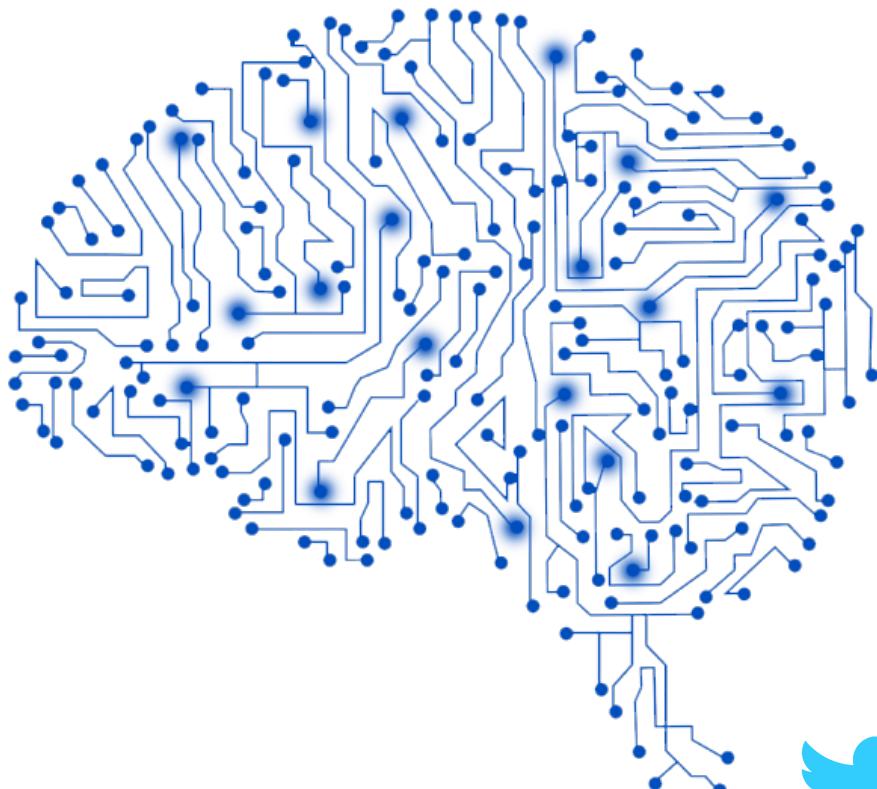


neuralBot

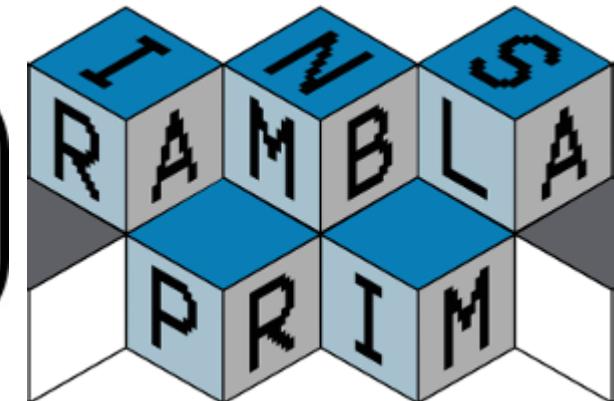
ROBOT AMB XARXA NEURONAL



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JORNADES TÈCNIQUES

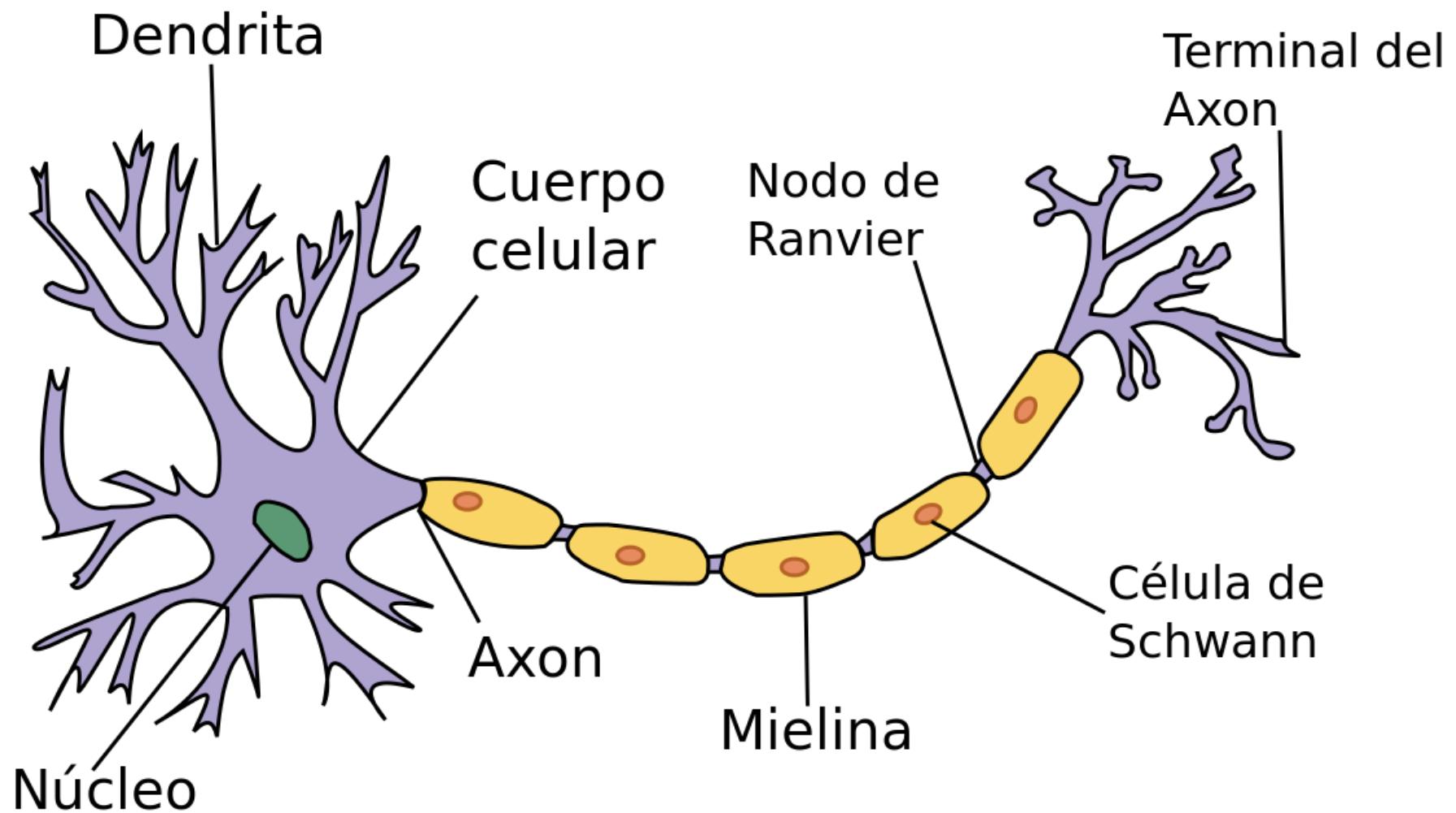
11/05/2018



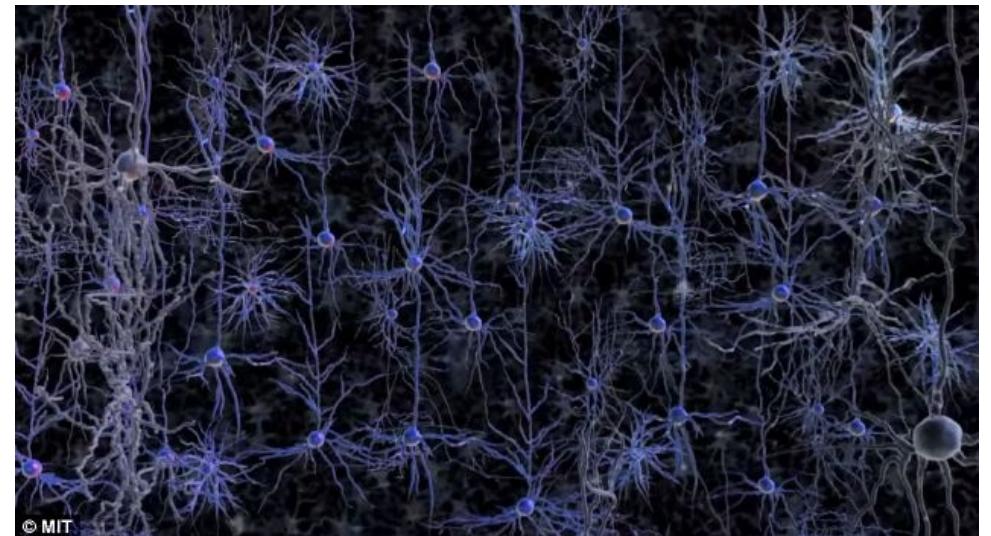
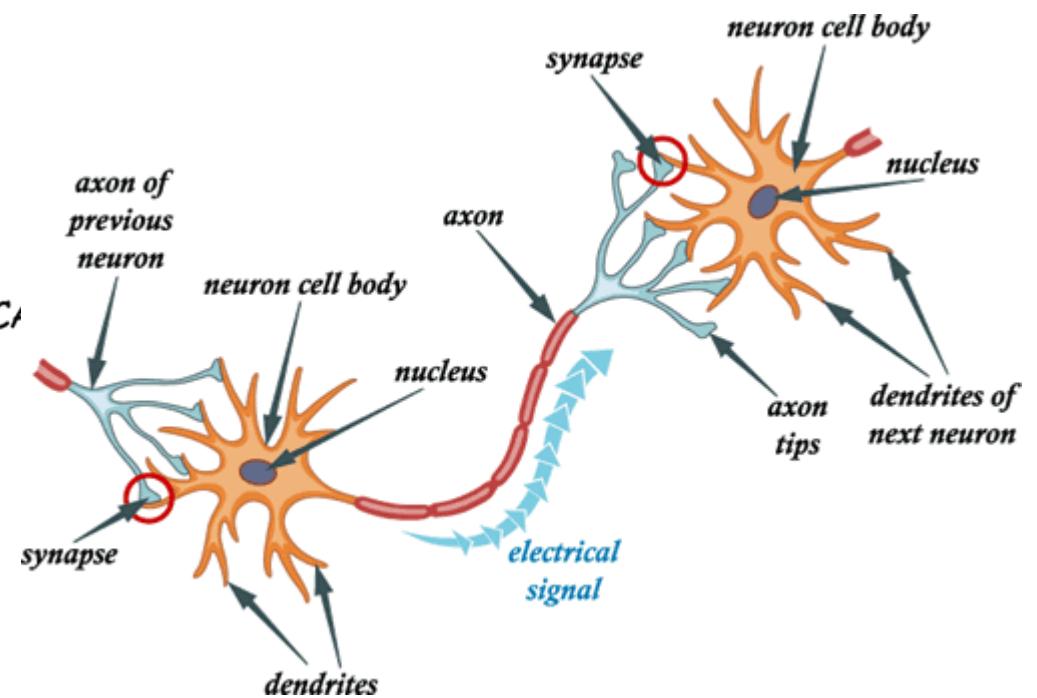
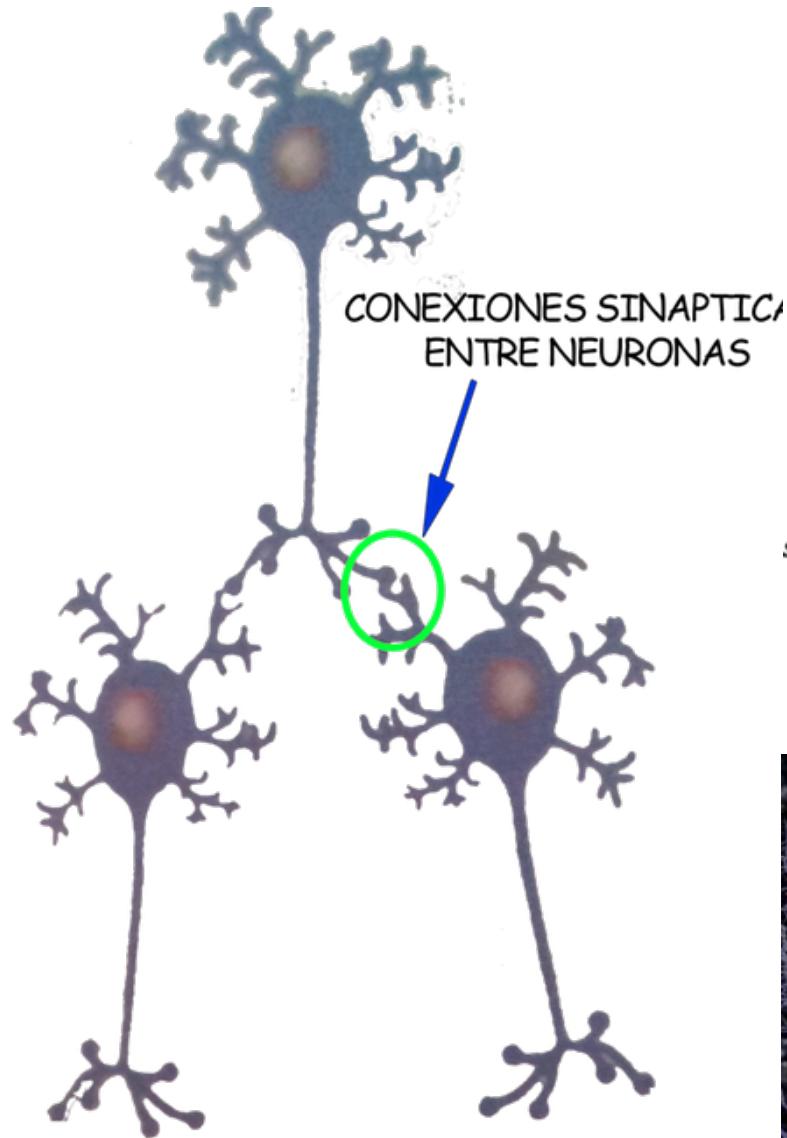
JAUME NOGUÉS



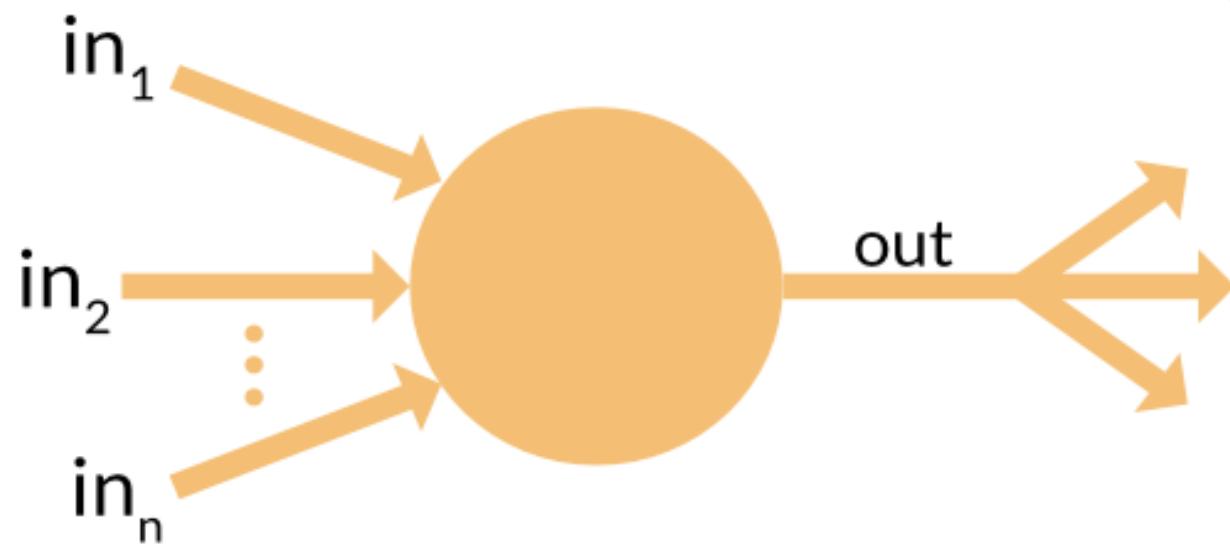
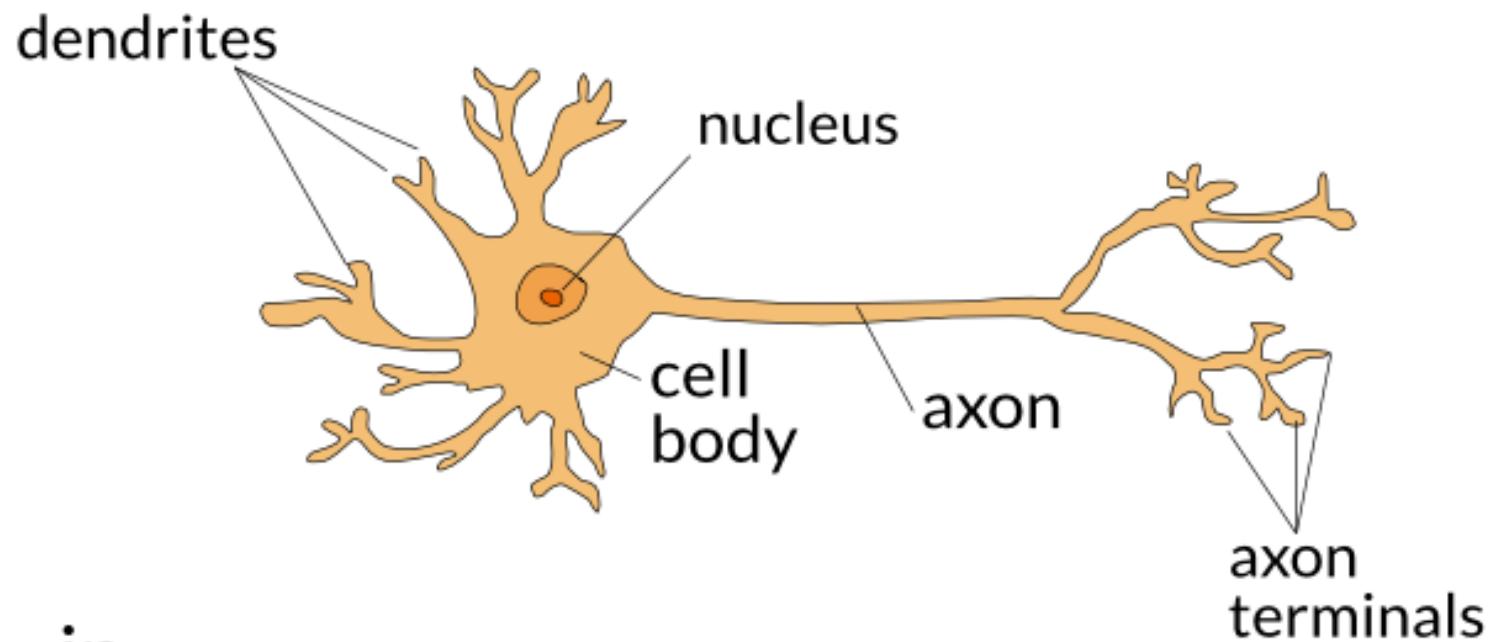
NEURONA BIOLÒGICA



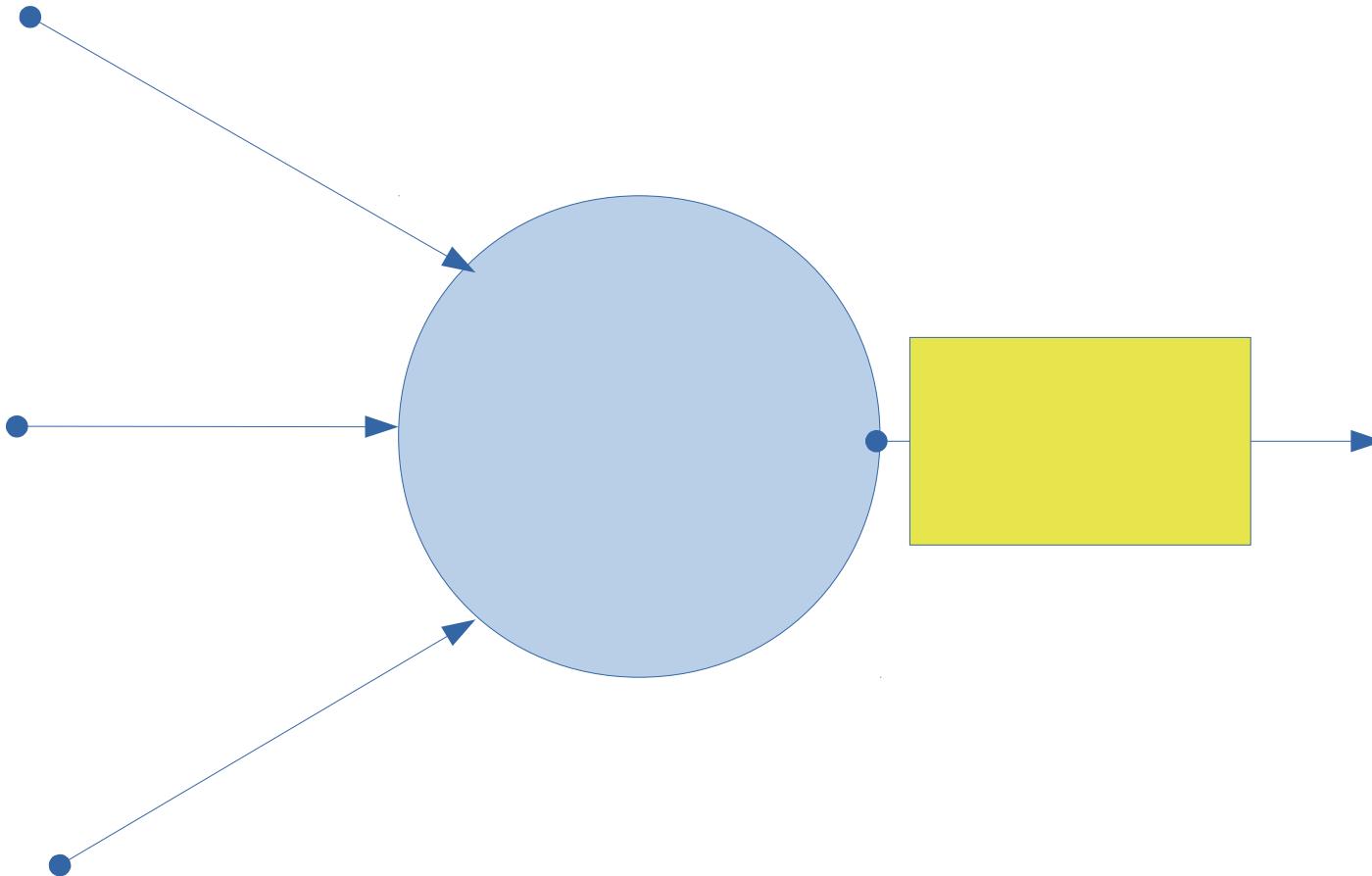
CONNEXIONS ENTRE NEURONES



PERCEPTRÓ, NEURONA ARTIFICIAL



PERCEPTRÓ, NEURONA ARTIFICIAL



PERCEPTRÓ, NEURONA ARTIFICIAL

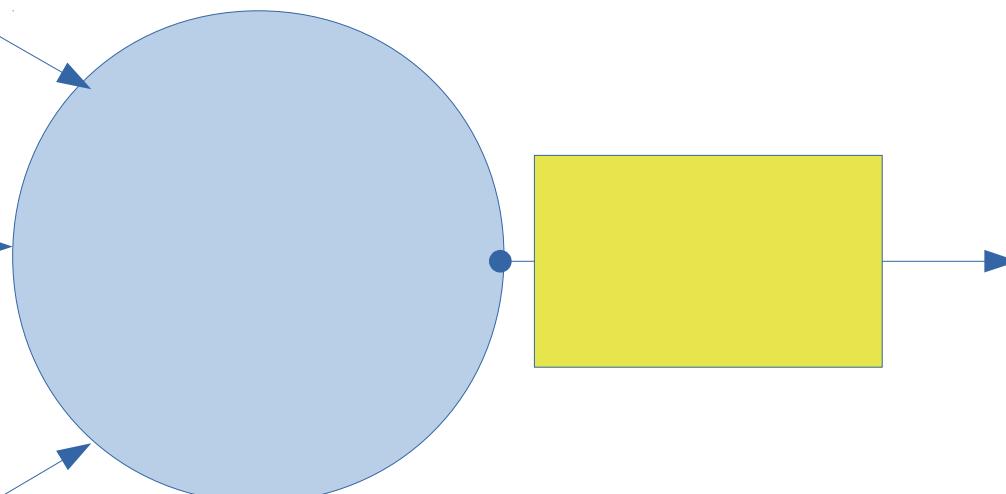
ENTRADAS

$I_1=0,3$

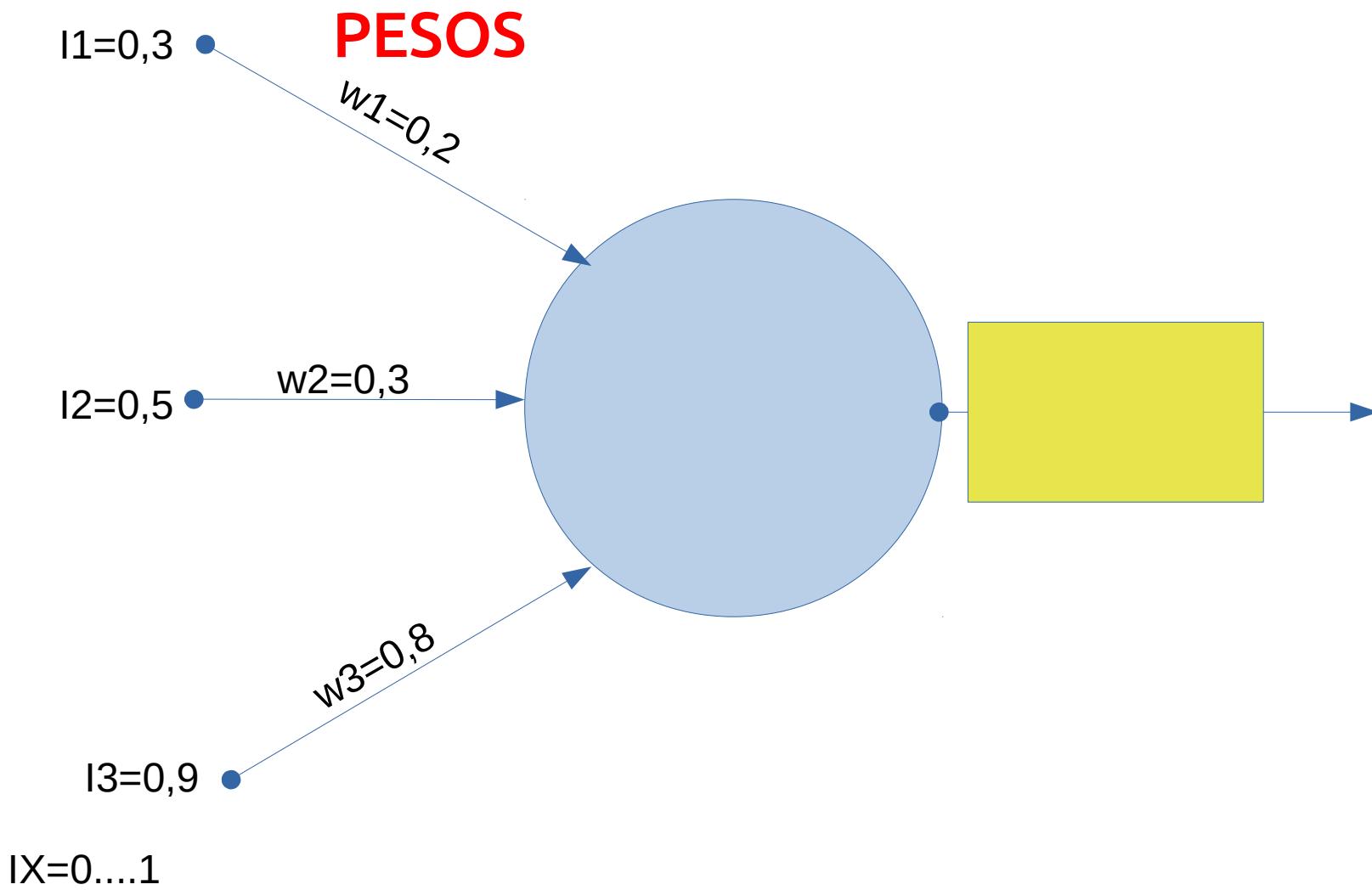
$I_2=0,5$

$I_3=0,9$

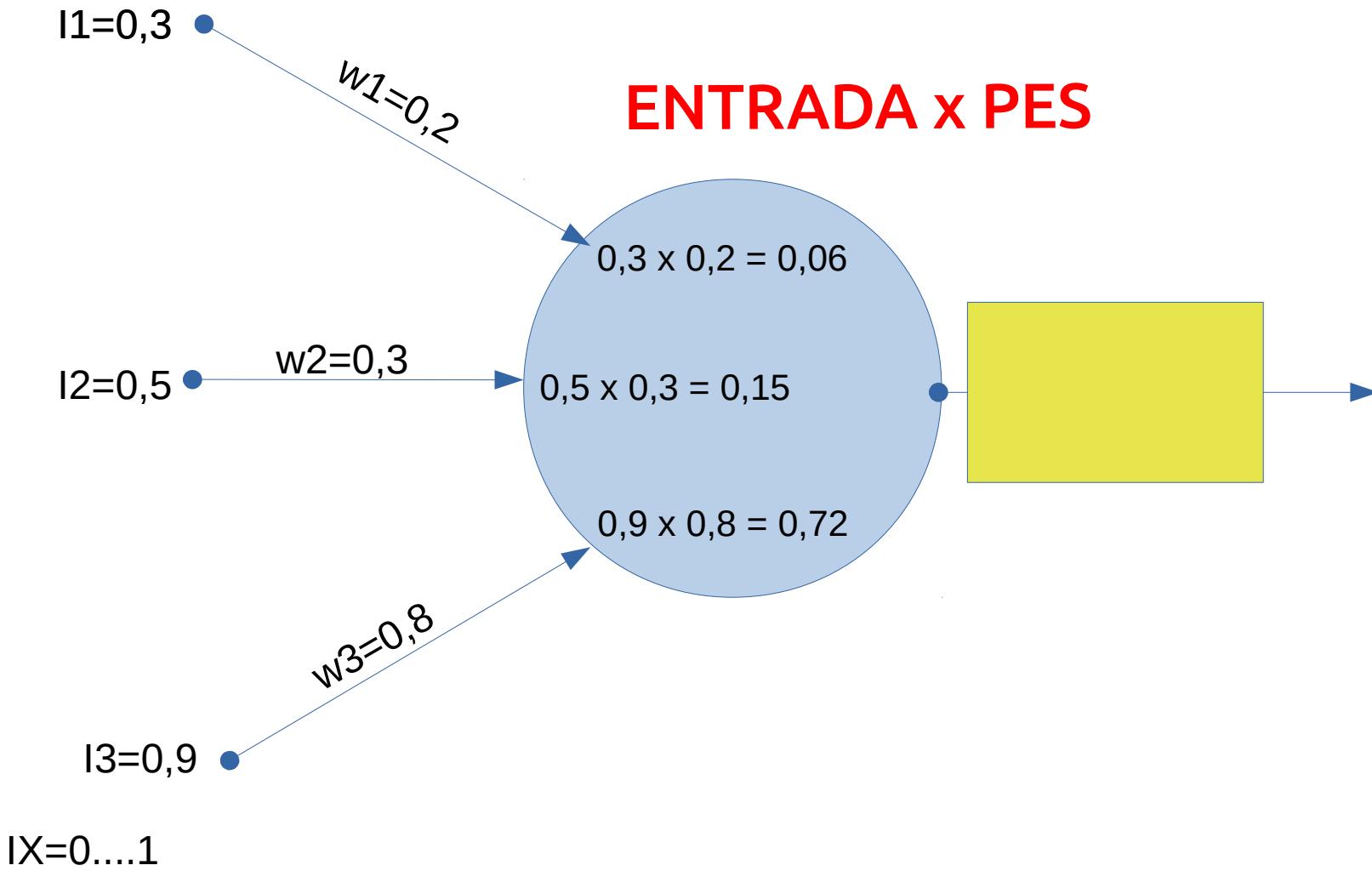
$I_X=0....1$



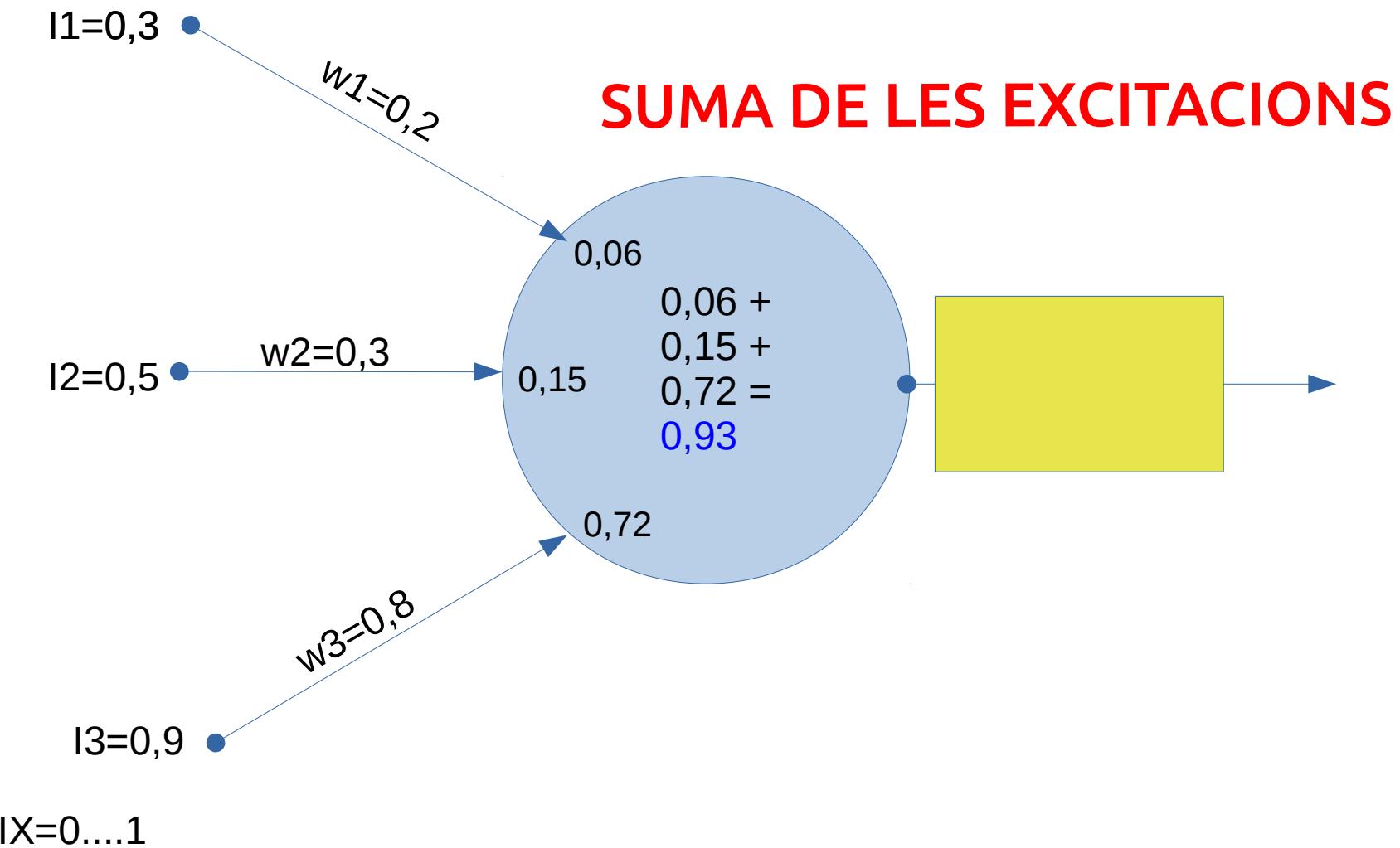
PERCEPTRÓ, NEURONA ARTIFICIAL



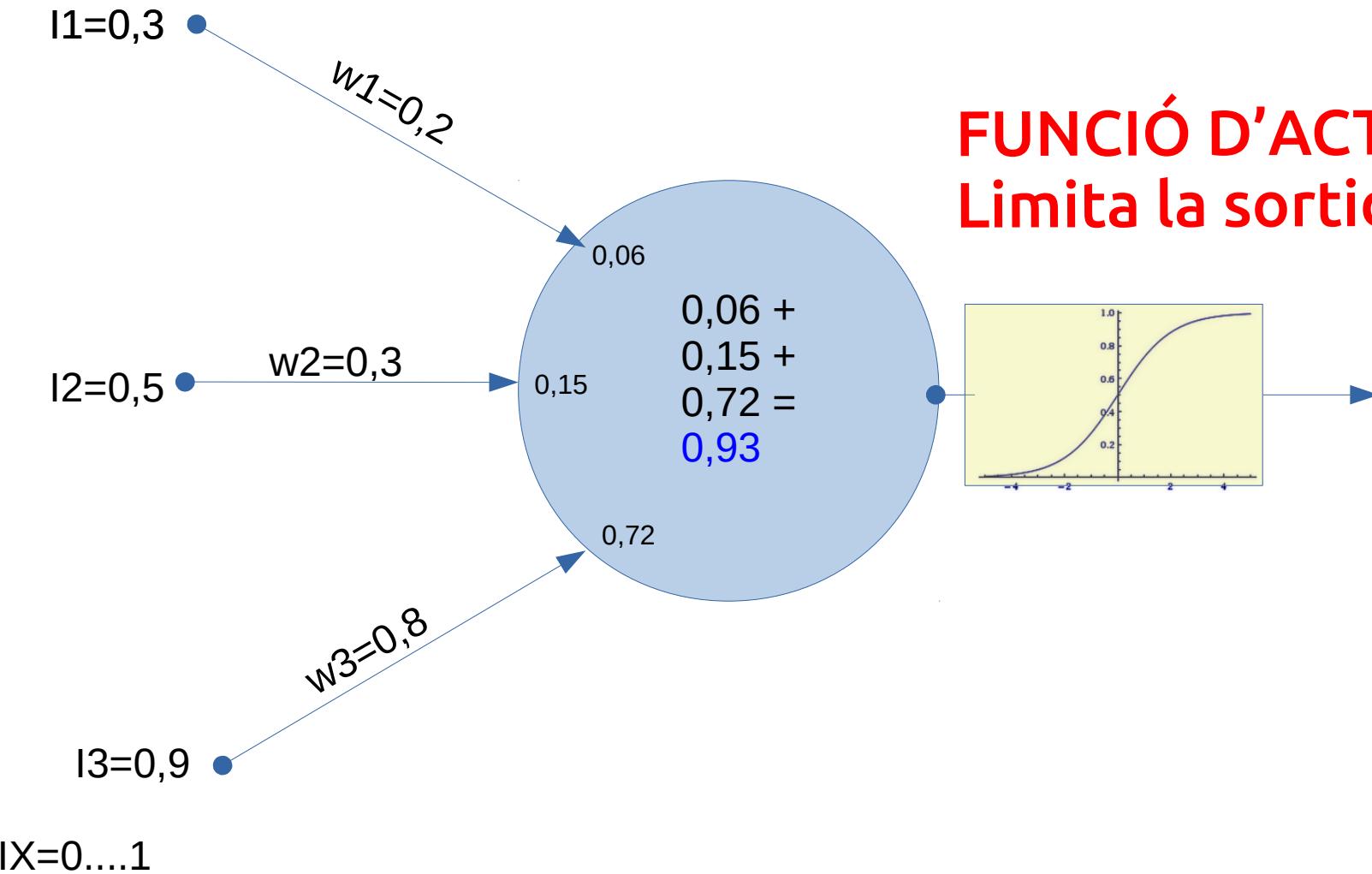
PERCEPTRÓ, NEURONA ARTIFICIAL



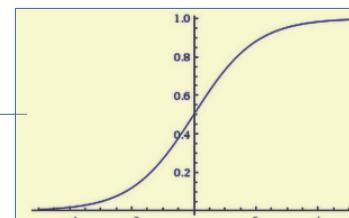
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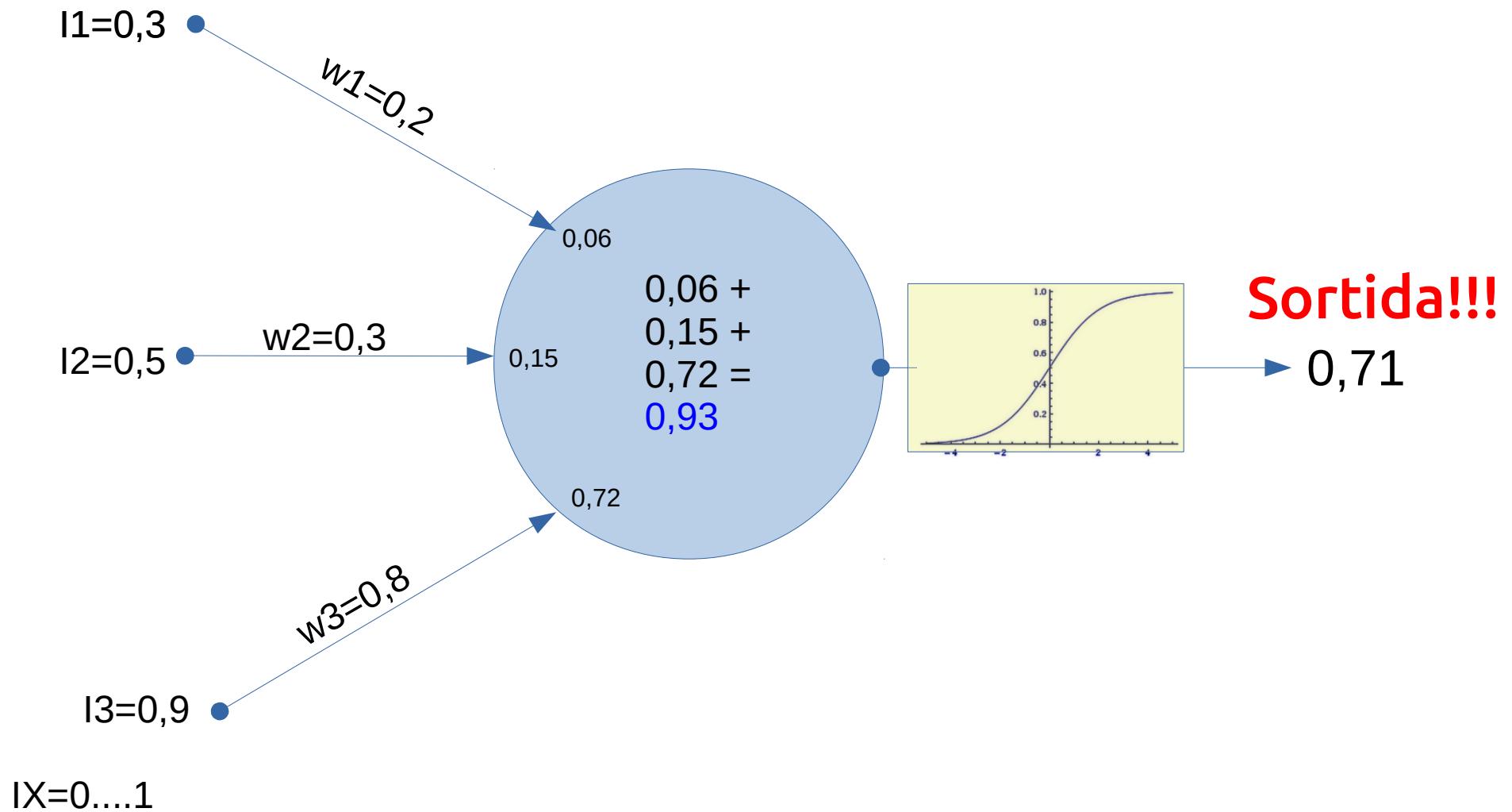
PERCEPTRÓ, NEURONA ARTIFICIAL



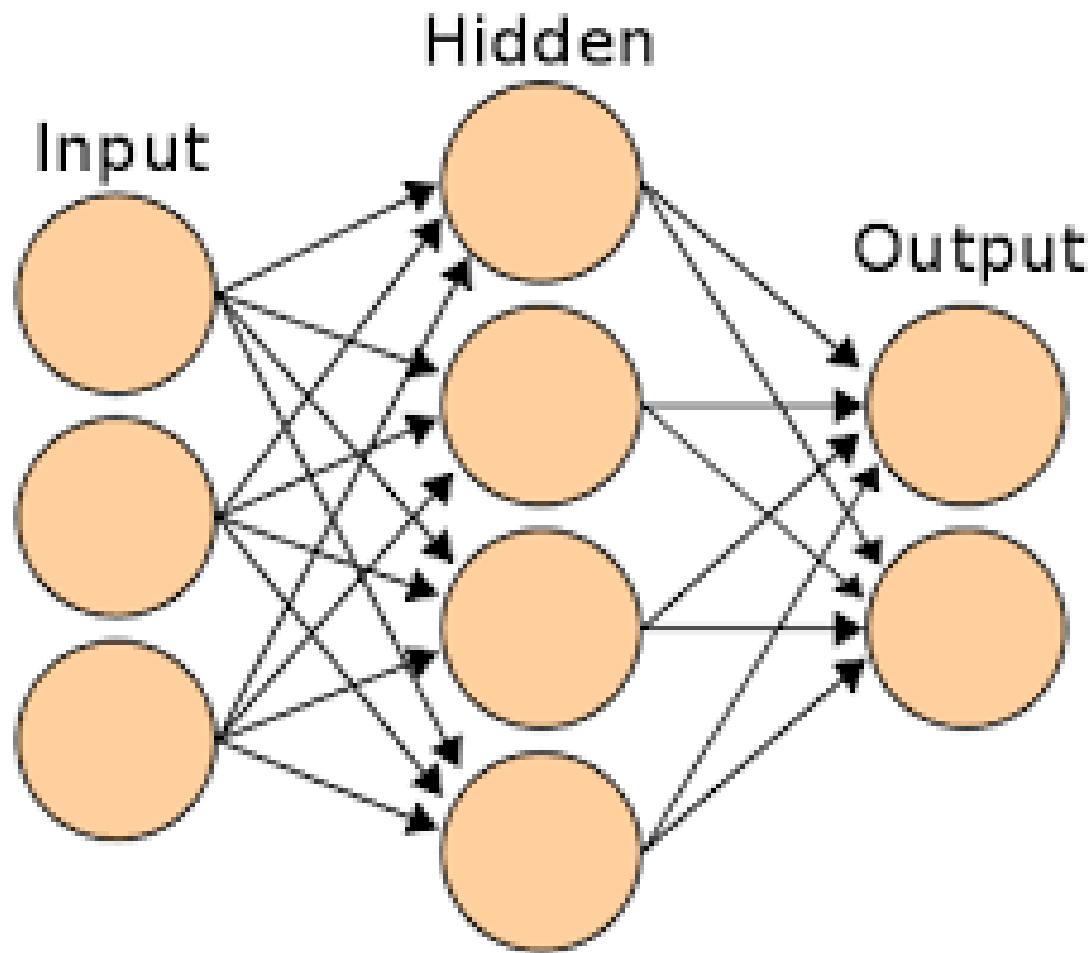
FUNCIÓ D'ACTIVACIÓ
Limita la sortida



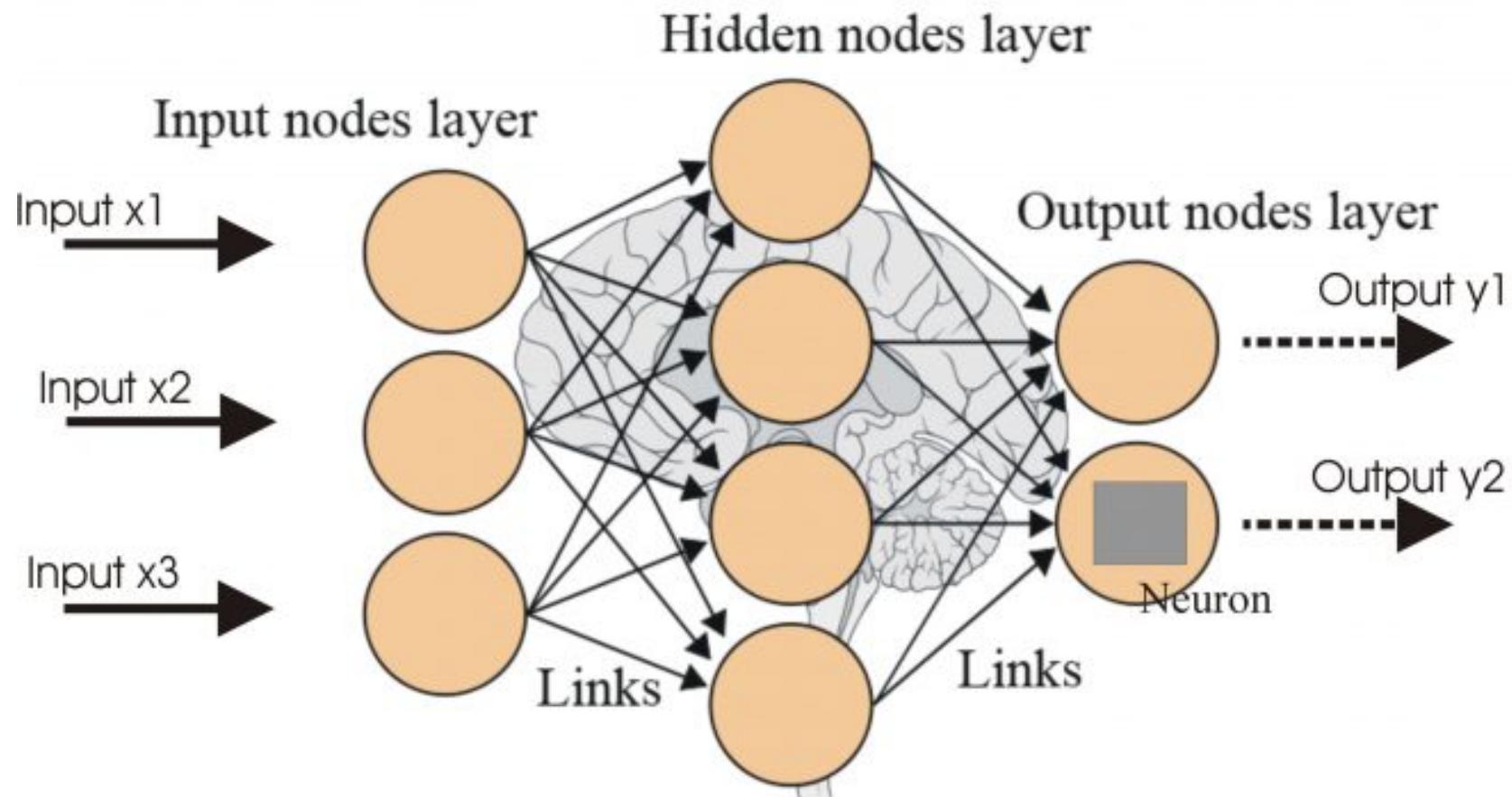
PERCEPTRÓ, NEURONA ARTIFICIAL



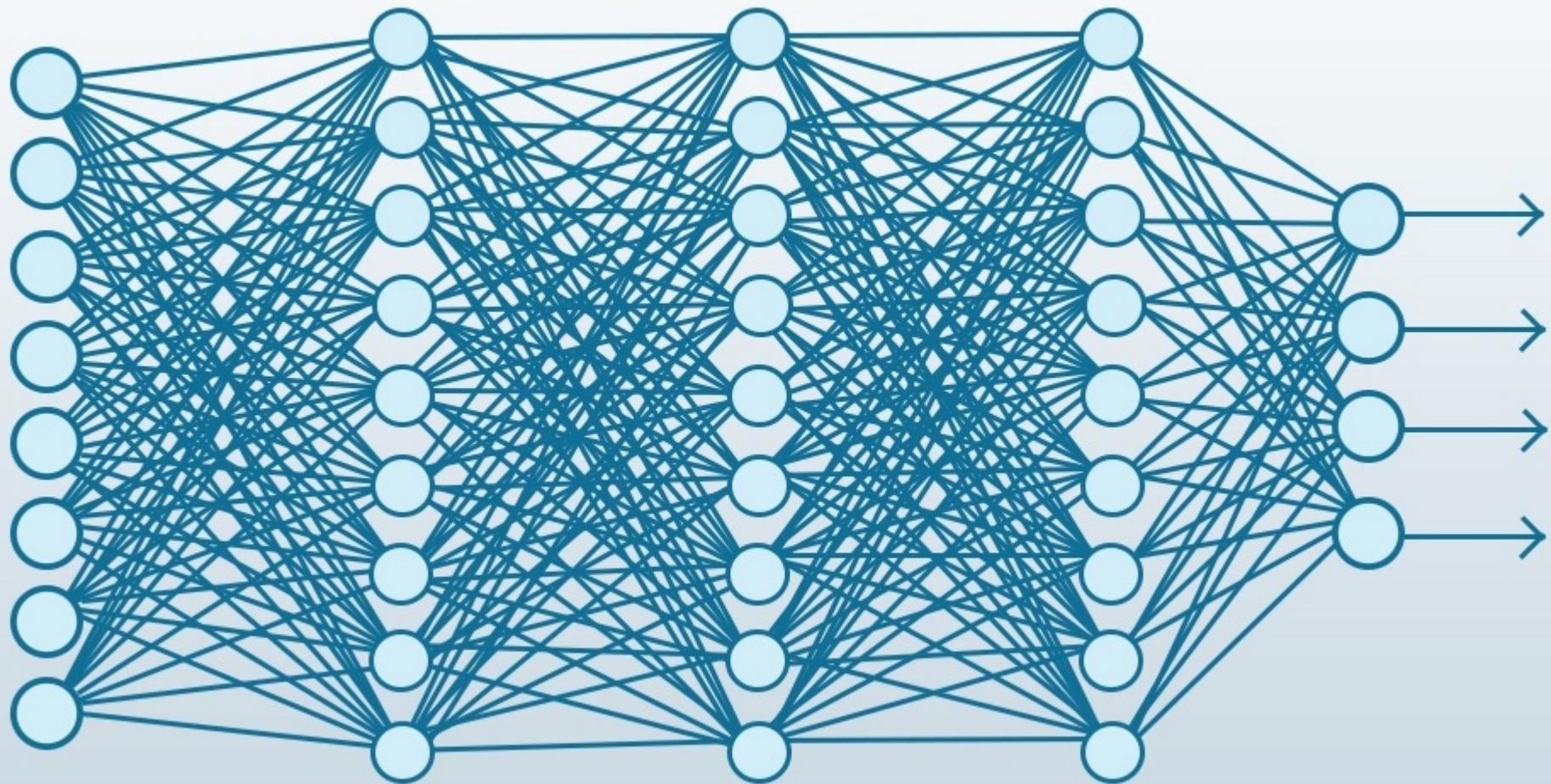
XARXA NEURONAL ARTIFICIAL



XARXA NEURONAL ARTIFICIAL



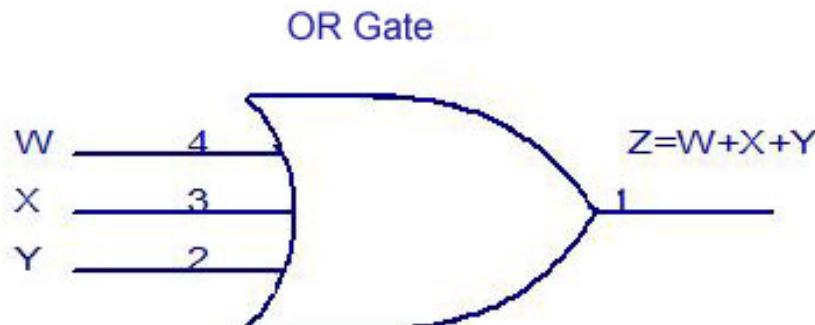
XARXA NEURONAL ARTIFICIAL DEEP LEARNING



XARXA NEURONAL ARTIFICIAL

EXEMPLE

3 Input OR Gate

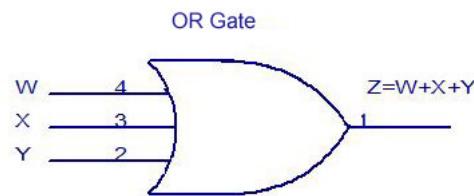


TRUTH TABLE

| INPUTS | | | OUTPUT |
|--------|---|---|--------|
| W | X | Y | Z |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 |

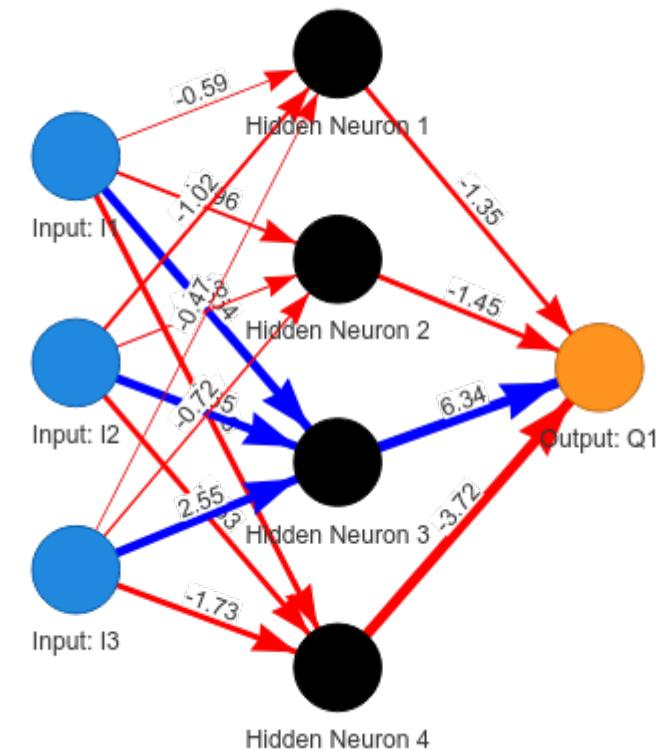
XARXA NEURONAL ARTIFICIAL

3 Input OR Gate



TRUTH TABLE

| INPUTS | | | OUTPUT |
|--------|---|---|--------|
| W | X | Y | Z |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 |

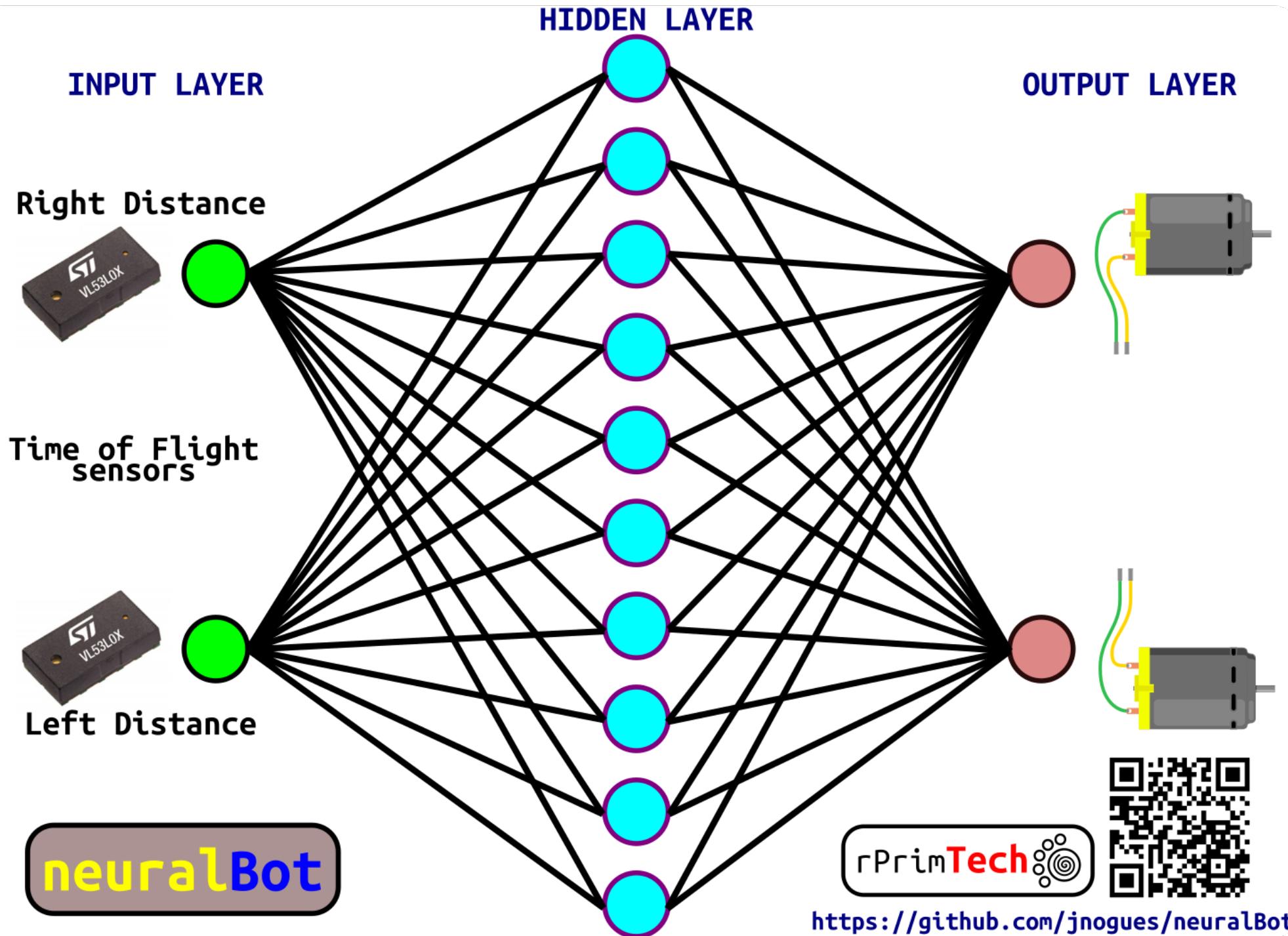


ENTRENAMENT!!

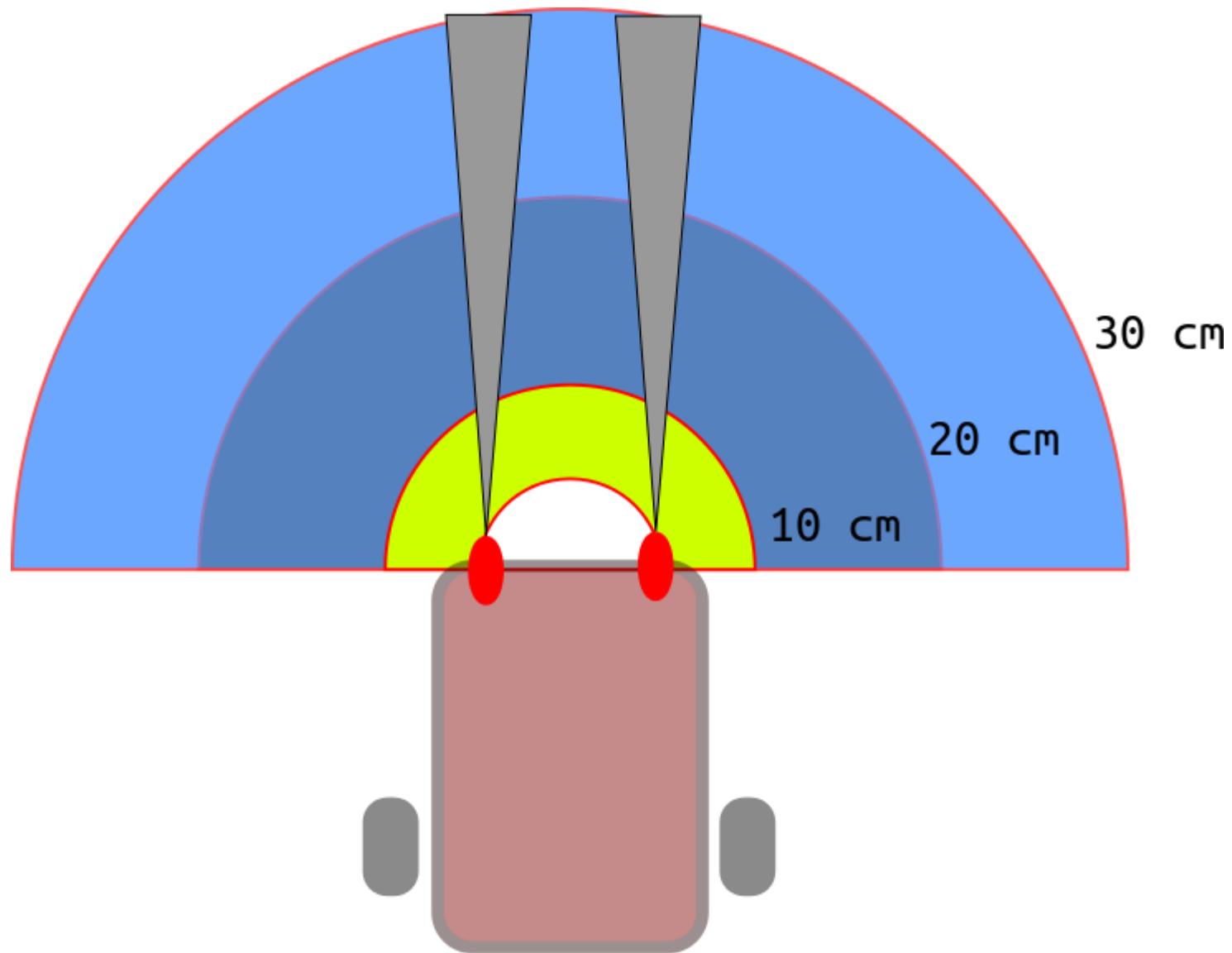
NEURALBOT



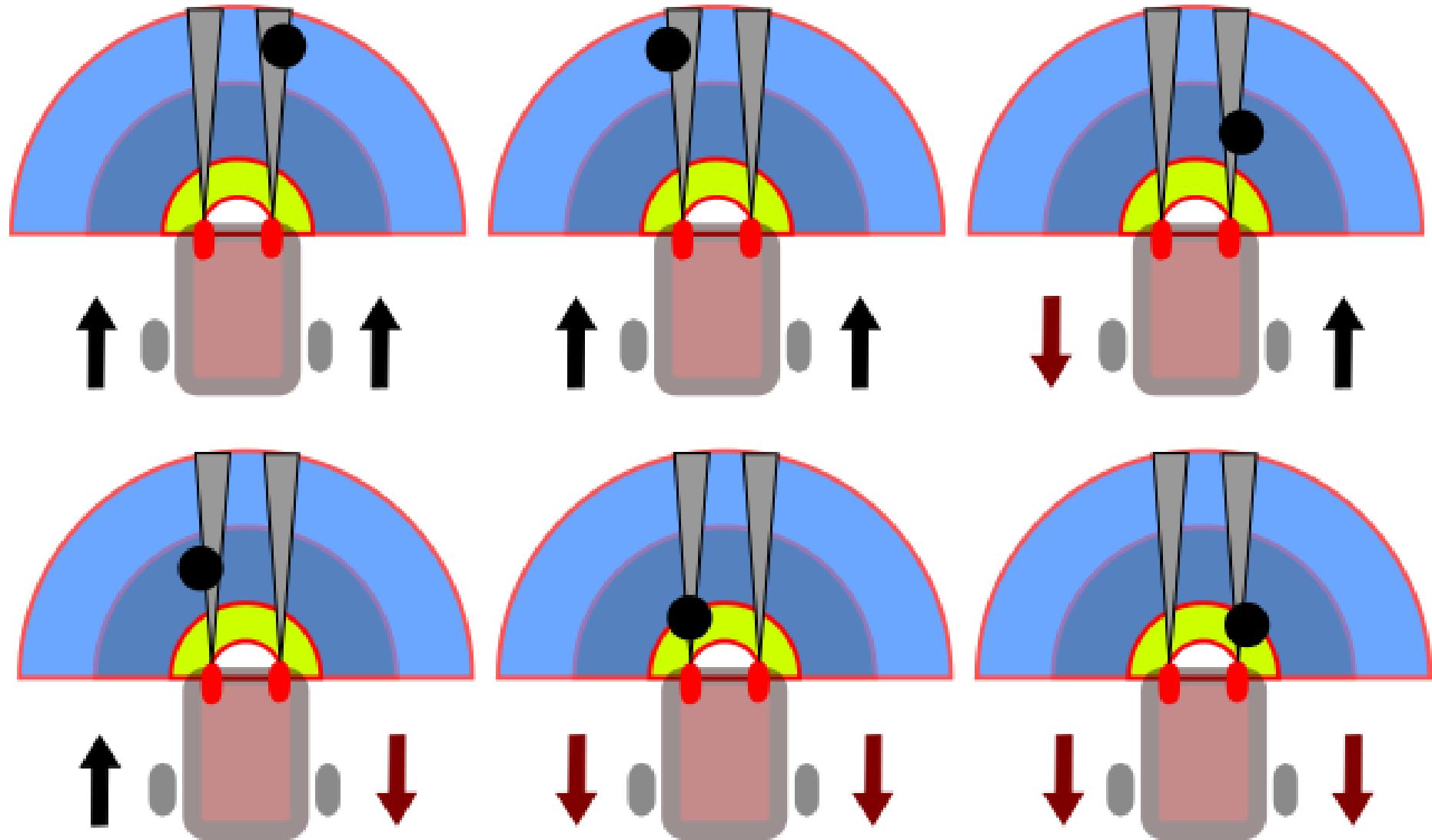
NEURALBOT



NEURALBOT



NEURALBOT



NEURALBOT DATA SET

| LEFT | RIGHT | | | MOTORS | LEFT | RIGHT | | MOTORS |
|------|-------|---|---|--------|------|-------|---|--------|
| 30 | 30 | 1 | 1 | FOWARD | 20 | 18 | 0 | 1 |
| 30 | 25 | 1 | 1 | FOWARD | 16 | 14 | 0 | 1 |
| 25 | 30 | 1 | 1 | FOWARD | 12 | 10 | 0 | 1 |
| 21 | 28 | 1 | 1 | FOWARD | 18 | 20 | 1 | 0 |
| 28 | 21 | 1 | 1 | FOWARD | 14 | 16 | 1 | 0 |
| 22 | 24 | 1 | 1 | FOWARD | 10 | 12 | 1 | 0 |
| 24 | 22 | 1 | 1 | FOWARD | | | | |
| 22 | 21 | 1 | 1 | FOWARD | | | | |
| 21 | 22 | 1 | 1 | FOWARD | | | | |

ENTRENAMENT!!

| LEFT | RIGHT | | | MOTORS | LEFT | RIGHT | | MOTORS |
|------|-------|---|---|---------|------|-------|---|--------|
| 10 | 10 | 0 | 0 | REVERSE | 30 | 18 | 0 | 1 |
| 8 | 10 | 0 | 0 | REVERSE | 15 | 28 | 0 | 1 |
| 10 | 8 | 0 | 0 | REVERSE | 12 | 26 | 0 | 1 |
| 6 | 8 | 0 | 0 | REVERSE | | | | |
| 8 | 6 | 0 | 0 | REVERSE | 18 | 30 | 1 | 0 |
| 5 | 5 | 0 | 0 | REVERSE | 15 | 28 | 1 | 0 |
| 30 | 8 | 0 | 0 | REVERSE | 12 | 26 | 1 | 0 |
| 8 | 30 | 0 | 0 | REVERSE | | | | |
| 28 | 6 | 0 | 0 | REVERSE | | | | |

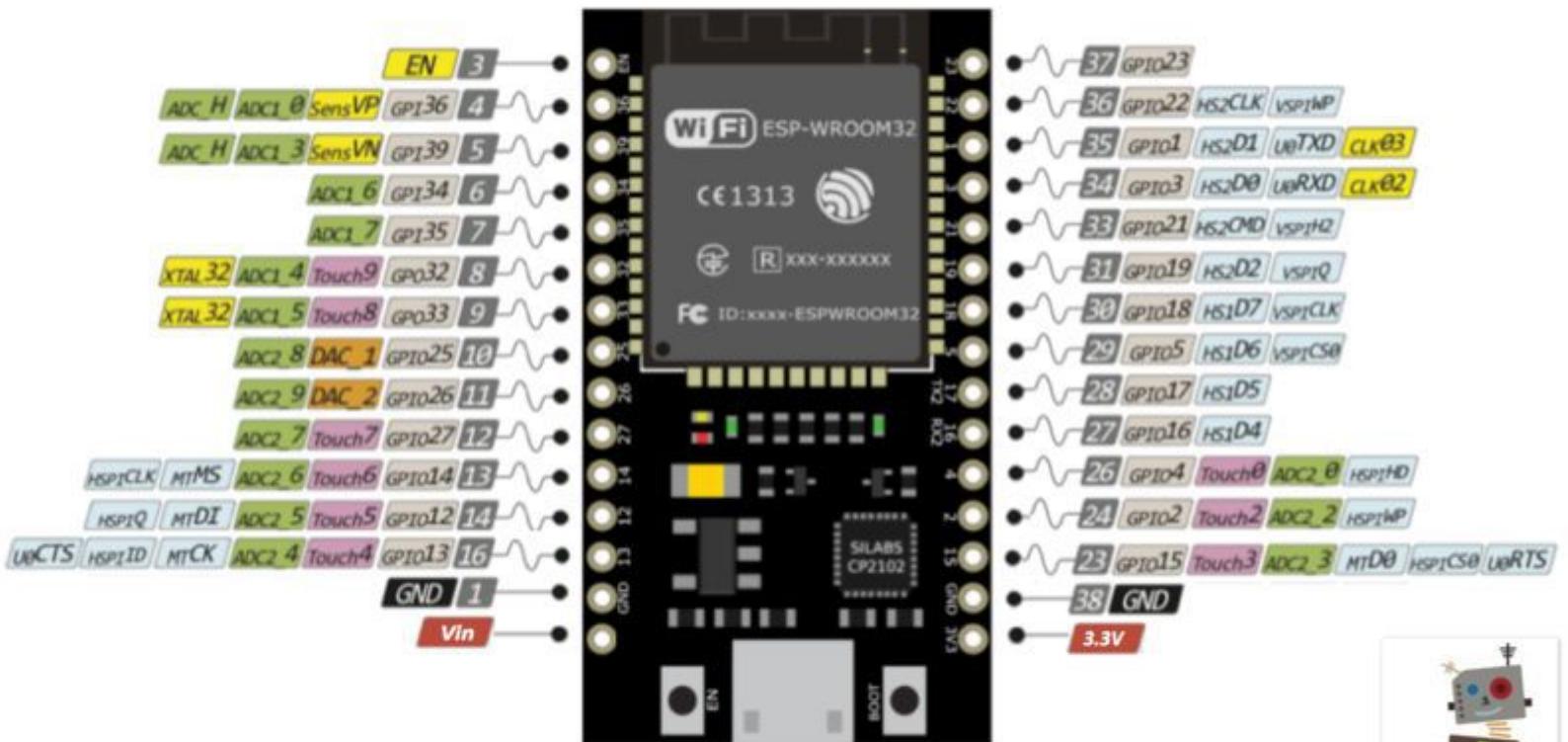
NEURALBOT

PROCESSADOR ESP32

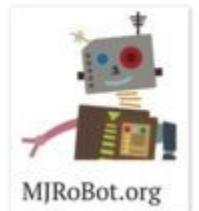
**ESP32
PINOUT**

-  Power
-  GND
-  Serial Pin
-  Analog Pin
-  Control
-  Physical Pin
-  Port Pin
-  Touch Pin
-  DAC Pin
-  PWM Pin

ESP32 DEVELOPMENT BOARD DUAL CORE ESP-32 & ESP-32S BOARD



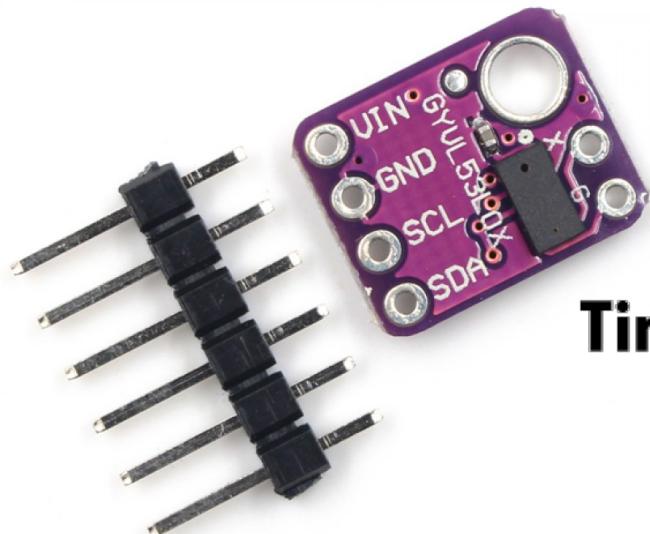
Freely adapted by <https://MJRoBot.org>



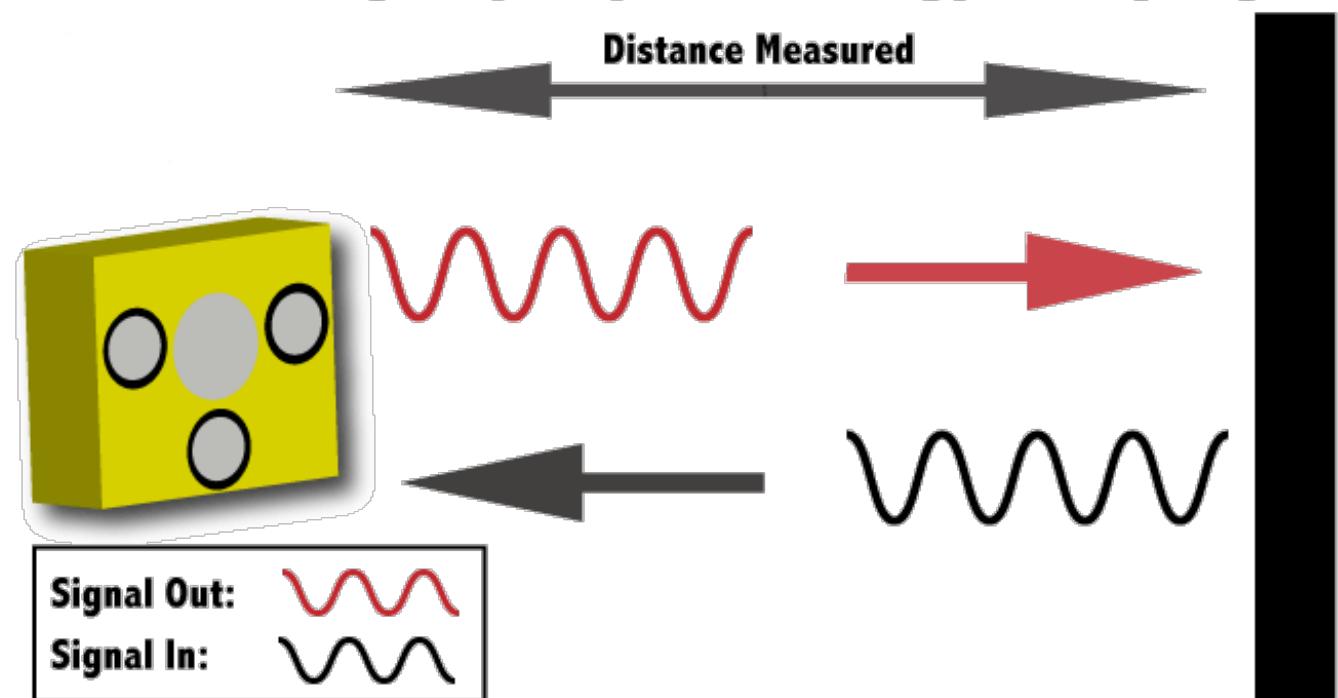
NEURALBOT

LIDAR

LIGHT DETECTION AND RANGING OR LASER IMAGING DETECTION AND RANGING



Time-of-Flight (ToF) Technology Using Light



NEURALBOT

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JNOGUESE@GMAIL.COM



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