ECE 455/555 / SYSC 575 – Neural Networks I

READING # 1:
Assigned: Monday, January 9, 2012
Complete by: Wednesday, January 11, 2012

Read/study the following material in the Haykin text book:
   Table of Contents
   Preface
   2nd edition: Chapter 1 (Introduction)
   3rd edition: Introduction, Chapter 1 (Rosenblatt’s Perceptron)

Notes:
   • Haykin includes many technical details and a few specific examples. You can skim over these (but may want to return to them later in the term). Focus on the getting the general, “big picture” ideas about neural networks. (In particular, don’t spend a lot of time on the directed graphs material.)
   • Likewise for the history section: Don’t worry about remembering all the names and dates, just get a general idea of the timeline and important milestones in the development of neural networks.
   • The 3rd edition has an expanded introduction (compared to the 2nd edition) that includes more discussion about the different types of learning. If you have the 2nd edition, you may wish to use the internet or other resources to understand the differences between supervised, unsupervised, and reinforcement learning.

If you don’t yet have the text, you can do your own research on the following topics (and if you do have the text, focus on these topics):
   • What is a neural network?
   • Benefits (and drawbacks) of neural networks
   • Diagram of real neuron (cell body, dendrites, axon, synapses)
   • Diagram of artificial (model) neuron
   • Network architectures
   • Knowledge representation
   • Prior information
   • Learning methods
   • Learning tasks