Neurocomputing: Fundamentals of Computational Neuroscience

Assignment 5 due October 31 in class (15 points)

Team up with <u>one</u> other student of the class.

1. Design and simulate a single layer mapping network that uses Hebbian learning to learn the letter recognition task of assignment1 and 2. Show the robustness of this network to noisy pattern. How many training steps are necessary?

2. Given are 2-dimensional data that are generated by `x=0.1*[x1+x2 ; x1-3*x2]`, where `x1=2*(rand-0.5)` and `x2=randn`. Use Oja's learning rule to find the first principal component (what is the value?). Plot a graph similar to figure 7.11B, and plot also a figure that shows the change of the magnitude of the weight vector during training.