



$$D = \{ (x=1.5, y=1.0) \} \quad (N=1)$$

$$w_1 = 0.39$$

$$w_2 = 0.94$$

$$a_{NL} = 0.64222$$

$$a_{N2} = 0.6465 = f$$

$$J(w_1, w_2) = 0.43618$$

$$\delta_{N2} = f - y = 0.6465 - 1.0 = -0.3535$$

$$\delta_{NL} = (w_2 * \delta_{N2}) * (a_{NL}) * (1 - a_{NL}) = -0.07635$$

$$\frac{\partial J}{\partial w_1} = x * \delta_{NL} = -0.114525$$

~~✓~~

$$\frac{\partial J}{\partial w_2} = a_{NL} * \delta_{N2} = -0.22702$$

Using $\epsilon = 0.000025$

$$\frac{\partial J}{\partial w_1} = \frac{J(w_1 + \epsilon, w_2) - J(w_1 - \epsilon, w_2)}{2 * \epsilon}$$

$$\frac{\partial J}{\partial w_2} = \frac{J(w_1, w_2 + \epsilon) - J(w_1, w_2 - \epsilon)}{2 * \epsilon}$$