



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Coimbatore – 35.



DEPARTMENT OF BIOMEDICAL ENGINEERING

UNIT 4

PERCEPTRON

Algorithm:

Step 0. Initialize weights and bias.

(For simplicity, set weights and bias to zero.) Set learning rate.

Step 1. While stopping condition is false, do Steps 2-6.

Step 2. For each training pair $s:t$, do Steps 3-5.

Step 3. Set activations of input units:

$$x_i = s_i$$

Step 4. Compute response of output unit

$$y_{in} = b + \sum_i x_i w_i;$$

$$y = \begin{cases} 1 & \text{if } y_{in} > \theta \\ 0 & \text{if } -\theta \leq y_{in} \leq \theta \\ -1 & \text{if } y_{in} < -\theta \end{cases} ;$$

Step 5. Update weights and bias if an error occurred for this pattern.

$$y \neq t$$

$$w_i(\text{new}) = w_i(\text{old}) + \alpha t x_i$$

$$b(\text{new}) = b(\text{old}) + \alpha t$$

else

$$w_i(\text{new}) = w_i(\text{old})$$

$$b(\text{new}) = b(\text{old})$$

Step 6. Test stopping condition.

If no weights changed in Step 2, stop; else, continue.

Example

A Perceptron for the **AND** function: bipolar inputs and targets