Boolean functions and Perceptron

A perceptron is described as $w_0' + \sum_{i=1}^{n} w_i x_i$

- ## NOT

For implement this operator we can use a single perpetron, so we have:

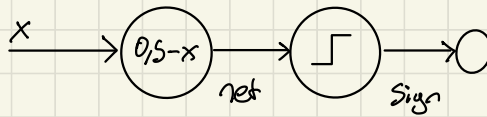$$w_0' + w_1 x_1 \qquad\qquad x \in \{0, 1\}$$

$$w_0 = 0,5$$
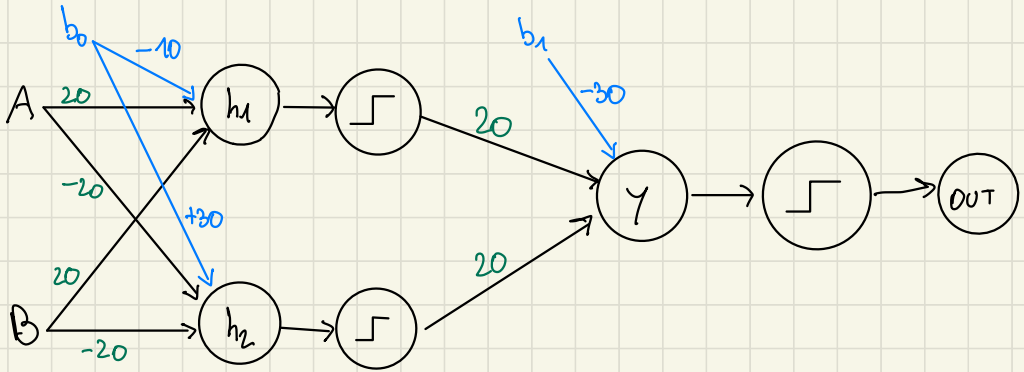$$w_1 = -1$$

So, it becomes:

$$0,5 - x_1$$

- When x is equal to 1, the output is $-0,5$ and it is negative
- When x is equal to 0, the output is $0,5$ which is positive

- A XOR B

A	B	A XOR B
0	0	0
0	1	1
1	0	1
1	1	0

A	B	$h_1 = 20 \cdot A + 20 \cdot B - 10$	$h_2 = -20 \cdot A - 20B + 30$	$Y = 20 \cdot h_1 + 20 h_2 - 30$
0	0	0	1	0
0	1	1	1	1
1	0	1	1	1
1	1	1	0	0

- $A \land (\neg B)$

A	B	$\neg B$	$A \land (\neg B)$
0	0	1	0
0	1	0	0
1	0	1	1
1	1	0	0

bo -1

A $\xrightarrow{1}$ $A+B+bo$ → OUT

B → $0.5-x$ → ⎍ $\xrightarrow{1}$

NOT