PERCEPTRÓN: LA BASE DE LAS REDES NEURONALES

Ministerio de
Desarrollo Productivo
Argentina

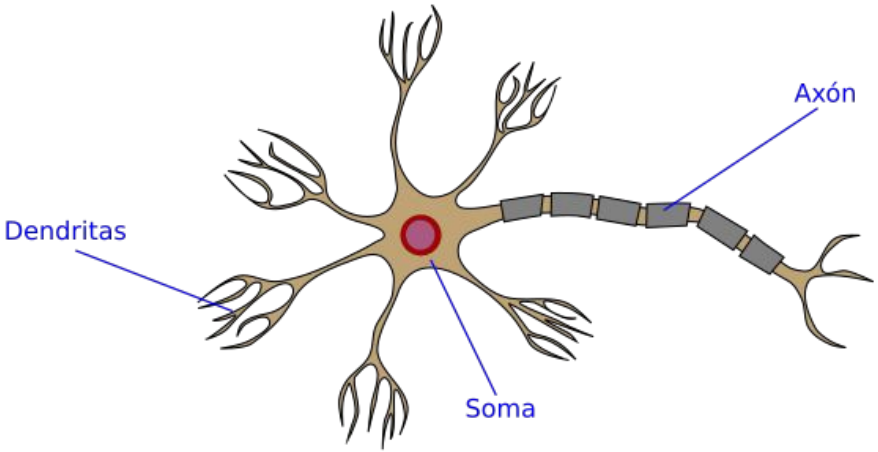
Secretaría de
Economía del Conocimiento

Argentina
programa
4.0

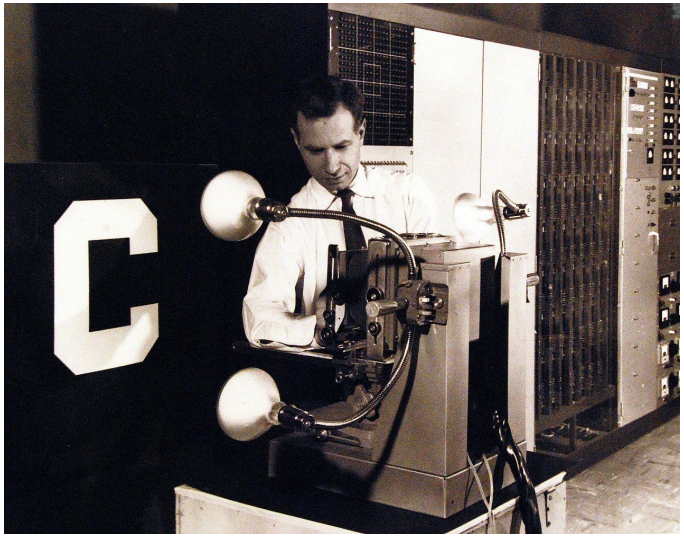
De nuestro aprendizaje supervisado, sabemos:

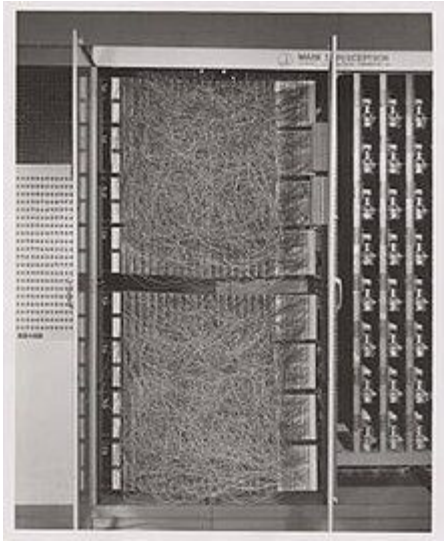
- Estamos aprendiendo una función f:X ⟶ Y
- La función “mapea” inputs a etiquetas, mediando un parámetro w.
- Podemos escribir esto de la siguiente manera:
  y = f(x; w)

La neurona biológica

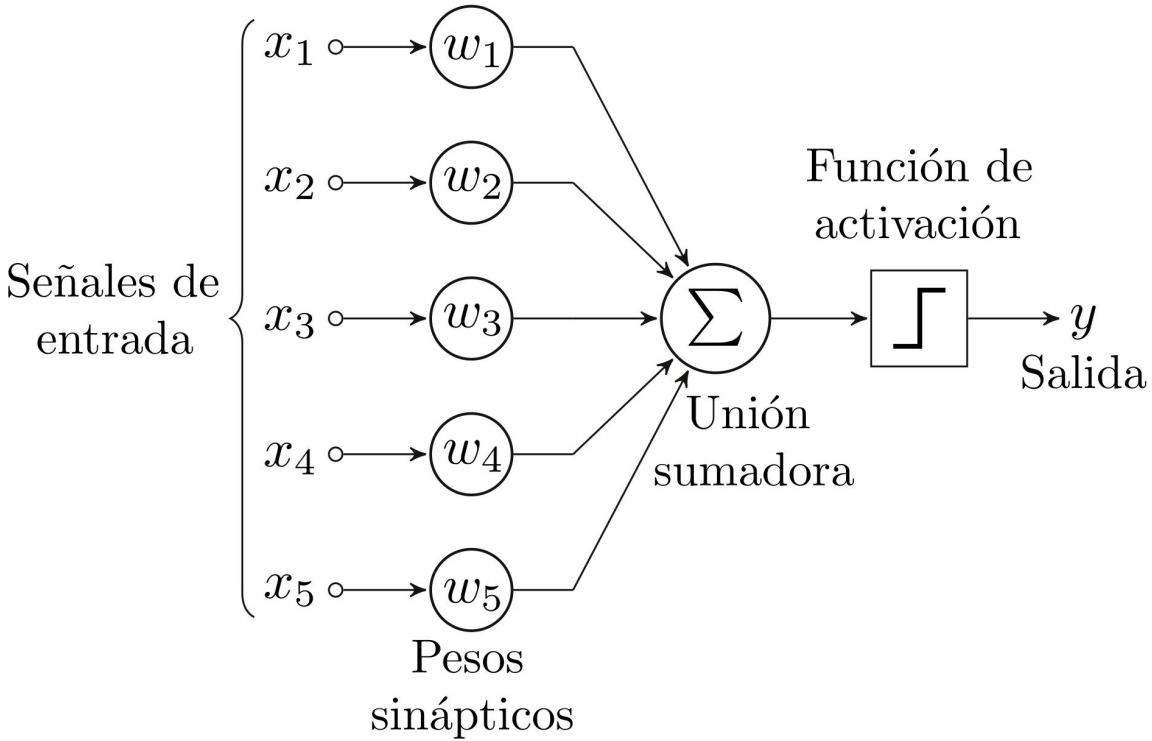


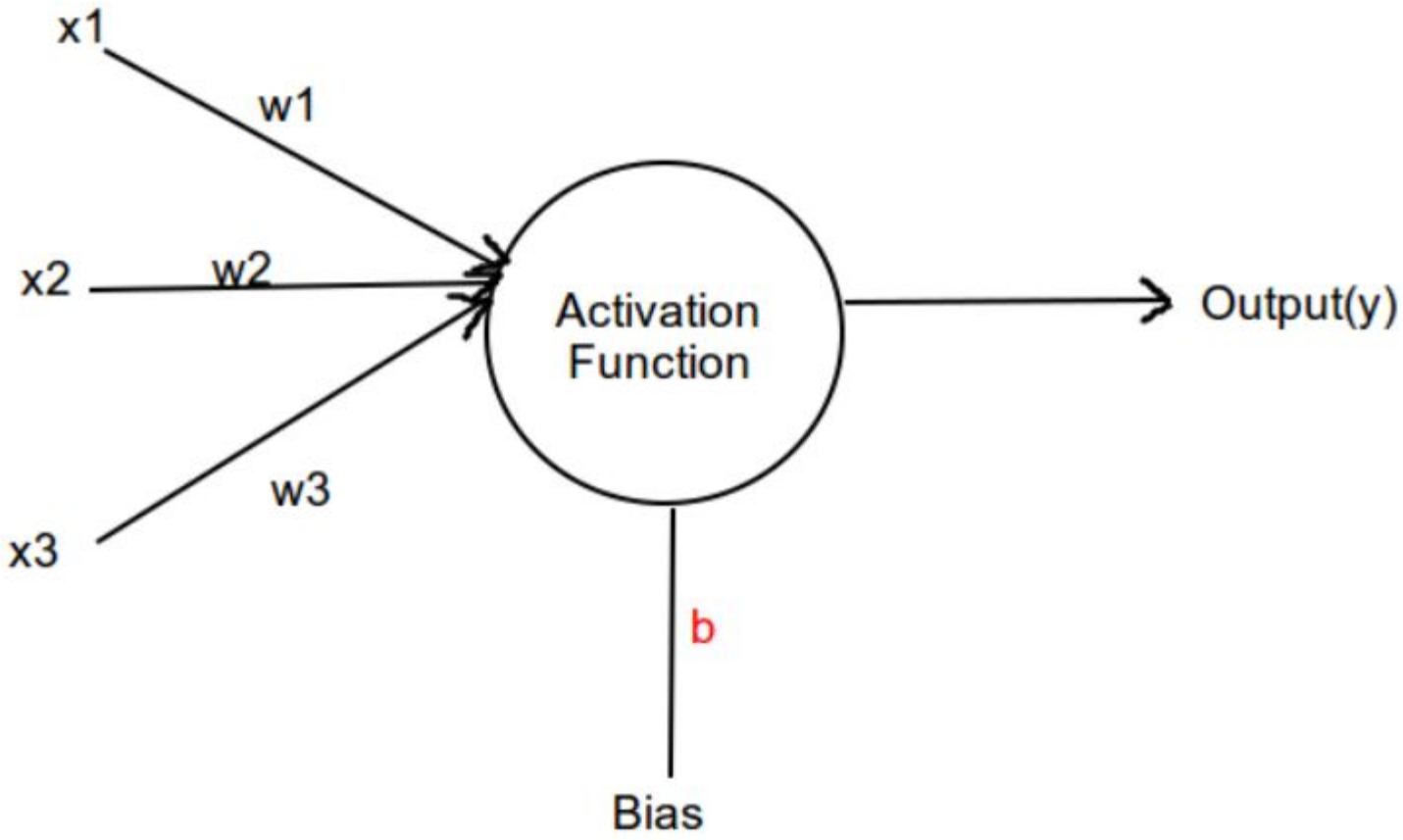
Perceptrón





El perceptrón

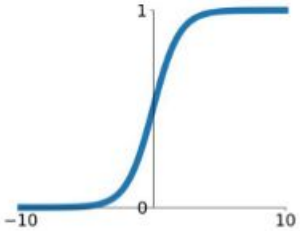



x1
w1
x2
w2
x3
w3
Activation
Function
Output(y)
b
Bias

Activation Functions

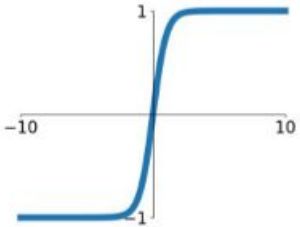
Sigmoid

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



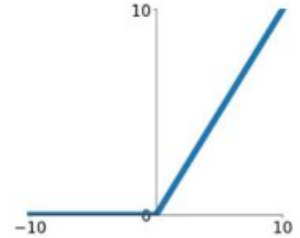
tanh

$$\tanh(x)$$



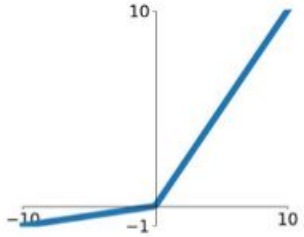
ReLU

$$\max(0, x)$$



Leaky ReLU

$$\max(0.1x, x)$$

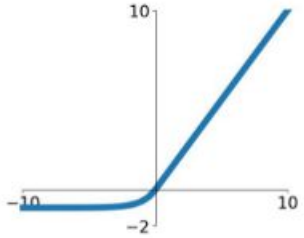


Maxout

$$\max(w_1^T x + b_1, w_2^T x + b_2)$$

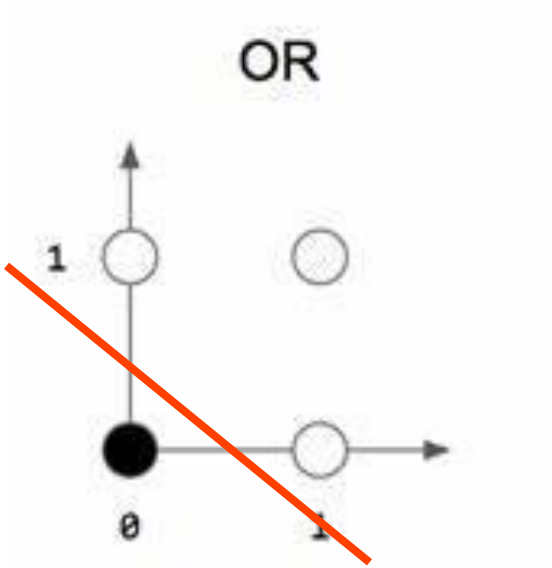
ELU

$$\begin{cases} x & x \geq 0 \\ \alpha(e^x - 1) & x < 0 \end{cases}$$



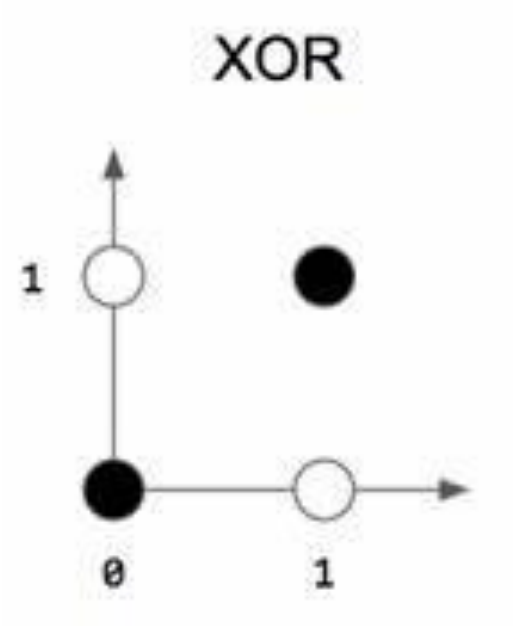
Operación OR

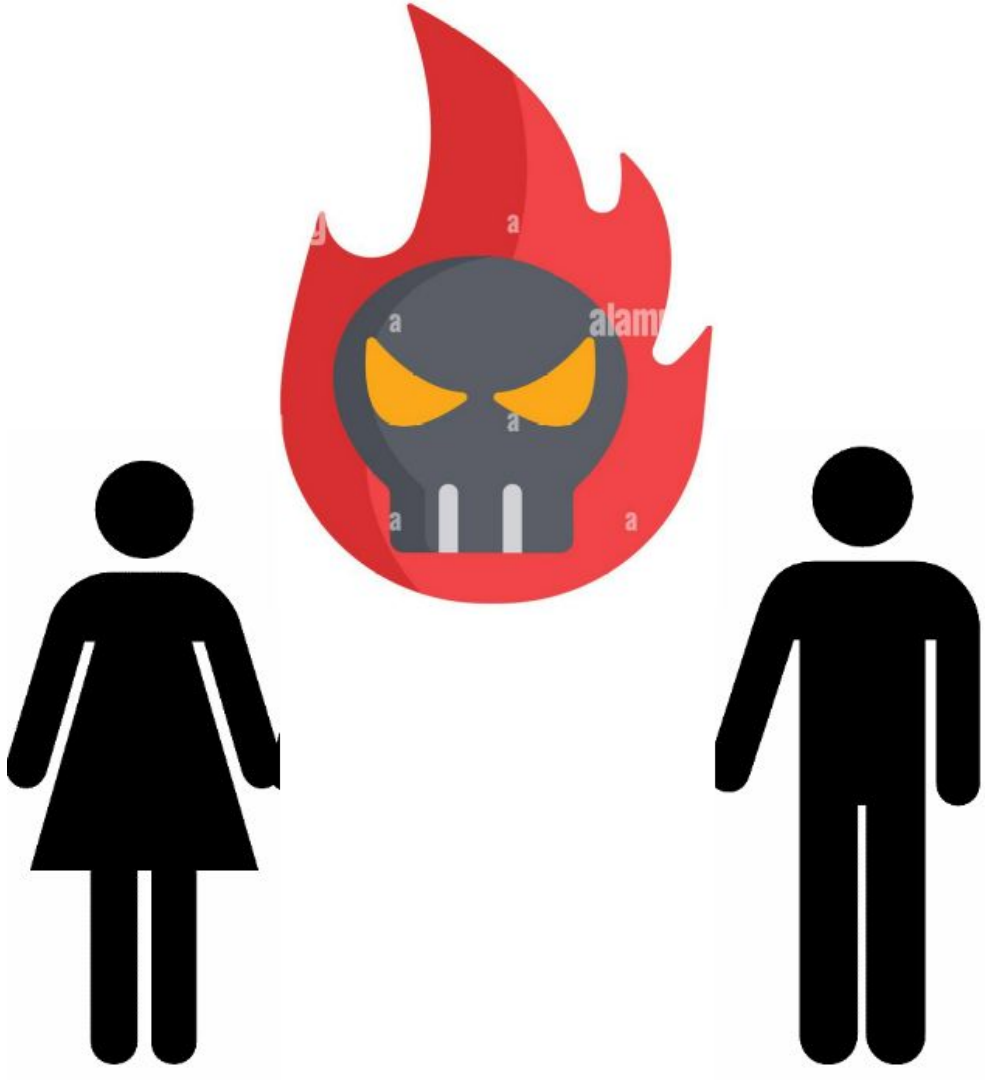
Condición 1	Condición 2	OR
0	0	0
0	1	1
1	0	1
1	1	1

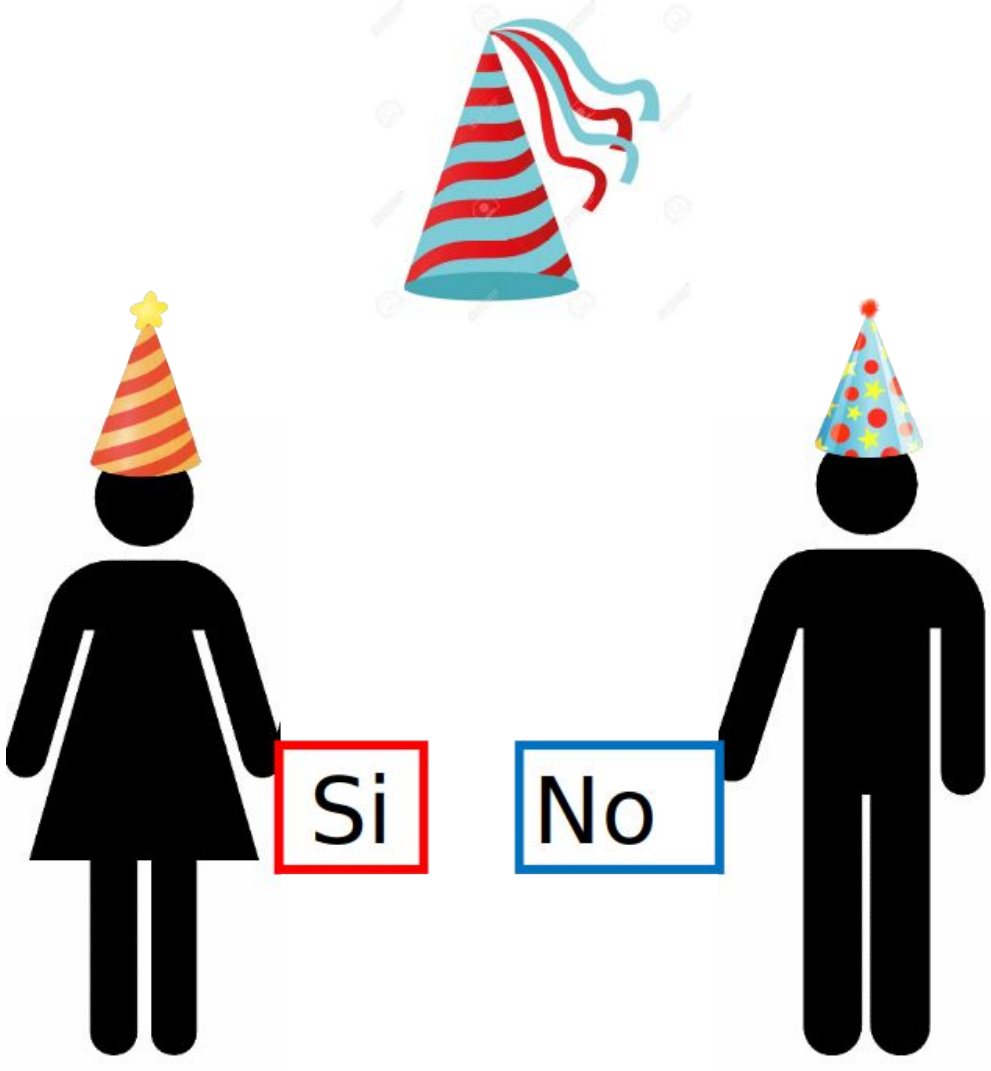


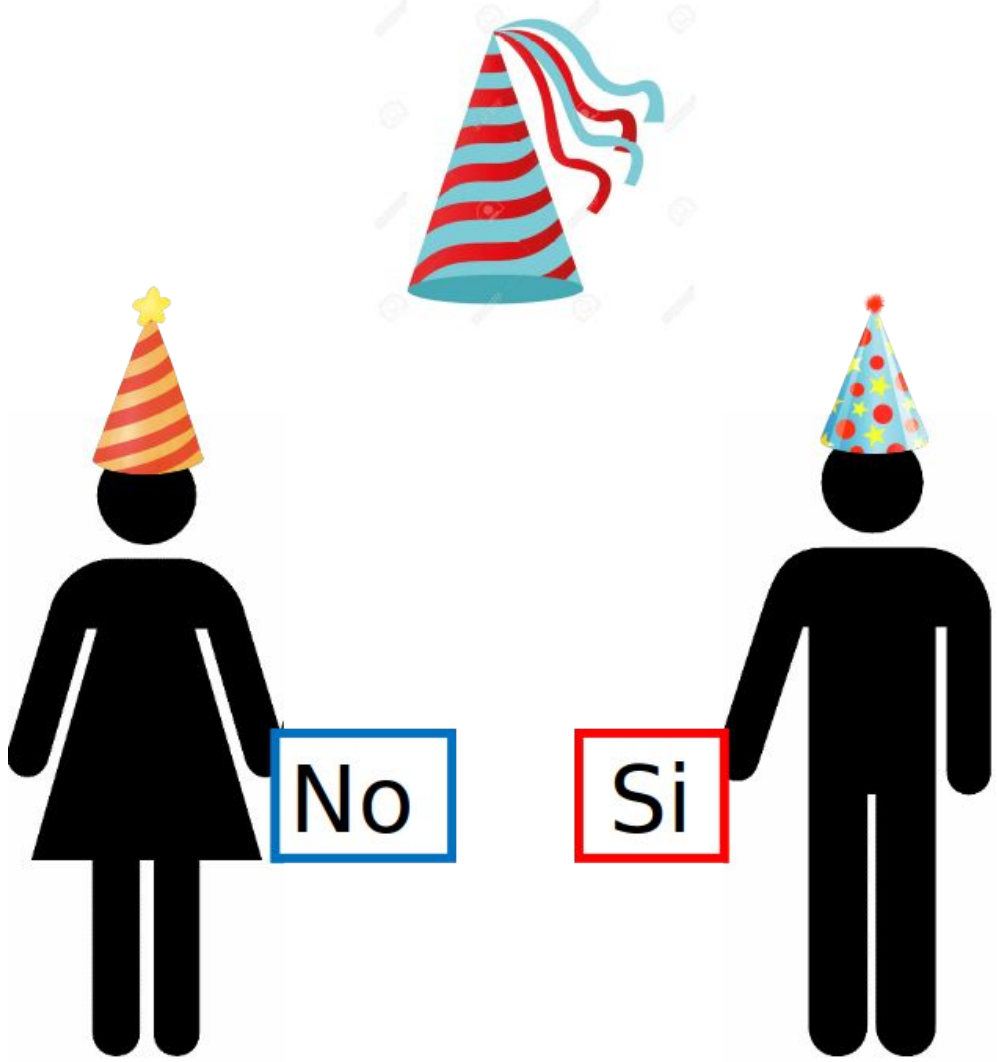
Operación XOR u OR Exclusivo

Conidición 1	Condición 2	XOR
0	0	0
0	1	1
1	0	1
1	1	0





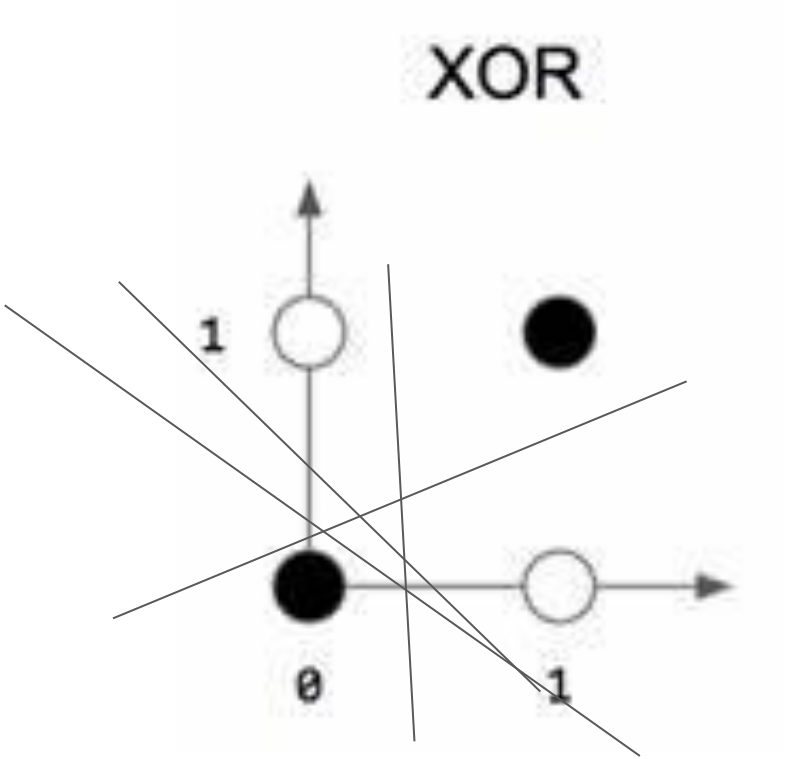

Si
No


No
Si

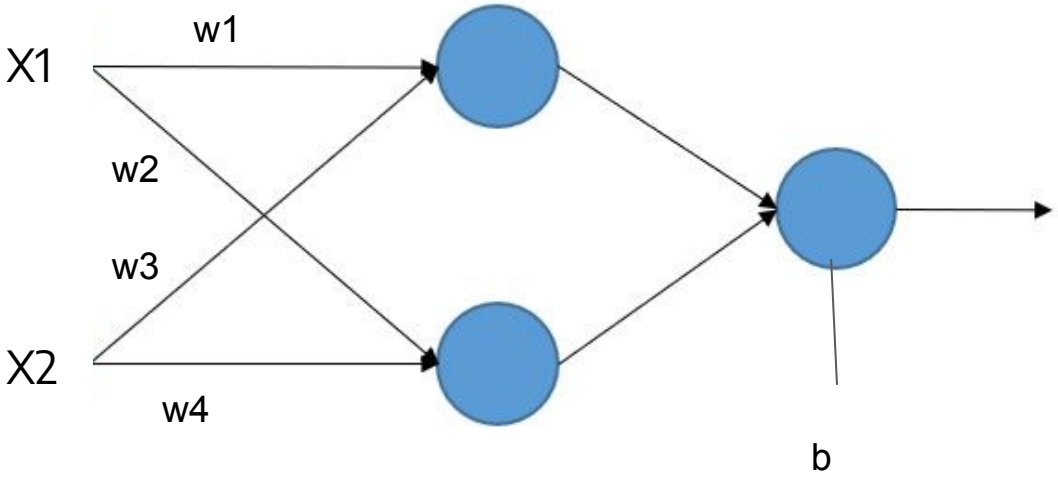

zZz
Si
Si

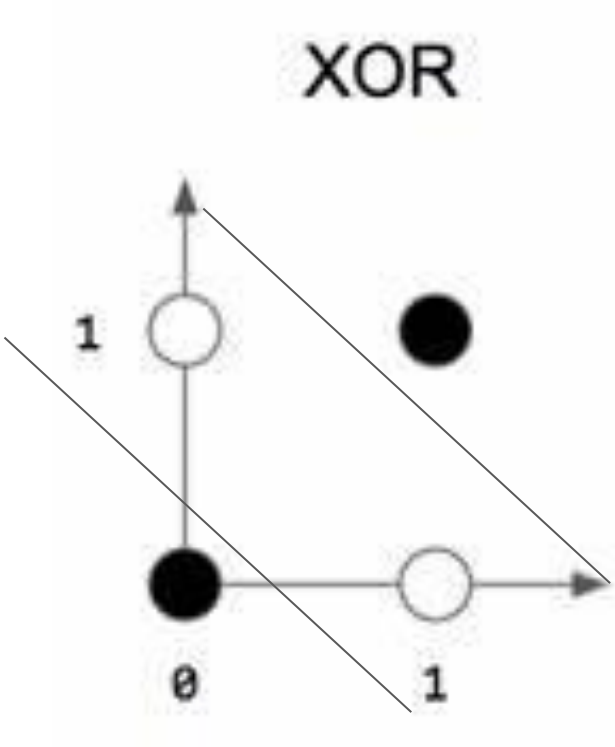

zZz
No
No

Operación XOR u OR Exclusivo

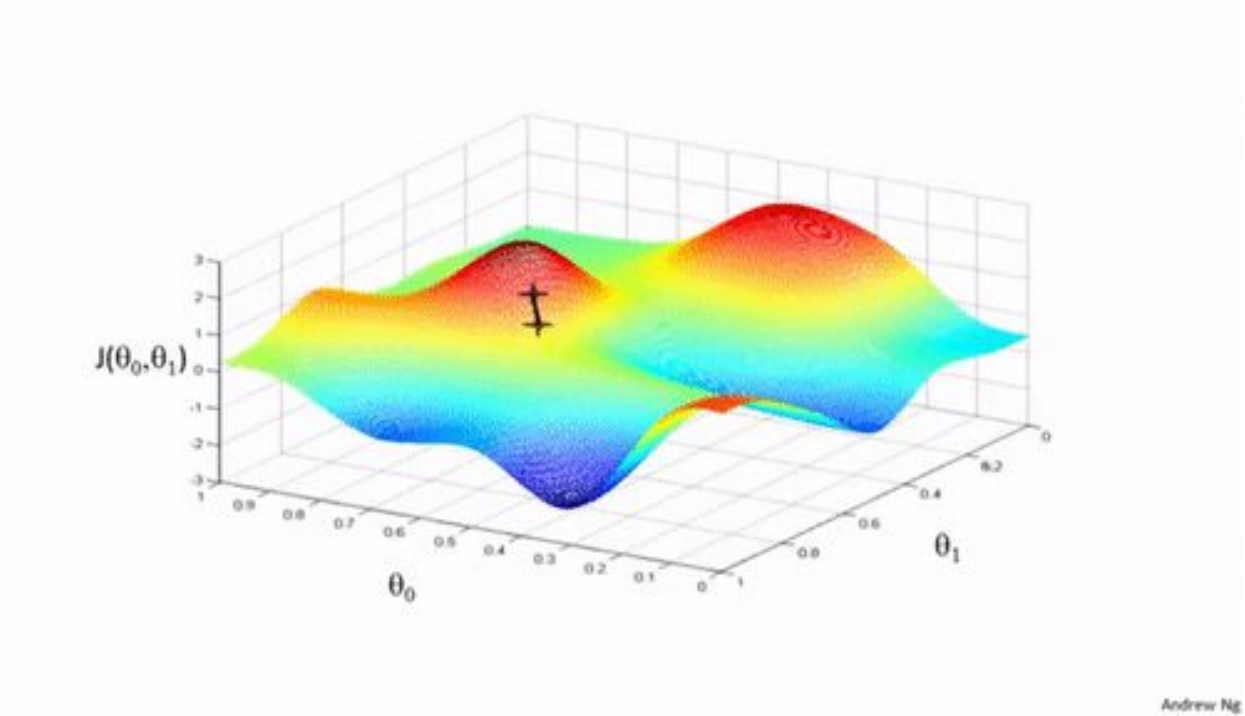


Perceptrón multicapa





Descenso por gradiente



Por favor, jueguen

https://playground.tensorflow.org/