

**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.