- Apply inputs to the network, here subscript p is used as the pattern index.

$$x_p = (x_{p1}, x_{p2}, ..., x_{pn})^t$$

- Calculate, the inputs to the hidden layer units (see figure 1)

$$net^h_{pj} = \sum_{i=1}^{N} w^h_{ji} x_{pi} + \Theta^h_j$$

- Calculate the outputs of the hidden layer units.

$$i_{pj} = f^h_j(net^h_{pj})$$

- Calculate the inputs to each output layer unit

$$net^o_{pk} = \sum_{j=1}^{L} w^o_{kj} x_{pj} + \Theta^o_k$$

- Calculate output

$$o_{pk} = f^o_k(net^o_{pk})$$

- Calculate the error terms for the output units

$$\delta^o_{pk} = (y_{pk} - o_{pk}) f^{o'}_k(net^o_{pk})$$

- Calculate the error terms for the hidden layer units

$$\delta^h_{pj} = f^{h'}_j(net^h_{pj}) \sum_k \delta^o_{pk} w^o_{pk}$$

  Error terms on the hidden layer units are calculated before updating the connection weights to the output layer units.

- Calculate the weight updated between the output-hidden layer units

$$w^o_{kj}(t+1) = w^o_{kj}(t) + \eta \delta^o_{pk} i_{pj}$$

- Calculate the weight updates between the hidden-input layer units

$$w^h_{ji}(t+1) = w^h_{ji}(t) + \eta \delta^h_{pj} x_i$$

The error term is calculated as :

$$E_p = \frac{1}{2} \sum_{k=1}^{M} \delta^2_{pk}$$

In the procedure above, i is used as an index for the input layer units, j as an index for the hidden layer units and k as an index over the output layer units.