2021_02-03_T2

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

$\rho = 1.0$

$x = (-1, -1) \quad , \quad t = (1, 0)$

$\Theta_1^1 = [1, -1, -1] \quad \Theta_1^2 = [1, -1] \quad \Theta_2^2 = [1, -1]$

Notación extendida 1.0 $\quad x = (1, -1, -1)$

capa oculta: $\phi_1^1 = \Theta_1^1 \cdot x = 1 \cdot 1 + -1 \cdot -1 + -1 \cdot -1 = 3 \longrightarrow S_1^1 = \frac{1}{1+e^{-3}} = 0,9525$

capa salida: $\phi_1^2 = \Theta_1^2 \cdot S_1^1 = 1 \cdot 1 + (-1) \cdot 0,9525 = 0,0475 \longrightarrow S_1^2 = \frac{1}{1+e^{-0,0475}} = 0,5118$

capa salida: $\phi_2^2 = \Theta_2^2 \cdot S_1^1 = 1 \cdot 1 + (-1) \cdot 0,9525 = 0,0475 \longrightarrow S_2^2 = \frac{1}{1+e^{-0,0475}} = 0,5118$

Resultado esperado $\longrightarrow t = (1, 0)$

Calculo error capa salida:

$\delta_1^2 = (t_1 - S_1^2) \cdot S_1^2 (1 - S_1^2) = (1 - 0,5118) \cdot 0,5118 (1 - 0,5118) = 0,122$

$\delta_2^2 = (t_2 - S_2^2) \cdot S_2^2 (1 - S_2^2) = (0 - 0,5118) \cdot 0,5118 (1 - 0,5118) = -0,128$

Calculo error capa oculta:

$\delta_1^1 = (\delta_1^2 \cdot \Theta_{11}^2 + \delta_2^2 \cdot \Theta_{21}^2) \cdot S_1^1 (1 - S_1^1) = (0,122 \cdot -1 + (-0,128) \cdot -1) \cdot 0,9525 (1 - 0,9525)$

$= 0,00027$

Actualización pesos Θ_{21}^2 y Θ_{22}^1

$\Theta_{21}^2 = \Theta_{21}^2 + \rho \delta_2^2 S_1^1 = -1 + 1 \cdot 0,9525 \cdot -0,128 = -1,1219$

$\Theta_{22}^1 = \Theta_{22}^1 + \rho \delta_1^1 X_2 = -1 + 1 \cdot 0,00027 \cdot -1 = -1,00027$