Deep Learning Lab - Assignment 1

November 19, 2017

Before We Start

In order to use Tensorflow on your personal computer, the recommended method is to install Anaconda (https://www.anaconda.com/download), Anaconda is a Python distribution that already includes libraries such as Numpy, Matplotlib and Jupyter (this way you won't have to install them manually). Next, you should install Tensorflow (https://www.tensorflow.org/install/). If all went well you should be able to run a jupyter notebook in the path of your project by first nevigating to that folder in cmd/terminal, and then running "jupyter notebook".

Down To Business

In class we have seen several models: Perceptron, Logistic Regression and Multi Layered Perceptron (or Neural Nets). You already have the code for Logistic Regression in the slides, your assignment is to use this code to implement a Multi Layered Perceptron. Your model should have **at least** 1 hidden layer.

The goal of this assignment is to get you acquainted with neural nets, Tensorflow, and the process of optimizing a model for a certain task. More specifically, you should implement 3 different neural networks and write a report in pdf format. In your report you should write the hyper-parameters you used in each of the 3 neural networks and their metrics:

1. the model architecture (amount of layers, size of layers)
2. the learning rate
3. the optimization algorithm (sgd, adam, etc)
4. the loss function
5. the batch size
6. the amount of epochs
7. the activation functions
8. regularization/dropout
9. a plot of training loss and validation loss (to check for overfitting)
10. a plot of training accuracy and validation accuracy (to check for overfitting)