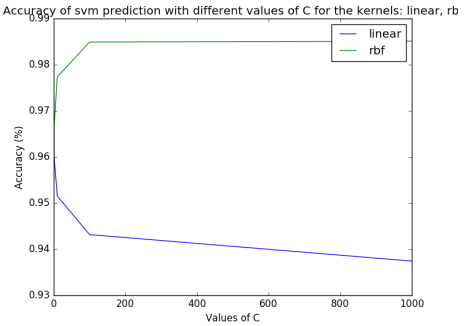
Robert Werthman
CSCI 5622
Homework 3: SVM

1. **Different values of C and two kernels**
   I used 5 different values of regularization parameter C: 0.1, 1, 10, 100, 1000. I used two different kernels: linear and radial basis function. For each kernel I used all five values of C. I determined the accuracy for each value of C and kernel by using 3-fold cross validation with just the original training set given in the sample driver. The accuracyfor each value of C and kernel is the mean of the accuracies for all of the cross validation folds.

   As can be seen in the figure below, the radial basis function kernel did better than the linear kernel for all values of C. Increasing values of C increased the accuracy of the radial basis function kernel and decreased the accuracy of the linear kernel.



2. **Examples of support vectors for each class**
   Support vectors for each class should look similar to what that actual class should look like. Support vectors for the 3's class should look like 3's and support vectors for the 8's class should look like 8's.

   Three example support vectors for the 3's class:

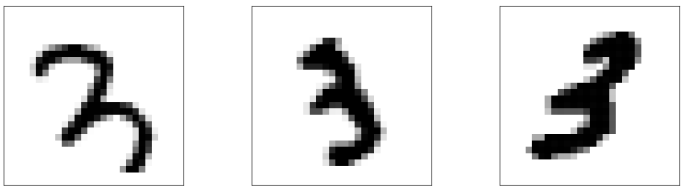


Figure 1: 3's support vectors

   Three example support vectors for the 8's class:

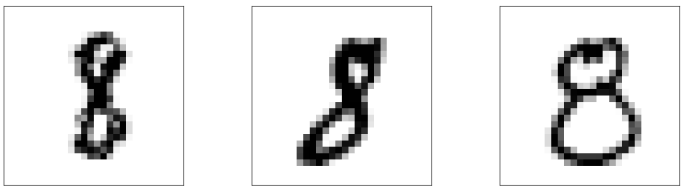


Figure 2: 8's support vectors