CS 180: Introduction to Artificial Intelligence
Artificial Neural Network

Deadline: 20 March 2014

Consider a three-layer fully-connected artificial neural network, with five hidden nodes ($hidden_i$) and one output node (out). Let the following values be the initial weights of the network, $i \in \{1, 2, 3, 4, 5\}, j \in \{1, 2, ..., \#offeatures\}$.

$$w_{input_j, hidden_i} = \begin{cases} 0.2 & \text{if j and i are both odd} \\ 0.3 & \text{if i is even and j is odd} \\ 0.5 & \text{if i is odd and j is even} \\ 0.25 & \text{if j and i are both even} \end{cases}$$

$$w_{hidden_i, out} = \begin{cases} 0.7 & \text{if i} \leq 2 \\ 0.5 & \text{otherwise} \end{cases}$$

Perform the backpropagation algorithm to update the values of the weights given the training instance below.

$$X = [1, 2, 3, 4, 5]$$
$$target(X) = 0.5$$