

Final

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Solution to Problem (1):

Looking at the hyper-parameters I can see that we have a very low value of C which means that the SVM will have more flexibility on misclassified points within the dataset. My epsilon value came out to 0.0 which points to the fact that our algorithm may have been subject to overfitting. My gamma value was 2.0 which points to a lot of bias and low variance in our data. In this model we accepted a lot of misclassified points into our solution. Given the extremely low C and our epsilon being 0, there is a clear correlation to low C and low epsilon. This point combined with the high gamma and the extremely high training and testing scores, around .9999, lead me to believe that this algorithm implemented on our data set led to extreme overfitting in this example.

Solution to Problem (2):

Looking at the hyper-parameters for the digits dataset I can see that we got a much higher value of C which came out to 4096 which means that this time our algorithm allowed much less flexibility on misclassified points. My epsilon value came out to 2.5, this is fairly large and could be attributed to our bad results of our training and testing scores, around .34 and .32 respectively. My gamma value was .25 this shows that there was a lot less bias and a lot more variance this time around. The relationship between C and epsilon is shown in this example as well with the much higher C and the much higher epsilon. My score came out very low, as stated previously, this shows that regression may not have been the best method to learn from the data.