Data mining (TIES445),
Homework 12.12.2007

Perform the following tasks using MATLAB Neural Networks toolbox and write a short report. Attach the critical parts of the codes and macros. Deadline for the report is 21.12.2007.

1. Using NN toolbox function build a single layer perceptron for the classification example presented in the lecture slides (Tan et al. Chapter 5. Classication: Alternative Techniques, slide 62). Set the weights and bias manually to the values given in the slide. Test the perceptron. (Function needed, e.g., newp, sim). The data can be loaded from file "binarysample.csv" and classes from "binaryclasses.csv".
    a. Get help from the Perceptrons part of the MATLAB neural network toolbox user guide (www.mathworks.com/access/helpdesk/help/toolbox/nnet/nnets_ug.html)!!
2. Do the same as in problem 1., but train the network using 'train' function. Try different values for initial weights and bias.
3. Study the Backpropagation part of the NN toolbox user guide. Load the Iris2.dat. Construct the class vector. Sample random 80% of the data for training and use the rest 20% for testing. Create a two-layer feedforward network object (newff), train the network, and test it with the test data. If you are not satisfied with the results, change the network structure (number of neurons or activation function etc.) and/or the initial weights and bias. Report your network architecture, the final initializations, and the results/errors for training and testing.