MSE Loss

$$f(x) = \sum_{n=0}^{n} (\text{Guess} - Y)^2$$

$$\frac{d\,\text{Error}}{dw} = 2 \cdot \text{ERROR} * \frac{\sum X \cdot D}{\sum D}$$

Cross entropy loss

$$\sum \frac{w \cdot X \cdot D}{w \cdot D}$$

$$f(x) = \frac{\sum W \cdot X \cdot D}{\sum W \cdot D}$$

$f(X, W, D) = \sum 1/W \cdot D \cdot \sum X \cdot W D$

σ = activation

f(x) =

f(D) =

Cross-entropy?

$-\sum \log(x) \cdot Y$

$-\sum \log(f(w, \hat{Y}, X)) \cdot Y$

$-\sum (Y - \text{Guess}) \cdot Y \cdot D$

dZ = 2 · ERROR · (Distance).

→ (Y - Guess) → for Classification

$$\frac{d\sigma(\hat{Y})}{dw} \sum ((w_i)(D_i))^{-1} \cdot \sum X \cdot ((w_i)(D_i))'$$

$$\sum -1/(w_i D_i)^2 \cdot ((x)^0 (w)^0 (D_i))'$$

$$-1/(D_i)^2 \quad - \frac{X \cdot D_i}{D_i \cdot D_i} - \frac{X}{D_i} - \frac{X}{D_i}$$

$$\to -(D_i)^{-2} \cdot X \cdot D_i = -\frac{\hat{X}_i}{D_i}$$

Estimation Function $(\hat{Y})$

$$\hat{Y} = \left(\sum_{i=0}^{n} 1/w_i(D_i)\right) \cdot \left(\sum_{i=0}^{n} \hat{X}_i \cdot w_i(D_i)\right) \Bigg| \left(\sum_{i=0}^{n} (w_i)^{-1}(D_i)^{-1}\right) \cdot \left(\sum_{i=0}^{n} X_i w_i D_i\right)$$

$$\hat{Y}_{n=1} = 1/w_i(D_i) \cdot w_i(D_i) \cdot \hat{X}_i = \hat{X}_i$$

$$\hat{X}_i = \begin{cases} X_{in} & \text{if } (D_i \in f(h)) \\ 0 & \text{if } (D_i \neq f(h)) \end{cases}$$

$f_h(D_i)$ — Conditional Estimation Activation. $\left(\sum -1 (w_i)^{-2} (D_i)^{-1}\right)$

$$-(w_i)^{-2}(D_i)^{-1}.$$

Loss Function $(\sigma(\hat{Y}))$.

$$\sigma(\hat{Y}) = \sum_{i=0}^{n} (\hat{Y} - \hat{Y})^2 = (\text{Mean\_Squared\_Error}) \cdot \left(\frac{X_i}{w_i^2}\right) D_i$$

$$\sigma(\hat{Y}) = -\sum_{i=0}^{n} y \log(\hat{Y}) = (\text{Cross\_Entropy\_Error}).$$

$$-1(w_i)^{-2} - \frac{X_i D_i}{w_i^2 \cdot D_i} - \frac{X_i}{w_i^2}$$

Derivation of loss (dz).

$$dz = \frac{d\sigma(\hat{Y})}{dz} = 2 \cdot (\hat{Y} - \hat{Y}) \cdot \frac{d\sigma(\hat{Y})}{dw_i} = 2(\hat{Y} - Y) \cdot \left(-\frac{X_i}{D_i}\right)$$

$$\frac{d\sigma(\hat{Y})}{dw_i} = \sum \left((w_i(D_i))^{-2} \cdot \sum \left((x_i D_i)(w)^0\right)\right)$$

$$= -\frac{X_i}{D_i} \cdot \boxed{-\left(\frac{X_i}{w_i^2}\right)} \left(\sum -(w_i)^{-2}(D_i)^{-1}\right) \times \left(\sum (x D_i)\right).$$

Estimation Function $(f(\hat{Y}))$

$$f(\hat{Y}_n) = \left(\sum_{i=0}^{n} w_i \cdot f(D_i)\right)^{-1} \cdot \left(\sum_{i=0}^{n} X_i \cdot w_i \cdot f(D_i)\right)$$

$$f(\hat{Y}_{n=1}) = (w_i \cdot f(D_i))^{-1} \cdot X_i \cdot w_i D_i = \hat{X}_i$$

$$\hat{X}_i = \begin{cases} X_{in} & \text{if } (f(D_i) = 1) \\ 0 & \text{if } (f(D_i) = 0) \end{cases}$$

$f(D_i)$ = Conditional Activation Estimation.

$$f(k) \begin{cases} [D] \leftarrow (1/e_{ucl}) \,\|\, (1-m_{ax}) \text{ if } D=1 \\ [-D] \text{ if } (f(D_i)=0) \end{cases}$$

Loss Function $(\sigma(f\hat{Y}))$.

$$\sigma(f(\hat{Y}_n)) = \sum_{i=0}^{n} (Y - \hat{Y})^2 = \text{Mean Squared Error}$$

$$\sigma(f(\hat{Y}_n)) = -\sum_{i=0}^{n} Y \cdot \log(f(\hat{Y}_n)) = \text{Cross Entropy Loss}$$

Derivative (Stochastic) $(\hat{Y}_{n=1})$

$$\frac{d\sigma(f(\hat{Y}_n))}{dw_i D_i} = \left(\sum -(1(w_i)^0 D_i)^{-2}\right) \cdot \left(\sum (1 \cdot (w_i)^0 \cdot (X_i(D_i)^0)\right)$$

$$= \boxed{\frac{-X_i}{(w_i D_i)^2}}$$

Gradient Function:

$$g(f(\hat{Y}_n), \sigma(f(\hat{Y}_n)))$$

→ 2. Error. (-Distance). L_Rate.

$$\frac{d\, w_{Di}}{dw_i} =$$

w $\quad$ w_{cm} $\quad$ x $\quad$ $w - \nabla w$

0.6 → 0,9 → 1 $\quad$ $1,8 - (-1/0.01) = (1,8 - 100) \cdot 0.001$

$0.001 \cdot 2$ $\quad$ $= -98,2 \cdot 0,002$

w

0.2 → 0.85 → 1 $\quad$ $1,7 \; (-1/0.0392) = (1,7 - 25) \cdot 0.001$

$= -23,3 \cdot 0.001$

$= -0,0233$

0.1.9876 → 0,81 → 1 $\quad$ $1,62 \; (-1/0,0351) = (1,7 - 25,51) \cdot 0.001$

$= 25,61 \cdot 0.001$

$= -0.02561$

$w = w - \nabla w$

$\nabla w = 2(y - \hat{y}) \cdot \left(-\frac{x_1}{w_1^2}\right)$

$w = w + \nabla w$

$\nabla w = 2(\hat{y} - y) \left(-\frac{x_1}{w_1^2}\right)$

Gradient Loss Option:

2 . Error . (-(Distance)) FIX

FIX

2 . Error . $(-x_i / D_i)$ X

(fx) { [-1] -1 if $X_i < \hat{Y}_n$ — 1; [1] $D \cdot (1)^0$ if $X_i >= \hat{Y}_n$ — 2

Cross function: — 3

2. ERROR . (-Distance)

* 2 . Error . $(-x_i / w_i^2)$ ✓

2 . Error . $(-x_i / (w_i D_i)^2)$ — 4

2 . Error . (1) / ~~2 . Error (n+1)^2~~ → Derivative of X is $\frac{d}{dx}$ ~~... sum node~~

2 . Error . (X . D) → cross entropy function $\sum X . D . W$

Derivative one by one:

$$\left(- \frac{n+1}{x^2 y} \right) \left((n+1) y z \right)$$

0, 2r → L_{max}

0, 1 → L_{ActRow}

$$\left(- \frac{n+1}{x^2 y} \right) \left((n+1) y z \right)$$

Y = D_1

Z = X

X = W_1

$L_{row} - L_{max}$

$L_{value} - L_{node}$

$L_{row} - L_{node}$

$L_{max} = L_{node}$

0, r

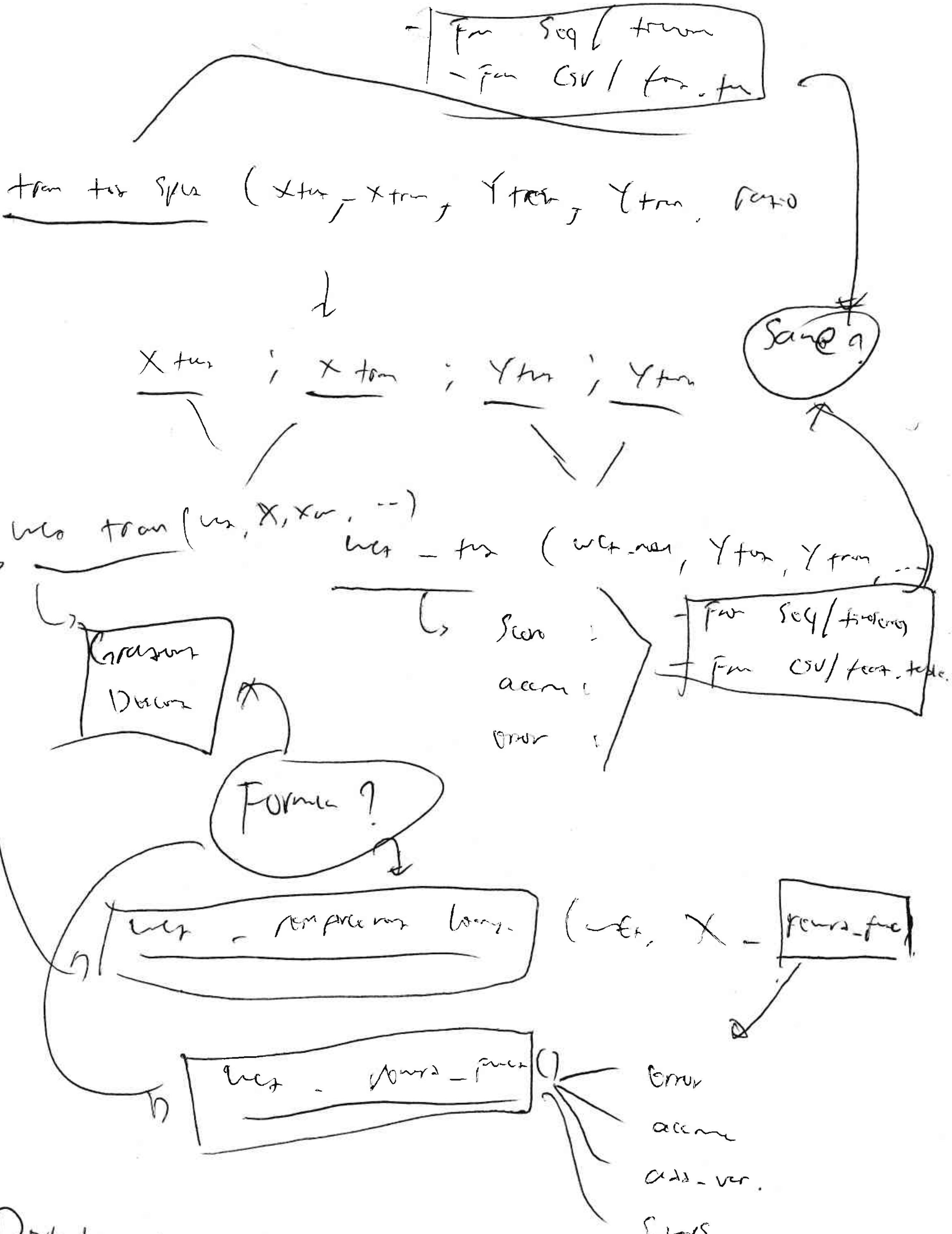
0, 1

$$\left(- \frac{(n+1)^2 z}{x^2} \right)$$

$$\left(- \frac{(n+1)^2 x_1}{w_1^2} \right)$$

Weight Initialization / regularization = $\left(\frac{1}{\sqrt{n}}\right)$; n = no of wt nodes

↳ round.



Dorsale Estimasi Sygen Cogentlolo Same Grutunt.
Sum (Con_ parametri).