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FA17-BCS-090-B

Solution

Calculated weighted sums of hidden nodes 3 & 4.

$$v_3 = w_{13}x_1 + w_{23}x_2, \quad v_4 = w_{14}x_1 + w_{24}x_2$$

Output

$$y_3 = \phi(v_3), \quad y_4 = \phi(v_4)$$

Weighted Sums of node 5 & 6

$$v_5 = w_{35}y_3 + w_{45}y_4, \quad v_6 = w_{36}y_3 + w_{46}y_4$$

Output

$$y_5 = \phi(v_5), \quad y_6 = \phi(v_6)$$

P_1: Input Pattern (0,0)

$v_3 = -2 \cdot 0 + 3 \cdot 0 = 0$, $y_3 = \phi(0) = 1$

$v_4 = 4 \cdot 0 - 1 \cdot 0 = 0$, $y_4 = \phi(0) = 1$

$v_5 = 1 \cdot 1 - 1 \cdot 1 = 0$, $y_5 = \phi(0) = 1$

$v_6 = -1 \cdot 1 + 1 \cdot 1 = 0$, $y_6 = \phi(0) = 1$

Output (1,1)

P_2: Input Pattern (1, 0)

$v_3 = -2 \cdot 1 + 3 \cdot 0 = -2$, $y_3 = \phi(-2) = 0$

$v_4 = 4 \cdot 1 - 1 \cdot 0 = 4$, $y_4 = \phi(4) = 1$

$v_5 = 1 \cdot 0 - 1 \cdot 1 = -1$, $y_5 = \phi(-1) = 0$

$v_6 = -1 \cdot 0 + 1 \cdot 1 = 1$, $y_6 = \phi(1) = 1$

Output (0, 1)

P_3: Input Pattern (0, 1)

$v_3 = -2 \cdot 0 + 3 \cdot 1 = 3$, $y_3 = \phi(3) = 1$

$v_4 = 4 \cdot 0 - 1 \cdot 1 = -1$, $y_4 = \phi(-1) = 0$

$v_5 = 1 \cdot 1 - 1 \cdot 0 = 1$, $y_5 = \phi(1) = 1$

$v_6 = -1 \cdot 1 + 1 \cdot 0 = -1$, $y_6 = \phi(-1) = 0$

Output (1, 0)

P_4: Input Pattern (1, 1)

$v_3 = -2 \cdot 1 + 3 \cdot 1 = 1$, $y_3 = \phi(1) = 1$

$v_4 = 4 \cdot 1 - 1 \cdot 1 = 3$, $y_4 = \phi(3) = 1$

$v_5 = 1 \cdot 1 - 1 \cdot 1 = 0$, $y_5 = \phi(0) = 1$

$v_6 = -1 \cdot 1 + 1 \cdot 1 = 0$, $y_6 = \phi(0) = 1$

Output (1, 1)