

Machine Learning - Exercise 2

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Implementation details

- *Hyper parameters:*

Learning Rate η :

The way I chose it is by making a function *choose_learning_rate*, which gets (min, max) learning rates values, and N number of values to try, and in a logarithmic interval from min to max containing N values of eta, try to train the module on this eta. the function picks the eta which gives the highest success percentage on the validation set.

I set the function to run on (min eta = 0.000001, max eta = 100), in N = 20 different values of eta [0.000001, 0.000002, 0.000004, 0.000008, ..., 25, 50, 100]

but overall it seems to have no big difference on the results.

The best learning rate on each algorithm for me, was found to be:

{perceptron : 0.0125, svm : 0.0008}

Regularization parameter λ

The way I choose the Regularization parameter for svm algorithm, was to try manually different values until i found the one that stays on high result.

the value is $\lambda = 2$

Number of epochs :

The way i choose this parameter for each algorithm is by adding a print line of the error percentage after each epoch. i raised and decreased the value of the number of epochs, and watched it converged at some point. i took this value and add 5 rounds just in case. so the values are:

{perceptron: 15, svm: 20, pa:20}