Part 2

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Course Outline

Perceptron Training Phase

Note1

Note 2

Note 3

Perceptron Training Phase

In phase training of Perceptron, it is a supervised learning algorithm, where weights are adjusted to minimize error when ever the output does not match the desired output.

- First note
- Second note
- Third note

- "If the output is correct then no adjustment of weights is done".
- "If the output is 1 but should have been 0 then the weights are decreased on the active input link".
- "If the output is 0 but should have been 1 then the weights are increased on the active input link".

Prove the following phrases :

"If the output is correct then no adjustment of weights is done"

First Case :

Output = $O_{actual} = 0$

Target = $O_{desired} = 0$

$E = O_{desired} - O_{actual} = (0-0) = 0$

Adjust the weights

$W_{ij\ new} = W_{ijold} + \eta\ (O_{desired} - O_{actual})\ X_i$

$W_{ij\ new} = W_{ijold} + \eta\ E\ X_i$

$W_{ij\ new} = W_{ijold} + \eta\ *0*\ X_i$

$W_{ij\ new} = W_{ijold}$

"If the output is correct then no adjustment of weights is done"

Second Case :

Output = $O_{actual} = 1$

Target = $O_{desired} = 1$

$E = O_{desired} - O_{actual} = (1-1) = 0$

Adjust the weights

$W_{ij\ new} = W_{ijold} + \eta\ (O_{desired} - O_{actual})\ X_i$

$W_{ij\ new} = W_{ijold} + \eta\ E\ X_i$

$W_{ij\ new} = W_{ijold} + \eta\ *0*\ X_i$

$W_{ij\ new} = W_{ijold}$

Continue…

"If the output is 1 but should have been 0 then the weights are decreased on the active input link"

Output = $O_{actual} = 1$
Target = $O_{desired} = 0$

$E = O_{desired} - O_{actual} = (0-1) = -1$

Adjust the weights

$W_{ij\ new} = W_{ijold} + \eta\ (O_{desired} - O_{actual})\ X_i$
$W_{ij\ new} = W_{ijold} + \eta\ E\ X_i$
$W_{ij\ new} = W_{ijold} + \eta\ *-1*\ X_i$
$W_{ij\ new} = W_{ijold} - \eta\ *X_i$

"If the output is 0 but should have been 1 then the weights are increased on the active input link"

Output = $O_{actual} = 0$
Target = $O_{desired} = 1$

$E = O_{desired} - O_{actual} = (1-0) = +1$

Adjust the weights

$W_{ij\ new} = W_{ijold} + \eta\ (O_{desired} - O_{actual})\ X_i$
$W_{ij\ new} = W_{ijold} + \eta\ E\ X_i$
$W_{ij\ new} = W_{ijold} + \eta\ *\ 1*\ X_i$
$W_{ij\ new} = W_{ijold} + \eta\ *X_i$

Any Question?

Dear students.

Please, contact via Google Classroom