Neural Network Simulation Assignment

Psychology 465A

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In this assignment you will implement an elementary neural network and train it to perform the XOR problem without error. Then you will increase the number of hidden units and train the new network. Your first network should have a 2-element input layer, a one-element output layer and a two-element hidden layer. The second network should have the same input and output layers but should have a 4-element hidden layer. Use the delta rule to train your networks. Use a permuted sequence of training trials, i.e., the four possible inputs in various random orders.

Describe the results of this exercise in 2 double-spaced pages or less (graphs ok) and submit along with the results of your simulations and a printout of your program. Include a discussion of the effects of varying the number of hidden units on the learning rate. Also provide a list or table of the final weights of the various synapses for the two networks and discuss the differences and similarities between the two networks in terms of this table. This assignment is worth 20% of the term mark.