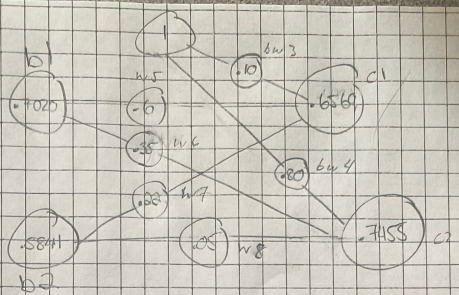

$$SE = \frac{1}{2}\sum_{i=1}^{n}(t_i - z_i)^2$$

Angel Martinez-Diaz

Santiago Liceaga

$$net_{c1} = (b1 \times w5) + (b2 \times w7) + (bias * bw1)$$

$$(.7020 \times .6) + (.5841 \times .22) + (1 \times .10) = .6497$$

$$net_{c1} = f(x) = \frac{1}{1+e^{-x}} \qquad \frac{1}{1+e^{-.6497}} = .6569$$

$$net_{c2} = (b1 \times w6) + (b2 \times w8) + (bias \times bw4)$$

$$(.7020 \times .35) + (.5841 \times .05) + (1 \times .80) = 1.0749$$

$$\frac{1}{1+e^{-1.0749}} = .7455$$

Total Error

Local error c1 $(0 - .6569)^2 = .6569^2 = .4315$

c2 $(0 - .7455)^2 = .7455^2 = .5557$

$.4315 + .5557 = .9872$

$\frac{1}{2} * .9872$

$.4936$ (total error)

Gradient

$$\frac{\partial E}{\partial w5} = (z-t)z(1-z)\,out_{b1}$$

$(.6569 - 0) \times .6569(1 - .6569) \times .7020$

$= .1039$

$$\frac{\partial E}{\partial bw_3} = \delta_z = (z-t)z(1-z)$$

$(.6569 - 0) * .6569 * (1 - .6569)$

$.1480$

$$\frac{\partial E}{\partial bw4}$$

$(.7455 - 0) \times .7455 \times (1 - .7455)$

$.1414$

$.1480 \times .6 = .0888$

$.1414 \times .35 = .049499$ $\Big\} = .13829$