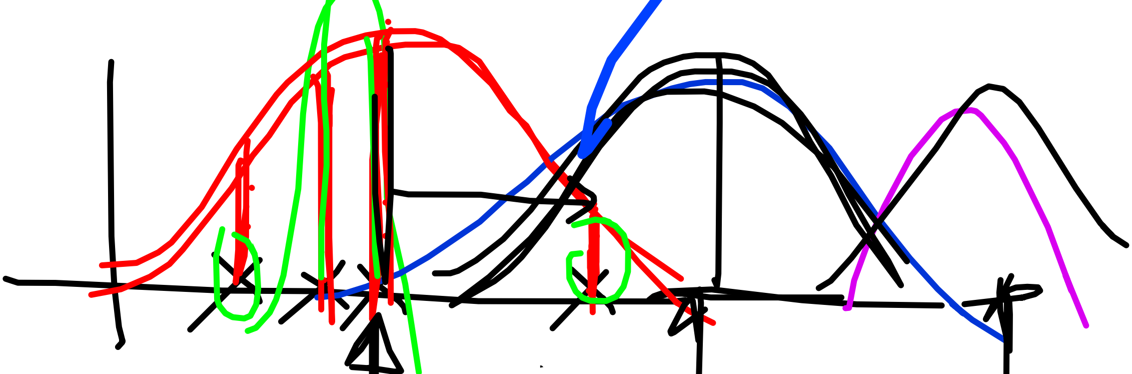


$$p(\underbrace{x_1, x_2, x_3} \mid \mu, \sigma^2) =$$

$$p(x_1 \mid \boxed{\mu, \sigma^2}) \cdot p(x_2 \mid \boxed{\mu, \sigma}) \cdots$$

$$\log \prod_{i}^{N} p(x_i \mid \mu, \sigma^2) = \sum^{N} \log p(x_i \mid \mu, \sigma^2)$$

$$\sum_{N} \log \frac{1}{\sqrt{2\pi}\,\sigma} \cdot \exp\left\{ -\frac{1}{2\sigma^2}(x-\mu)^2 \right\} = 1$$

$$\boxed{\sum_{n} \log \frac{1}{\sqrt{2\pi}\,\sigma} - \frac{1}{2\sigma^2}(x_n - \mu)^2}$$

$$\sum_n \frac{1}{\sqrt{2\pi}\,\sigma} - \frac{1}{2\sigma^2}(x_n - \mu_n)^2 \Rightarrow$$

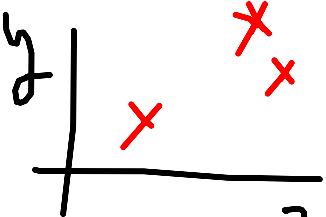
$$\frac{\partial}{\partial \mu} \sum_n \boxed{\cancel{\frac{1}{\sqrt{2\pi}\,\sigma}}}^{\to 0} - \frac{\partial}{\partial \mu} \sum_n \frac{1}{2} (x_n - \mu)^2 =$$

$$\sum_n (x_n - \mu) = 0$$

$$\sum_n (x_n - \mu) = 0$$

$$\sum_n x_n - N\mu = 0$$

$$\mu = \boxed{\frac{1}{N} \sum_n x_n}$$



$z_1 \quad y_1$

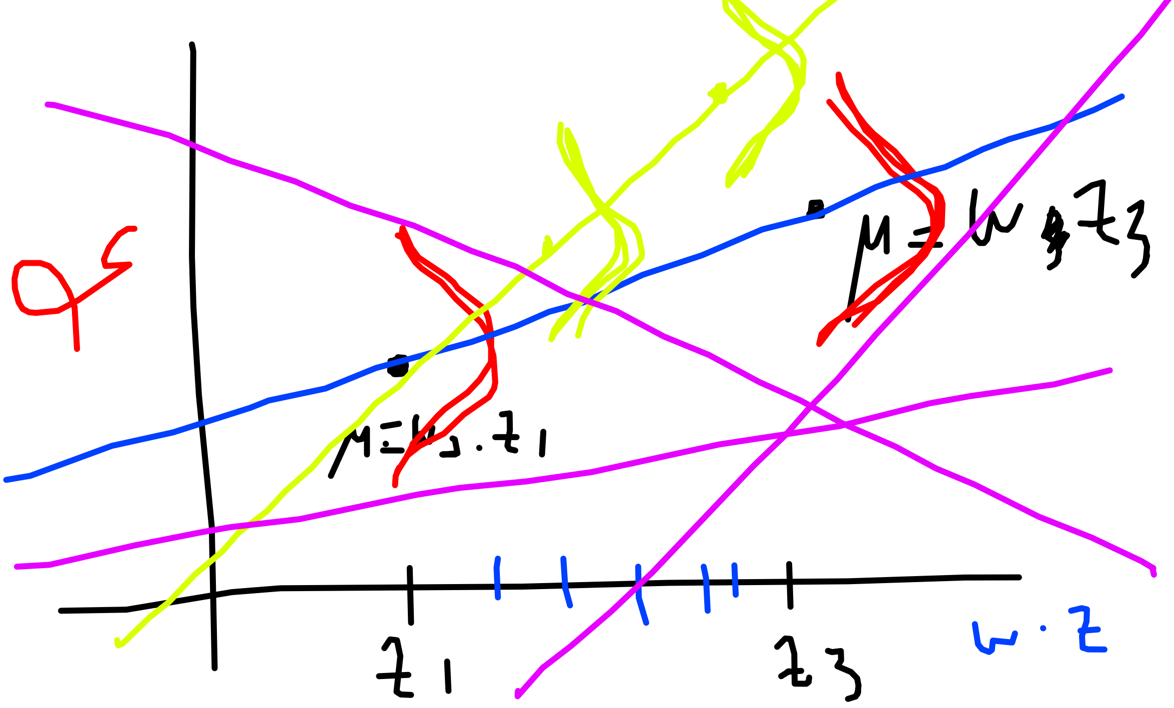
$z_2 \quad y_2$

$z_3 \quad y_3$

$w \cdot z_1$

$$\mathcal{N}(y_1 \mid w z_1, \sigma) \cdot \mathcal{N}(y_2 \mid w z_2, \sigma) \cdot$$

$$\mathcal{N}(y_3 \mid w z_3, \sigma)$$


z1
z3
w · z

$$\log \sum^{N} \frac{1}{\sqrt{2\pi}\sigma} \cdot \exp\left\{-\frac{1}{2\sigma^2}\big(y_n - \underbrace{w \cdot z_n}_{\mu}\big)^2\right\}$$

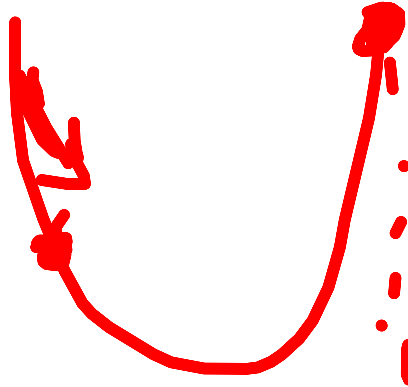
$$= \ln \sum^{N} \cancel{\frac{1}{\sqrt{2\pi}\sigma}} + \sum^{N} \frac{1}{2\sigma^2}\left(y_n - w \cdot z_n\right)^2 .$$

0

$$-\frac{1}{\sigma}\big(y_n - \underbrace{w \cdot z_n}\big)\, z_n$$

$\sigma \to 1, 2, 3$

$\to$ SSE

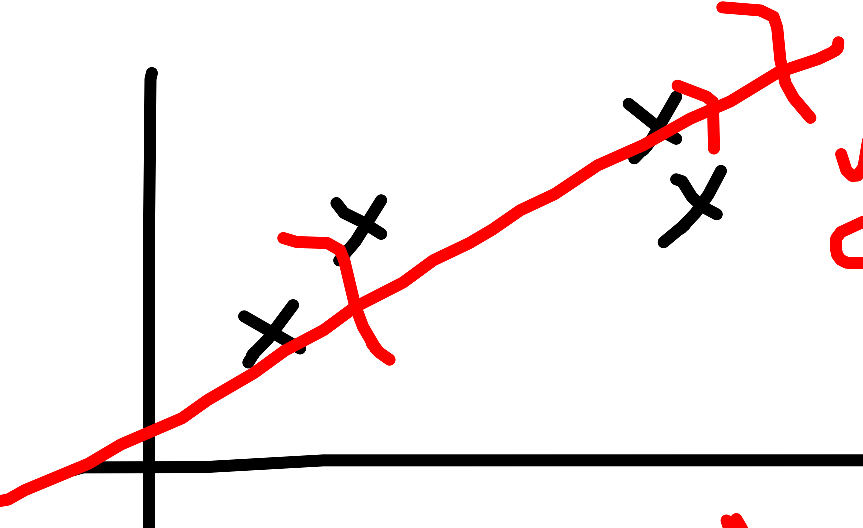


w

$$w - \alpha \cdot \frac{\partial}{\partial}$$

lr

—



$$y = w \cdot x$$

$$y_n = \mathcal{N}(y \mid w \cdot x, \sigma) \leftarrow \text{SSE}$$

$y_n, x_n \to y = w \cdot x$

↑ CONTINUO

$r = V_1 \cdot x$

M

$\text{sig}\left[w_2 \left[\text{sig}\left(w_1 \cdot x \right) \right] \right] = \theta$

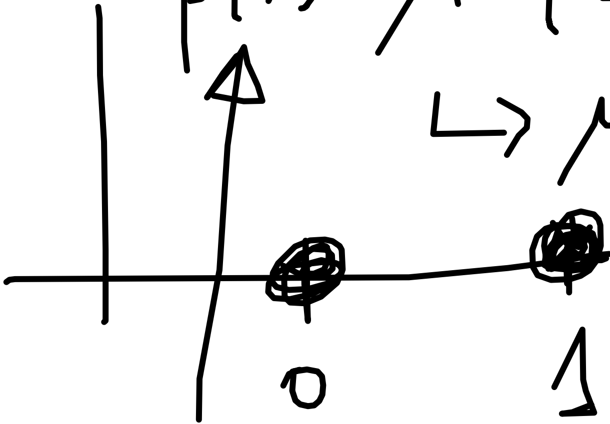
$x_1 \quad 1$

$x_2 \quad 0$

$\mu \rightarrow$ prob 1

$$p(x) = \mu^{x} \cdot (1-\mu)^{(1-x)}$$

$\hookrightarrow \mu$



$x_1 = 1 \quad x_3 = 1 \quad x_4 = 1$

$x_2 = 0 \quad x_5 = 0$

$$p(x_1 \mid \mu) \cdot p(x_2 \mid \mu) \cdots$$

$$\mu^{x_1} \cdot (1-\mu)^{1-x_1} \cdot \mu^{x_2} \cdot (1-\mu)^{1-x_2}$$

$$\prod^{N} \mu^{x_n} \cdot (1-\mu)^{1-x_n} =$$

$$\underbrace{\sum_n x_n \cdot \log(\mu)} + \underbrace{\sum_n \underbrace{(1-x_n)}_{0} \cdot \log(1-\mu)}$$

$0 \quad 1 \to \log \mu$

$0 \quad 0$

$$\underbrace{\sum x_n \frac{1}{\log \mu}} - \sum (1 - x_n) \frac{1}{\log(1-\mu)} = 0$$

$$\underbrace{\sum x_n} \log(1-\mu) - \sum [1 - x_n] \cdot \log \mu$$

$$M \cdot \log(1-\underset{4}{\mu}) - (N - M) \cdot \log \underset{0}{\mu} =$$

$y = \{0, 1\}$ $\quad y : z_1 \quad y : z_2$

$z_2 \in \mathbb{R}$

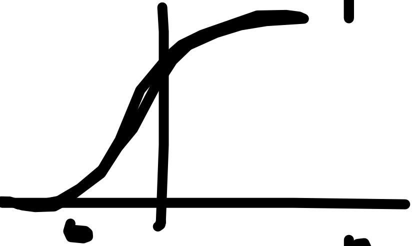
$y = \boxed{w \cdot z_1}$

f

CONTINUO

0,1

$\to \mu \quad P(y=1)$



$s(w\cdot z) \Rightarrow \mu \left\{ \begin{matrix} 0 \\ 1 \end{matrix} \right\}$

$y \left\{ \begin{matrix} 0 \\ 1 \end{matrix} \right\}$

-1

$d \quad \mu^{y}\cdot(1-\mu)^{1-y} \rightarrow (w\cdot z)^{y}\cdot(1-w\cdot z)^{1-y}$

$\boxed{y}\cdot\log(w\cdot \boxed{z}) + (1-y)\cdot \cancel{\log(1-wz)}$

$y = 1 \qquad s(w \cdot z) \rightarrow \mu = 1$

$y = 0 \qquad s \cdot (w \cdot z) \rightarrow \mu = 0$

$1 - 0 = 1$

$1 \qquad f\,w(\;)$