Back ProPagation $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, b_1 = 1, b_2 = 1, \alpha = 0.05$ $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, b_1 = 1, b_2 = 1, \alpha = 0.05$ $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, b_1 = 1, b_2 = 1, \alpha = 0.05$ $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, b_1 = 1, b_2 = 1, \alpha = 0.05$ $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, b_1 = 1, b_2 = 1, \alpha = 0.05$ $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, b_1 = 1, b_2 = 1, \alpha = 0.05$ $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, b_1 = 1, a_2 = 0.5$ $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, b_1 = 1, \alpha_2 = 0.5$ $\Rightarrow \underline{Given} \Rightarrow \alpha_1 = 0.05, \alpha_2 = 0.1, a_2 = 0.1$ Do Back ProPayation tomake y= 0.01, y= 0.99 For One iteration. Solution => Forward ProPagation $\mathcal{Z}^{(2)} = \theta_{1} \cdot \chi^{(1)} = \begin{bmatrix} 0.15 & 0.20 & 0.35 \\ 0.25 & 0.3 & 0.35 \end{bmatrix} \begin{bmatrix} 0.05 \\ 0.1 \\ 1 \end{bmatrix}$ $Z^{(2)} = \begin{bmatrix} 0.3775 \\ 1.3095 \end{bmatrix}$ $a^{(2)} = \frac{1}{1 + e^{-z}} = \begin{bmatrix} 0.593269921 \\ 0.5968843783 \end{bmatrix}$ $Z = \theta_{2} \cdot \partial_{2} = \begin{bmatrix} 0.4 & 0.45 & 0.6 \\ 0.5 & 0.55 & 0.6 \end{bmatrix} \cdot \begin{bmatrix} 0.5932699 \\ 0.59628 \\ 1 \end{bmatrix} = \begin{bmatrix} 1.105906 \\ 1.224921 \end{bmatrix} d\theta^{(2)} = \begin{bmatrix} 0.041 & 0.0411 \\ -0.041 & -0.041 \end{bmatrix}$ $\partial^{(3)} = \frac{1}{1+\bar{e}^{2}} = \frac{1}{0.7729284} \begin{bmatrix} 0.7513651 \\ 0.7729284 \end{bmatrix} \begin{bmatrix} 0.9707 \\ 0.7729284 \end{bmatrix} \begin{bmatrix} 0.9707 \\ 0.9707 \end{bmatrix} \begin{bmatrix} 0.041 & 0.0410 \\ 0.5 & 0.55 \end{bmatrix} \begin{bmatrix} 0.041 & 0.0410 \\ -0.011 & -0.011 \end{bmatrix}$

Back Polagation for Output

Back Polagation for Output

Enter Calc

$$err^{(2)} = a^{(3)} - y = \begin{bmatrix} 0.7513651 \\ 0.7729224 \end{bmatrix} \begin{bmatrix} 0.01 \\ 0.99 \end{bmatrix}$$
 $err^{(2)} = \begin{bmatrix} 0.7413651 \\ -0.217072 \end{bmatrix}$

[2] Later Differentiation

 $dg(Z^{(3)}) = a^{(3)}(1-a^{(3)})$
 $dg(Z^{(3)}) = \begin{bmatrix} 0.7513651 \\ 0.7729228 \end{bmatrix} \begin{bmatrix} 1 - 1 \\ 0.7729228 \end{bmatrix}$

[3] Sixtion

 $0.29 = 0.35$
 $0.3 = \begin{bmatrix} 0.05 \\ 0.3 = 0.35 \end{bmatrix} \begin{bmatrix} 0.05 \\ 0.1755101 \end{bmatrix}$

[3] S⁽³⁾ = $err^{(3)} dg(Z^{(3)})$
 $S^{(3)} = \begin{bmatrix} 0.7413651 \\ 0.1755101 \end{bmatrix} \begin{bmatrix} 0.1868156 \\ -0.217072 \end{bmatrix} \begin{bmatrix} 0.1868156 \\ -0.217072 \end{bmatrix} \begin{bmatrix} 0.1868156 \\ -0.038098 \end{bmatrix}$

[4] UPlate weights

 $d\theta^{(2)} = A \cdot S^{(2)} \cdot a^{(2)}$
 $d\theta^{(2)} = \begin{bmatrix} 0.384986 \\ -0.038098 \end{bmatrix} \begin{bmatrix} 0.5932699 \\ 0.593269921 \end{bmatrix}$
 $d\theta^{(4)} = \begin{bmatrix} 0.041 & 0.0419 \\ -0.011 & -0.011 \end{bmatrix}$
 $d\theta^{(2)} = \begin{bmatrix} 0.359 & 0.4898 \\ 0.5932844 \end{bmatrix} \begin{bmatrix} 0.0419 & 0.0419 \\ -0.05 & 0.55 \end{bmatrix} \begin{bmatrix} 0.041 & 0.0419 \\ -0.05 & 0.55 \end{bmatrix} \begin{bmatrix} 0.041 & 0.0419 \\ -0.05 & 0.55 \end{bmatrix} \begin{bmatrix} 0.05932699 & 0.59682844 \end{bmatrix}$
 $d\theta^{(2)} = \begin{bmatrix} 0.359 & 0.4898 \\ 0.59328 \end{bmatrix} \begin{bmatrix} 0.041 & 0.0419 \\ -0.05 & 0.55 \end{bmatrix} \begin{bmatrix} 0.041 & 0.0419 \\ -0.05 & 0.55 \end{bmatrix} \begin{bmatrix} 0.05932699 & 0.59682844 \end{bmatrix}$
 $d\theta^{(2)} = \begin{bmatrix} 0.359 & 0.4898 \\ 0.59328 \end{bmatrix} \begin{bmatrix} 0.041 & 0.0419 \\ -0.05 & 0.55 \end{bmatrix} \begin{bmatrix} 0.051 & 0.0511 \\ -0.051 & 0.561 \end{bmatrix}$

Back ProPagation for Hidden Layer Calculation

$$err^{(2)} = \Theta_{T}^{(2)} \cdot S^{(3)}$$
 $err^{(2)} = \begin{bmatrix} 0.4 & 0.5 \\ 0.45 & 0.55 \end{bmatrix} \begin{bmatrix} 0.1384986 \\ -0.038098 \end{bmatrix}$

$$e_{rr(2)} = \begin{bmatrix} 0.03635044 \\ 0.04137647 \end{bmatrix}$$

$$\frac{[2] \text{Layer differentiation}}{dg(Z^{(2)})} = a^{(2)} \left[1 - a^{(2)} \right]$$

$$\frac{dg(Z^{(2)})}{0.5968843783} = \begin{bmatrix} 0.24130483 \\ 0.24061341 \end{bmatrix}$$

$$\mathcal{B}[\mathcal{B}]\mathcal{S}^{(2)} = err^{(2)} \cdot ag(\mathcal{Z}^{(2)})$$

$$\mathcal{S}^{(2)} = \begin{bmatrix} 0.036350447 \\ 0.04137047 \end{bmatrix} \cdot \begin{bmatrix} 0.241364837 \\ 0.24061341 \end{bmatrix}$$

$$S^{(2)} = \begin{bmatrix} 0.00877 \\ 0.00995 \end{bmatrix}$$

$$\frac{(4) \text{ UP date Weights}}{d\theta^{(1)}} = \alpha \cdot \delta^{(2)} \cdot \frac{(1)^2}{27} \times \frac{1}{7}$$

$$= 0.5 \cdot \begin{bmatrix} 0.0087 \\ 0.00995 \end{bmatrix} \cdot \begin{bmatrix} 0.05 & 0.1 \end{bmatrix}$$

$$\frac{d\theta^{(1)}}{d\theta^{(1)}} = \begin{bmatrix} 0.0002175 & 0.000435 \\ 0.00024875 & 0.6064975 \end{bmatrix}$$

$$\theta^{(1)} = \theta^{(1)} - d\theta^{(1)}$$

$$= \begin{bmatrix} 0.15 & 0.2 \\ 0.25 & 0.3 \end{bmatrix} - \begin{bmatrix} 0.00 \\ 0.25 & 0.3 \end{bmatrix} - \begin{bmatrix} 0.00 \\ 0.1999565 \end{bmatrix}$$

$$\theta^{(1)} = \begin{bmatrix} 0.1497825 & 0.1999565 \\ 0.24975125 & 0.2995025 \end{bmatrix}$$