Regresión logística

$p = \frac{\# \text{aciertos}}{\text{total}} = \frac{1}{6}$

p = probabilidad del caso exitoso

$\underline{odds} = \frac{p}{p-1} = \frac{1}{5}$ $\rightarrow \ln\left(\frac{p}{1-p}\right) = a + b_1x_1 + b_2x_2 + \ldots + b_nx_n$

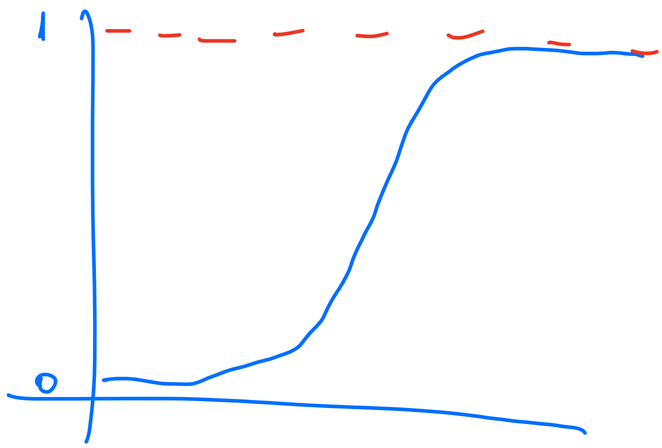
$p = \frac{e^{a+b_1x_1+b_2x_2+\ldots+b_nx_n}}{1+e^{a+b_1x_1+b_2x_2+\ldots+b_nx_n}}$

Función sigmoide

$\sigma(z) = \frac{1}{1+e^{-z}}$

Maximizar likelihood

$\sigma(z) = \frac{1}{1+e^{-z}}$



Gradiente descendente

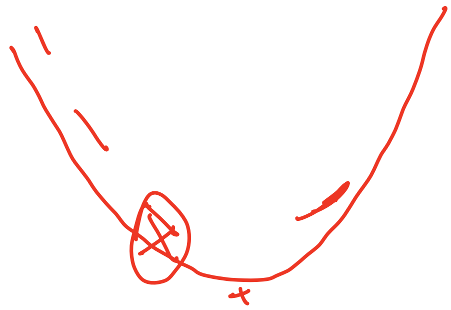
$\nabla f(x)$

Función costo

$\gamma_{nuevo} = \gamma^{anterior} + a f(x)$

tasa de aprendizaje

learning rate



Regresión lineal

$$\overset{+1}{\hat{y}} = b + a_1 x_1 + \boxed{a_2} x_2$$

$$\boxed{\underbrace{\ln\left(\frac{p}{1-p}\right)}_{\text{logit}} = b + a_1 x_1 + a_2 x_2 \quad +1}$$

Si aumenta 1 unidad de x_2, logit aumenta a_2

$$e^{\left(\cancel{\ln}\left(\frac{p}{1-p}\right)\right)} = e^{(a_2)} \rightarrow \boxed{\frac{p}{1-p}} = e^{a_2}$$

$$\frac{p(x=1)}{1-p(x=1)} = e^{a^2}$$

$$p(x=1) = e^{a^2} \times (1 - p(x=1))$$

$logit = \ln\left(\frac{p}{1-p}\right)$

$logit = 2.44x_1 - 3.39$

$\ln\left(\frac{p}{1-p}\right) = 2.44x_1 - 3.39$ Si $x_1 + 1$,

$\Delta \ln\left(\frac{p}{1-p}\right) = 2.44$

$e \qquad e$

$p = P(x=1) \rightarrow$ Probabilidad de éxito

$\frac{p}{1-p} = e^{2.44}$

Modelo de riesgo

x_1 = Sueldo

x_2 = deuda

x_3 = años trabaj.

1 = Pagar

0 = No paga

$$\overbrace{4.7x_1 + 2.3x_2 + 1.3x_3 + 5.7}^{\text{modelo}}$$