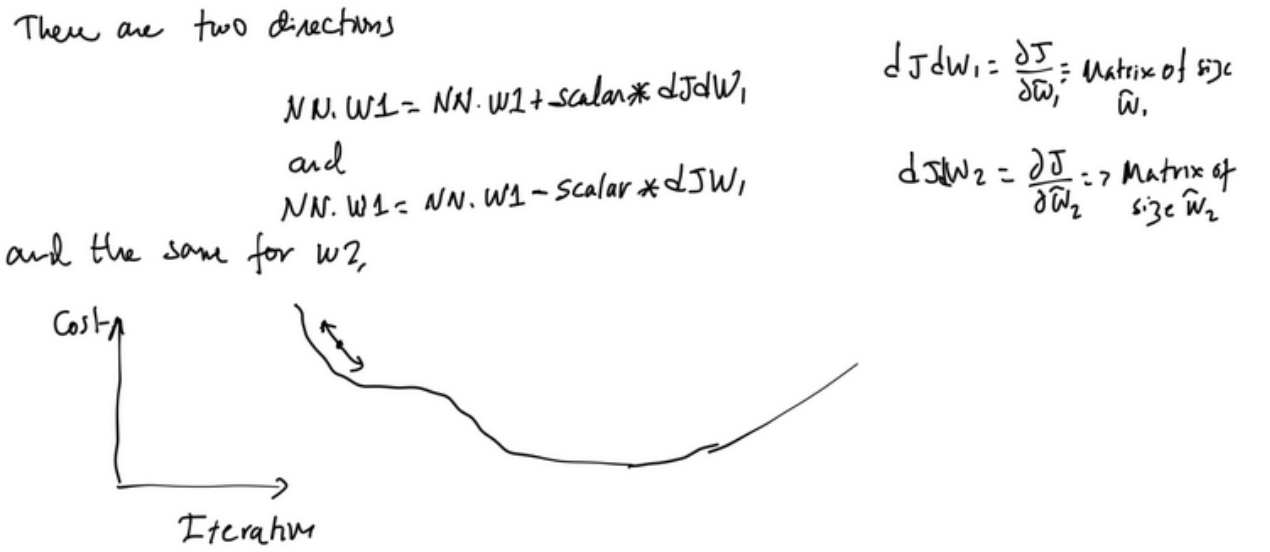
Homework #1 CogSci 131
Due June10th at 11:59PM
Neural Nets
Total number of points 100.

Instructions

Please submit a working jupyter notebook with the solution to the questions below. Do not use someone else's work; all code has to be your own. Use the NeuralNet.ipynb script provided in the modules section. You can submit a pdf file in addition to your ipynb file, or use the markdown language.

1. **Minimize the Cost.** (700 points)

Using the example found in neural nets demystified and in the script provided, write a program that minimizes the cost function to a given accuracy set in advance by you. Please do not get stuck in the meaning of accuracy. This simply means a given threshold that is reasonable and you think your program could reach, for example 0.1% of the target. Notice that the program does part of the job for



you. In this case there are two directions:

Plot the cost vs iteration and see if you get a similar figure to the one I am showing above. Scalar is a parameter that allows to change the step of the iteration. Some people call this the learning rate for some mysterious reason.

2) (30 points) Write a small essay of less than a page in length about the advantages and disadvantages of using a neural network to represent neuronal communication. Please review you notes on the lectures on the nervous system.