

# Hebbian Learning

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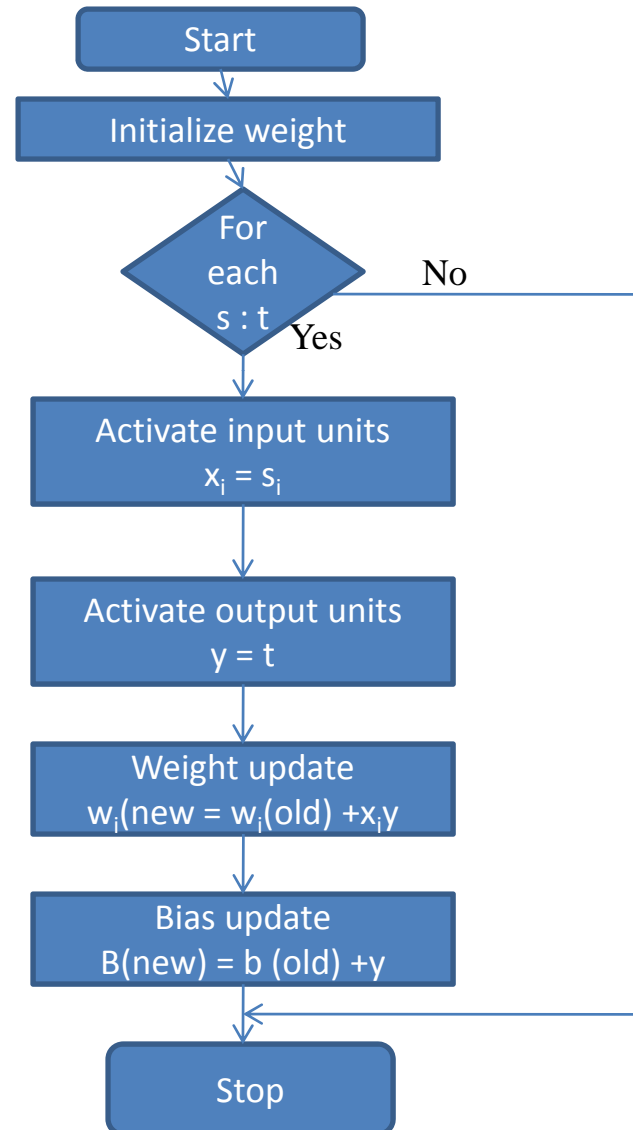
- When axon of cell A is near enough to excite cell B and firing takes place repeatedly, then some metabolic or changes takes place in one or both cell , such that A's efficiency is increased.
- Hebb proposed a rule based on correlative weight adjustment.
- According to the Hebb rule, the weight vector is found to increase proportionately to the product of the input and learning signal(neuron's output).
- In Hebb learning, if two interconnected neurons are 'on' simultaneously then the weight associated with these neurons can be increased by the modification made in their synaptic strength. The weight update is given by:

i.e. 
$$w_i(\text{new}) = w_i(\text{old}) + x_i y$$

- Hebb rule is more suited for bipolar data.

# Flow chart of Hebb training Algo

- Let  $s:t$  refers to each training input and target output pair.



# Popular neural systems

- ADALINE ( Adaptive Linear Neural Element)
- ART (Adaptive Resonance Theory)
- AM ( Associative Memory)
- BAM ( Bidirectional Associative Memory)
- Boltzmann machines
- BSB (Brain – State-in-a-Box)
- Cauchy machines
- Hopfield Network
- LVQ ( Learning Vector Quantization)
- Neoconition
- Perceptron
- RBF (Radial Basis Function)
- SOFM (Self –organizing Feature Map)