

Steps

Given w^1
1) Calculate w^2

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$$\text{output } 1 = w^{1T} x = 2.5$$

$$f(\text{net output } 1) = \frac{2}{1 + \exp(-\text{output } 1)} - 1 = 0.848$$

$$f'(\text{output } 1) = \frac{2 \exp(-\text{output } 1)}{[1 + \exp(-\text{output } 1)]^2} = \frac{1}{2} [1 - f(\text{out})^2] = 0.1402$$

$$w^2 = c(d_i - f(\text{output } 1)) f'(\text{output } 1) x_i + w^1 =$$

$$w^2 = [0.9741 \quad -1.0259 \quad -0.0259 \quad 0.4741]$$

2) Calculate w^3 $\text{output } 2 = w^{2T} x_2 = -2$

$$f(\text{output } 2) = \frac{2}{1 + \exp(-\text{output } 2)} - 1 = 0.7616$$

$$f'(output2) = \frac{1}{2} [1 - f(output2)^2] = 0.21$$

$$\omega^3 = c (d_2 - f(output2)) f'(output2) x_2 + \omega^2$$

$$\omega^3 = [0.9741 \quad -1.0214 \quad -0.0074 \quad 0.511]$$

3) Calculate ω^4

$$output^3 = \omega^{3T} x_3 = -2.5703$$

$$f(output3) = \frac{2}{1 + \exp(-output^3)} - 1 = -0.8578$$

$$f'(output3) = \frac{1}{2} [1 - f(output3)^2] = 0.1320$$

$$\omega^4 = c (d_3 - f(output3)) f'(output3) x_3 + \omega^3$$

$$\omega^4 = [0.9534 \quad -1.0607 \quad 0.0030 \quad 0.4903]$$