**Phase 1: Propagation**

Each propagation involves the following steps:

Step 1. Forward propagation of a training pattern's input through the neural network in order to generate the propagation's output activations.

Step 2. Backward propagation of the propagation's output activations through the neural network using the training pattern target in order to generate the deltas (the difference between the targeted and actual output values) of all output and hidden neurons.

**Phase 2: Weight update**

For each weight synapse follow the following steps:

Step 1. Multiply output delta and input activation based on the dimension of the neuron to get the gradient of the weight.

Step 2. Denote m input values.

Step 3. Initialize each of the m inputs (synapses) with a weight w1, w2, ...,

Step 4. The input values are multiplied by their weights and summed.

Step 5. The output is some function y = f(v) of the weighted sum.

Step 6. The output of a neuron (y) is a function of the weighted sum.

Step 7. Apply activation function.

Step 8. Subtract a ratio (percentage) from the gradient of the weight.

Repeat phase 1 and 2 until the performance of the network is satisfactory.