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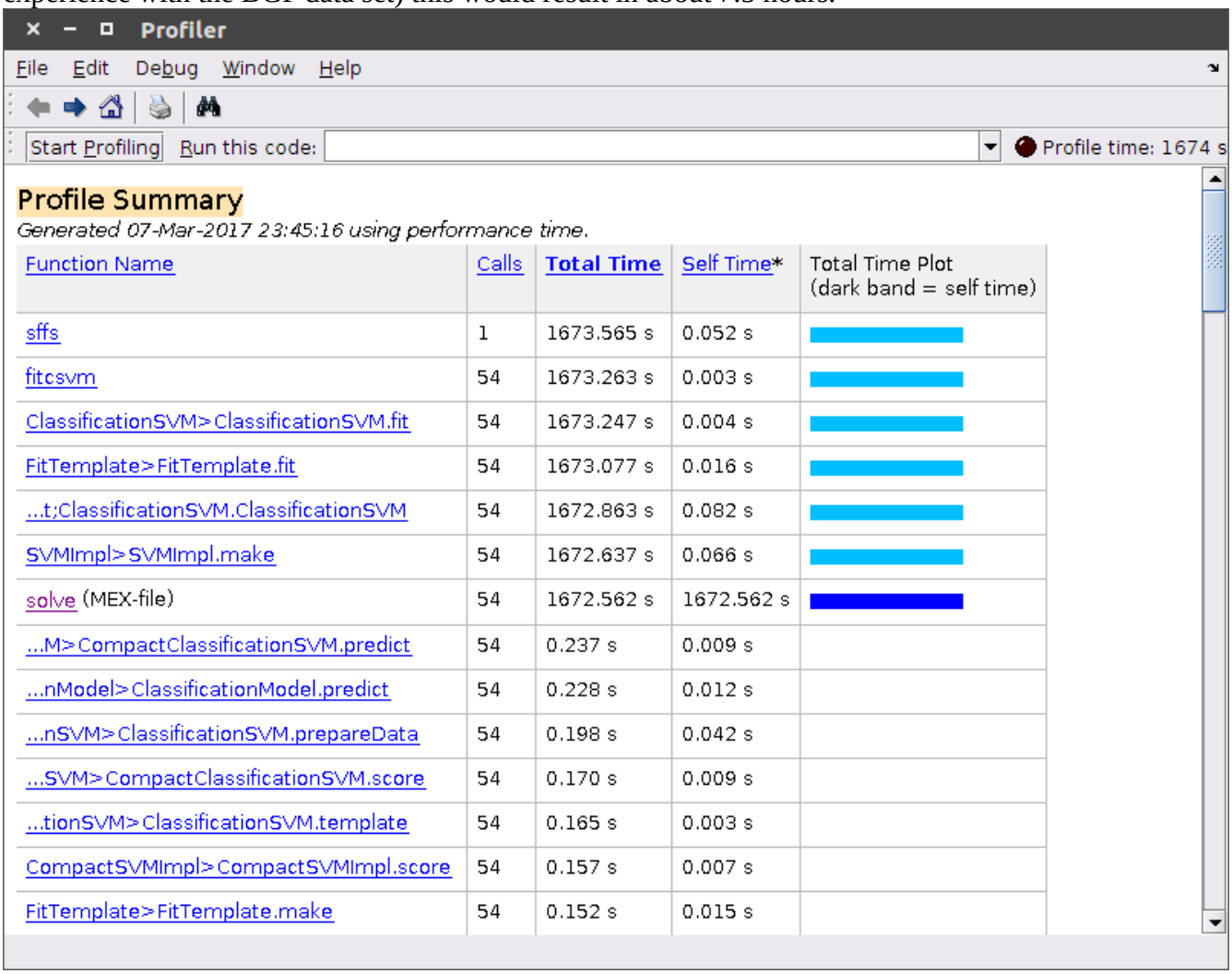
Supervised Learning
HW 2 Report

Listed below are the results from running the sequential forward floating selection algorithm implemented in the provided Matlab code. Note that this is only for the BGP data sets provided. Multiple attempts were made to run this algorithm on the LBP data set. The resulting computation was infeasible due to the time it took to train the svm on the data set. Below is a picture of the run time for one iteration of the SFFS algorithm which comes out to a little under thirty minutes an iteration. If we assume it takes 14 iterations to reach a point in which the accuracy doesn't improve (such as the experience with the BGP data set) this would result in about 7.5 hours.



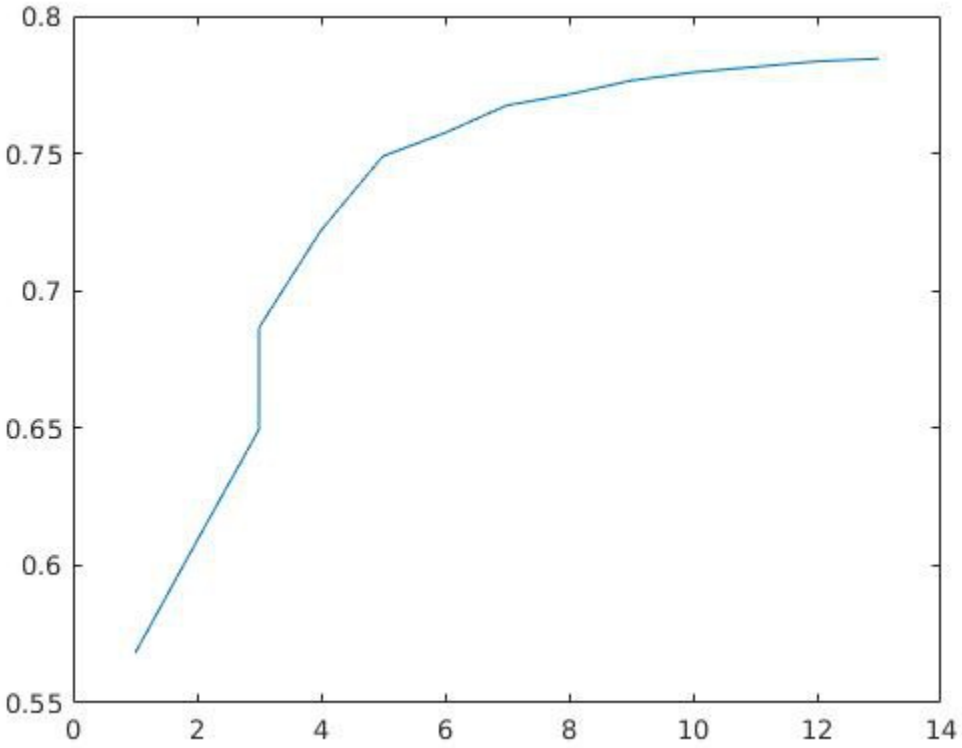
Profile Summary

Generated 07-Mar-2017 23:45:16 using performance time.

Function Name	Calls	Total Time	Self Time*	Total Time Plot (dark band = self time)
sffs	1	1673.565 s	0.052 s	
fitcsvm	54	1673.263 s	0.003 s	
ClassificationSVM>ClassificationSVM.fit	54	1673.247 s	0.004 s	
FitTemplate>FitTemplate.fit	54	1673.077 s	0.016 s	
...t;ClassificationSVM.ClassificationSVM	54	1672.863 s	0.082 s	
SVMImpl>SVMImpl.make	54	1672.637 s	0.066 s	
solve (MEX-file)	54	1672.562 s	1672.562 s	
...M>CompactClassificationSVM.predict	54	0.237 s	0.009 s	
...nModel>ClassificationModel.predict	54	0.228 s	0.012 s	
...nSVM>ClassificationSVM.prepareData	54	0.198 s	0.042 s	
...SVM>CompactClassificationSVM.score	54	0.170 s	0.009 s	
...tionSVM>ClassificationSVM.template	54	0.165 s	0.003 s	
CompactSVMImpl>CompactSVMImpl.score	54	0.157 s	0.007 s	
FitTemplate>FitTemplate.make	54	0.152 s	0.015 s	

Results

This is a graph of the number of selected features to the accuracy of the svm model. For the specific features selected at each iteration please see the log below.



The following are the logs of the accuracy of the model at each iteration and the specific features it selected.

After iteration 1 the max value of svm is at 0.568 with the following columns:
180

After iteration 2 the max value of svm is at 0.609 with the following columns:
180 52

After iteration 3 the max value of svm is at 0.6495 with the following columns:
180 52 74

After iteration 4 the max value of svm is at 0.6865 with the following columns:
52 74 182

After iteration 5 the max value of svm is at 0.722 with the following columns:
52 74 182 73

After iteration 6 the max value of svm is at 0.749 with the following columns:
52 74 182 73 53

After iteration 7 the max value of svm is at 0.7575 with the following columns:
52 74 182 73 53 89

After iteration 8 the max value of svm is at 0.7675 with the following columns:
52 74 182 73 53 89 143

After iteration 9 the max value of svm is at 0.7715 with the following columns:
52 74 182 73 53 89 143 81

After iteration 10 the max value of svm is at 0.7765 with the following columns:
52 74 182 73 53 89 143 81 58

After iteration 11 the max value of svm is at 0.7795 with the following columns:
52 74 182 73 53 89 143 81 58 153

After iteration 12 the max value of svm is at 0.7815 with the following columns:
52 74 182 73 53 89 143 81 58 153 62

After iteration 13 the max value of svm is at 0.7835 with the following columns:
52 74 182 73 53 89 143 81 58 153 62 34

After iteration 14 the max value of svm is at 0.7845 with the following columns:
52 74 182 73 53 89 143 81 58 153 62 34 19

After iteration 15 the max value of svm is at 0.7845 with the following columns:
52 74 182 73 53 89 143 81 58 153 62 34 19