

2023-01-30-P2

$\rho = 1.0$

cap. saída \rightarrow f. act. lineal

cap. oculto \rightarrow f. act. sigmoid

$$X = (1, 0, 2)^T$$

$$g(x) = \frac{1}{1+e^{-x}} \quad g'(x) = x(1-x)$$

$$t = (-1, 1, -2)^T$$

$$\Theta_1^1 = [1, -1.5, -1, 0.5]$$

$$S_1^1 = 0.622$$

$$\Theta_2^1 = [-2, 1, 1, -0.5]$$

$$S_2^1 = 0.119$$

$$\Theta_1^2 = [0.5, -1.5, 1]$$

$$S_1^2 = -0.3145$$

$$\Theta_2^2 = [-1, 0.5, 1]$$

$$S_2^2 = 1.4304$$

$$\Theta_3^2 = [-0.5, -0.5, -1]$$

$$S_3^2 = -0.9304$$

$$\delta_1^2 = (-1 + 0.3145) \cdot 1 = (-1, 3145) = -0.6855$$

$$\delta_2^2 = (1 - 1.4304) \cdot 1 = -0.4304$$

$$\delta_3^2 = (-2 + 0.9304) \cdot 1 = (-2, 9304) = -1.0696$$

$$\delta_1^1 = (\delta_1^2 \Theta_{1,1}^2 + \delta_2^2 \Theta_{2,1}^2 + \delta_3^2 \Theta_{3,1}^2) S_1^1 (1 - S_1^1) = (-0.6855 \cdot 0.622 + -0.4304 \cdot 0.119 + -1.0696 \cdot 0.3) \cdot 0.622(1 - 0.622)$$

$$\delta_1^1 = (-0.56) \cdot 0.3169$$

$$\delta_2^1 = (\delta_1^2 \Theta_{1,2}^2 + \delta_2^2 \Theta_{2,2}^2 + \delta_3^2 \Theta_{3,2}^2) \cdot S_2^1 (1 - S_2^1) =$$

$$= (-0.6855 \cdot 1 + -0.4304 \cdot 1 + -1.0696 \cdot 1) \cdot 0.119(1 - 0.119) =$$

$$= -0.00485$$

$$\Theta_{3,2}^2 = \Theta_{3,2}^2 + \rho \delta_3^2 S_2^1 = -1 + 1 \cdot -1.0696 \cdot 0.119 = -1.1272824$$

$$\Theta_{2,3}^1 = \Theta_{2,3}^1 + \rho \delta_2^1 X_3 = -0.5 + 1 \cdot -0.00485 \cdot 2 = -0.5097$$