Machine Learning 2013: Project 2 - SVM Report

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November 24, 2013

Experimental Protocol

Usage:
Download the csv files to /data/....csv (... = training, testing, validation)
Run svm.m
Results are in /data/....out (... = training, testing, validation)

1 Tools

- Matlab (code is in /code/ directory)
- Git / Github Repository [1]

2 Algorithm

For training the Support Vector Machine we used the *svmtrain*[2] function from the Statistics Toolbox of Matlab. And for classification of new data we used *svmclassify*[3], which is also a function of the Statistics Toolbox.

3 Features

4 Parameters

The support vector machine with the Gaussian Radial Basis Function as kernel, takes 2 parameters: The box constraint C for the soft margin, and a scaling factor σ.
To find the optimal values for these parameters we first used Grid search, to narrow down the range to

[1] https://github.com/lukaselmer/ethz-machine-learning
[2] http://www.mathworks.ch/ch/help/stats/svmtrain.html
[3] http://www.mathworks.ch/ch/help/stats/svmclassify.html

$\sigma \in [0.5, 0.6]$ and $C \in [1, 1.2]$.
Second, we randomly search in these ranges for the best values which resulted in following values:

- $\sigma = 0.556201641$
- $C = 1.316157273$

5 Lessons Learned