Reading Assignment

Read about perceptrons here, pages 77-92:


The “pocket” algorithm, which will you will use in the implementation part, is described on pages 90-92 and on the next page.

The Matlab code to which I refer on the next page is located here:

http://www.cs.hmc.edu/courses/2012/fall/cs152/perceptron_start.zip

You may use my code, or implement your own perceptron from scratch. My top-level script is perceptron_examples.
Implementation

- Extend the Matlab perceptron code that I provide, or your own, by implementing a "pocket" algorithm option.

- The idea is really simple. Although a neural network is not guaranteed to converge during training, the pocket option records the "best" weights (e.g. fewest errors) over one epoch (cycle through all samples) encountered during training and supplies that weight vector as the output, rather than the final vector.

- After testing your implementation on the xor, xnor, and parity, try it on the larger iris (3 examples), housing, and perceptron data sets that are included with the matlab code.

Report

- You will need to experiment with the learning rate and limit number of steps to get the best classifications with the perceptron.

- Report on the steps required and the % error for the given data sets, with and without the pocket feature. (Structure your code so that the feature can be turned off easily.)