# Multi - Layered perceptron

## $x_1$ XOR $x_2$

| $x_1$ | $x_2$ | $x_1$ XOR $x_2$ |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

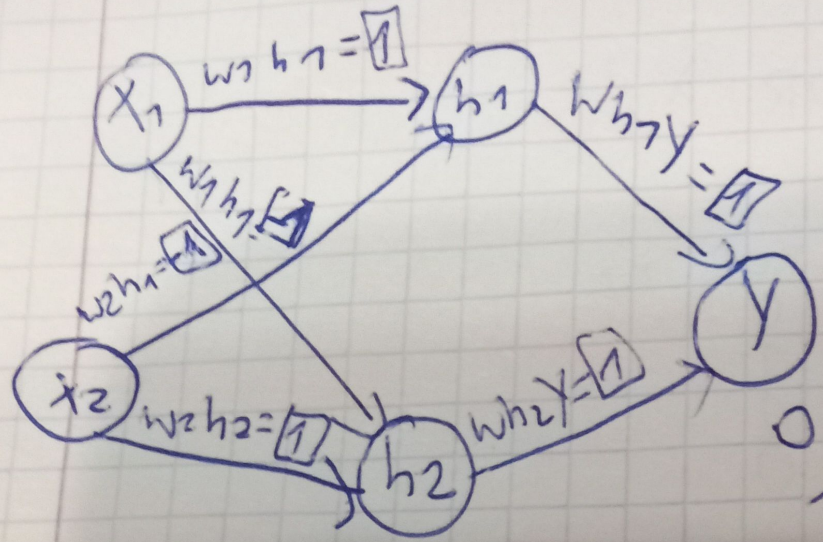
| | | | | h1 | | h2 | | Y |
|---|---|---|---|---|---|---|---|---|
| $x_1$ | $x_2$ | $\sim x_1$ | $\sim x_2$ | $x_2$ AND $\sim x_1$ | | $x_1$ AND $\sim x_2$ | | h1 OR h2 |
| 0 | 0 | 1 | 1 | 0 | (0) | 0 | (0) | 0 |
| 0 | 1 | 1 | 0 | 1 | (-1) | 0 | (1) | 1 |
| 1 | 0 | 0 | 1 | 0 | (0) | 1 | (-1) | 1 |
| 1 | 1 | 0 | 0 | 0 | (0) | 0 | (0) | 0 |

0 if $\partial(x) >= 0$

1 otherwise

0 if $\bar{o}(x) <= 0$

1 otherwise




0 if $\sigma(x) <= 0$
1 otherwise

0 if $\sigma(x) >= 0$
1 otherwise

h1

$\begin{cases} x_1=0, x_2=0 \\ 0 \cdot 1 + 0 \cdot (-1) = (0) \end{cases}$

$\begin{cases} x_1=0, x_2=1 \\ 0 \cdot 1 + 1 \cdot (-1) = (-1) \end{cases}$

$\begin{cases} x_1=1, x_2=0 \\ 1 \cdot 1 + 0 \cdot (-1) = (0) \end{cases}$

$\begin{cases} x_1=1, x_2=1 \\ 1 \cdot 1 + 1 \cdot (-1) = (0) \end{cases}$

h2

$\begin{cases} x_1=0, x_2=0 \\ 0 \cdot (-1) + 0 \cdot 1 = (0) \end{cases}$

$\begin{cases} x_1=0, x_2=1 \\ 0 \cdot (-1) + 1 \cdot 1 = (1) \end{cases}$

$\begin{cases} x_1=1, x_2=0 \\ 1 \cdot (-1) + 0 \cdot 1 = (-1) \end{cases}$

$\begin{cases} x_1=1, x_2=1 \\ 1 \cdot (-1) + 1 \cdot 1 = (0) \end{cases}$