



[AI]

1. NEURAL NETWORK

Formally a NN is formed by **Neurons (Input, Hidden, Output)** and **Edge** called connections that we can represent in a **DIRECTED GRAPH**.

NN is a network of neurons that communicate **with MLPs (Multi-Layer Perceptrons)**.

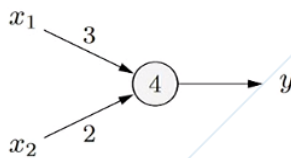
Human **perceives stimuli** from outside and thanks to his **receptors** the information can be decoded by **axons** (a part of neuron that is responsible to **lead the impulses** of information between neurons)

In the last century many engineers tried to make this high-level computation possible also for computers; their goal was to make the machine **self-conscious** and constantly improve itself without the human's help. (deep learning / **machine learning** / artificial intelligence).

EXAMPLES of AI nowadays : mouse, keyboard, machine-self drive, personal voice assistant

HOW NN WORKS

with Treshold = 4



x_1	x_2	$3x_1 + 2x_2$	y
0	0	0	0
1	0	3	0
0	1	2	0
1	1	5	1

x : "stimoli" from outside

w : weight of stimuli decided by human (importance's degree)

Result of 1 stimulus: **stimulus x weight > treshold ? 1 : 0**

SELF-ORGANIZING MAPS

HOPFIELS NETWORK

RADIAL BASIC FUNCTIONS NETWORKS

SUPPORT VECTOR MACHINE

FEED BACK NETWORK

LEARNING: SUPERVISED, UNSUPERVISED

OPTIMIZATION

CLASSIFICATION

CLUSTERING

PREDICTION

FUNCTION APROXIMATION



UNIVERSITÀ
DEGLI STUDI
DI MILANO

LAUREA MAGISTRALE
Dr. EMANUELE MERONI

2. FUZZY LOGIC

3. EVOLUTIONARY COMPUTING

VOCABOLARIO

FEASIBLE: fattibile

GRADIENTE: vettore geometrico formato da derivate parziali della funzione stessa

Well suited: adatto

MIMIC: imitare

FASHION: semplice

LAYERED: stratificato

SIGMOIDE: curva ad S