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Final

Problem 1

The user-defined penalty parameter is denoted by C. When C is large, there is a greater penalty to to violating the margin. Judging from problem 2, the higher the CV score the better. Then since the best CV score was given by the highest C value, I would say that the penalty for this problem is not great. For gamma that is the same, for every changing C, there is a change in the CV score, therefore there is no room for error without penalty. Considering that epsilon remained at 0.0 for the entire trial as C changed, no relationship between epsilon and C can be concluded.

Owners-MBP:ngo-final Helen$ python3 final.SVM.sinc.py

C 0.03125, epsilon 0.0, gamma 3.0517578125e-05. Testing set CV score: -0.405704

C 0.03125, epsilon 0.0, gamma 0.03125. Testing set CV score: -0.324806

C 0.03125, epsilon 0.0, gamma 2.0. Testing set CV score: -0.013879

C 0.125, epsilon 0.0, gamma 2.0. Testing set CV score: 0.071889

C 0.5, epsilon 0.0, gamma 2.0. Testing set CV score: 0.101407

\*......

Warning: using -h 0 may be faster

\*

optimization finished, #iter = 6917

obj = -1.309815, rho = -0.035705

nSV = 825, nBSV = 143

[LibSVM]Training set score: 0.999978

Testing set score: 0.999845

Segmentation fault: 11

Problem 2

BEST! -> C 256.0, epsilon 1.5, gamma 0.0625. Testing set CV score: 0.335932

For C greater than 64 there was a greater penalty as C increase. For hyper-parameters before

C 64.0, epsilon 1.1, gamma 0.125. Testing set CV score: 0.334643

there was a new best CV score for each set of C and epsilon, but new best CV scores were rare for set of C and epsilon values greater than and equal to 64 and 1.1 respectively. The final training and testing scores were:

Training set score: 0.343739

Testing set score: 0.325071

There was the following error; a plot was not produced:

//anaconda/lib/python3.5/site-packages/matplotlib/tight\_layout.py:222: UserWarning: tight\_layout : falling back to Agg renderer

warnings.warn("tight\_layout : falling back to Agg renderer")