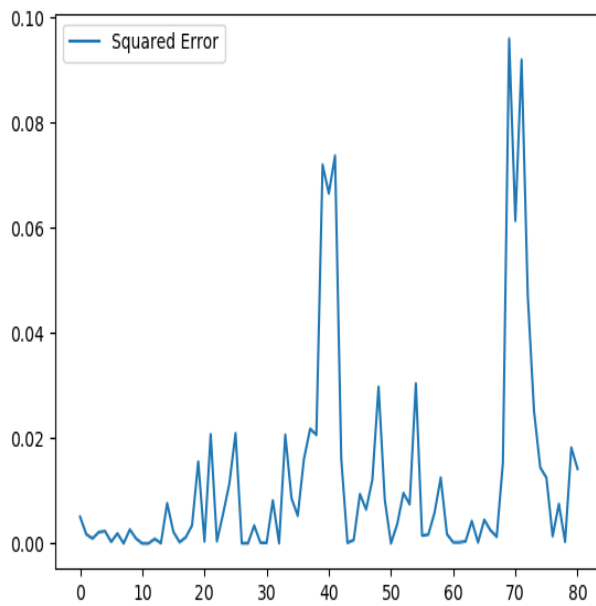
2. Support Vector Regression

Similarly, we import SVR from the sklearn package and obtained following results by setting $C=1.5$, $\epsilon=0.2$.





[[0.05687093 0.66343617 0.46295442 0.61609925 0.5115638 0.41043479



Valid score is

[[0.05687093 0.66343617 0.46295442 0.61609925 0.5115638 0.41043479

0.75737767]

[-0.23718432 0.45468578 0.41465187 0.33129524 0.31402601 0.40746438

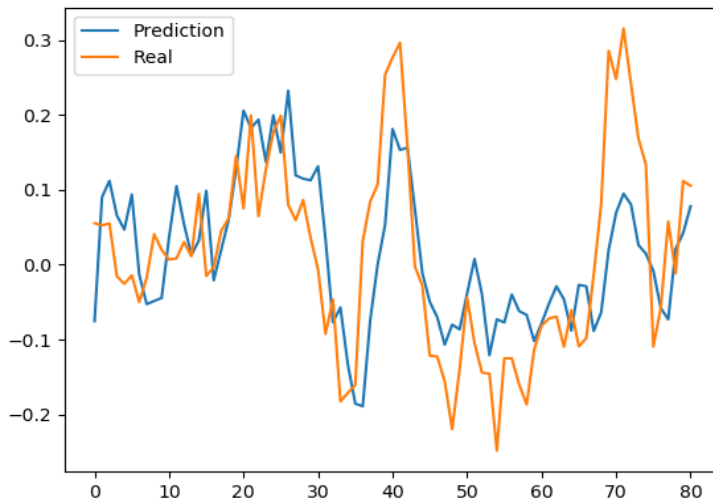
0.41716113]

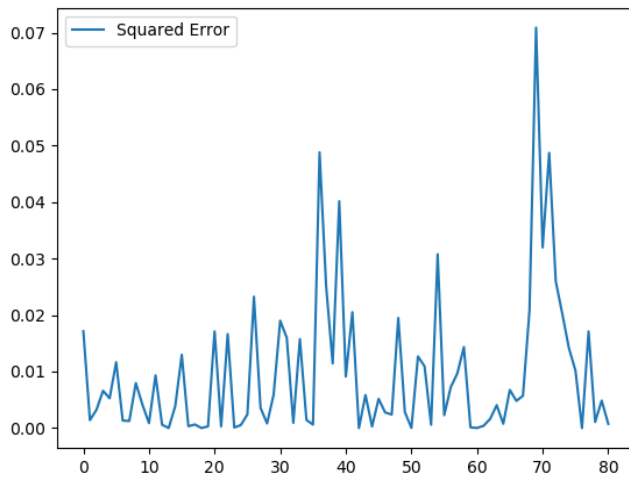
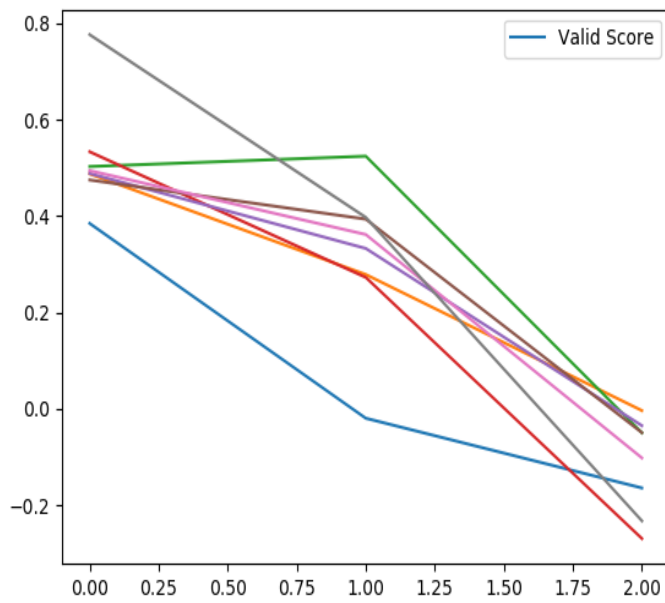
[-0.19827627 -0.0286132 -0.0669688 -0.04595645 -0.00096571 -0.07818464

-0.13806439]]

3. NU-SVR

We again import nu-svr from sklearn and did similar process to data then obtained following results by setting $C=1.5$ and $\epsilon=0.2$.





Valid score is

```
[[ 0.38461902  0.48733864  0.50253347  0.53323334  0.48814223  0.47468523
   0.49414706  0.77624329]
 [-0.01968677  0.27856525  0.52401483  0.27251562  0.33260764  0.39342236
   0.36150623  0.39709262]
 [-0.16434209 -0.00380394 -0.04993674 -0.26934031 -0.03512401 -0.04964332
  -0.10210366 -0.23267931]]
```

Discussion of result

We see in the graph that in SVR and NU-SVR support vector only influence model which is number of support vectors cannot be controlled in SVR and number of support vector is controlled by NU in NU-SVR. We see in ridge regression generally all data influence model.