Neural Networks I
G. Lendaris
October 18, 1999

ASSIGNMENT II: DUE: November 1, 1999

Overview

In this assignment you will implement a simulator for a simple feed-forward neural network. The network will have one input neuron, one hidden layer containing 2-5 neurons and a single output neuron. (see figure)

The network will be trained using the backpropagation algorithm (generalized Δ-rule) on the data set provided.

Simulator Details

The simulator may be implemented in the programming language of your choice.

The transfer function used must be differentiable, so the log sigmoid function is recommended:

\[ f(x) = \frac{1}{1 + e^{-x}} \]

\[ f'(x) = \frac{d}{dx} \left( \frac{1}{1 + e^{-x}} \right) = \frac{e^{-x}}{(1 + e^{-x})^2} = (1 - \frac{1}{1 + e^{-x}})(\frac{1}{1 + e^{-x}}) = (1 - f(x))f(x) \]