

Assignment #5: Artificial Neural Networks
Due Date: October 9, 2008

Goal for this assignment: demonstrate your understanding of what artificial neural networks are, and how they work by either describing them and how they work, or exploring their characteristics via simulation.

For this assignment answer either A or B (not both!).

A) What are the basic components of a connectionist model? How are these components similar to and different from a neuron? How does the PDP perspective differ from the classic view of the human information processor (i.e., the Levelt (1989) chapter)?

-OR-

I strongly recommend consulting with me before deciding to pursue option B!

B) Use tLearn, MATLAB, or some other program (there are many “canned” simulators available on the web) to implement a neural network(s) that will solve the LOGICAL-AND, the LOGICAL-OR, and the EXCLUSIVE-OR problems. *What is different (if anything) about the networks that can and cannot solve the EXCLUSIVE-OR problem?*

If you select this option you will need to provide a report similar to those seen in the reporting of experiments (i.e., sections for an introduction, methods, results, and discussion). This report should include among other things: (1) a printout or a drawing of the architecture of the model, (2) a verbal description of the architecture of the model (including a description of the input and the learning algorithm that was used), (3) a report of how much training was required for the network to learn the task, and (4) a report of the setting for each parameter.

Your paper should be typed, with 1-inch margins all around, and 12 point font size. You are welcome (and encouraged) to submit your answer via e-mail instead of handing in a paper copy; electronic copies/attachments should be saved in RICH-TEXT-FORMAT **only**. Alternatively you can cut-and-paste your answer into the body of your e-mail. Your full name and your KUID should appear in a header, or at the top of each page you submit.