

①

AND GATE PERCEPTRON TRAINING RULE

A	B	$A \wedge B$
0	0	0
0	1	0
1	0	0
1	1	1

STEP 1

$w_1 = 1.2$, $w_2 = 0.6$, Threshold = 1
Learning Rate $\eta = 0.5$

1. $A=0$, $B=0$ and Target = 0

- $w_i \cdot x_i = (0 \times 1.2) + (0 \times 0.6) = 0$

- This is not greater than the threshold of 1, so the output is 0.

Now actual output and target is equal so we do not need to update the weights.

2. $A=0$, $B=1$, Target = 0

- $w_i \cdot x_i = (1.2 \times 0) + (0.6 \times 1) = 0.6$

- $w_i \cdot x_i$ is not greater than the

(2)

threshold of 1, so the output is 0.

- Now actual output and target is equal so we do not need to update the weights.

3. $A=1, B=0, \text{Target}=0$

$$\bullet w_i \cdot x_i = (1.2 \times 1) + (0.6 \times 0) = 1.2$$

- $w_i \cdot x_i$ is greater than the threshold of 1, so the output is 1.

- Now actual output and target is not equal, so we need to update the weights.

$$w_i = w_i + \eta(t - o)x_i$$

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 weight learning rate target actual output

$$w_1 = 1.2 + 0.5(0 - 1)(1) = 0.7$$

$$w_2 = 0.6 + (0.5)(0 - 1)(0) = 0.6$$

STEP 2

$w_1 = 0.7, w_2 = 0.6, \text{Threshold} = 1$
 Learning rate $\eta = 0.5$

③

1. $A=0, B=0, \text{Target}=0$

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- $w_i \cdot x_i = (0.7 \times 0) + (0.6 \times 0) = 0$
- This is not greater than threshold of 1, so the output = 0
- Now actual output and target are equal so we do not need to update the weights.

2. $A=0, B=1, \text{Target}=0$

- $w_i \cdot x_i = (0.7 \times 0) + (0.6 \times 1) = 0.6$
- $w_i \cdot x_i$ is not greater than threshold of 1 so the output is 0
- Now actual output and target are equal so we do not need to update the weights.

3. $A=1, B=0, \text{Target}=0$

- $w_i \cdot x_i = (0.7 \times 1) + (0.6 \times 0) = 0.7$
- This is not greater than the threshold of 1, so the output is 0.
- Now actual output and

④

target are equal so we do not need to update the weights.

4. $A=1$, $B=1$, $\text{Target}=1$

- $w_i \cdot x_i = (0.7 \times 1) + (0.6 \times 1) = 1.3$
- $w_i \cdot x_i$ is greater than the threshold of 1, so the output is 1
- Now actual output and target are equal so we do not need to update the weights.

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