Roll no-41239

LP-4]
SCOA-4]

* Problem Statement :- Implement basic gates using Mc-Culoch pitts or Hebbnet neural network

* Objective :- i) To understand and implement Mc-Culoch Pitts basic logic gates using neural network.

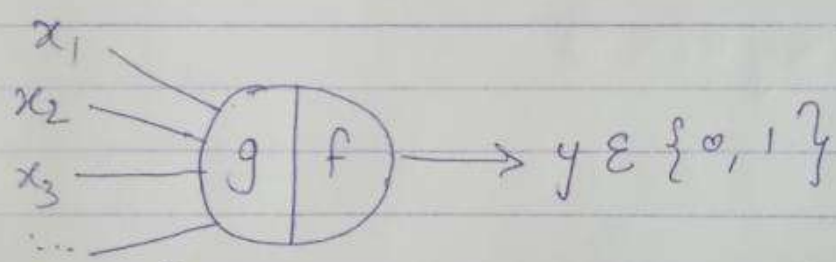
* Outcome :- I successfully implemented basic logic gates using Mc-Culoch Pitts.

* S/W and H/W requirement :- Open source OS, 64 bit OS, 8 GB 12AM, Gedit Jupyter notebook, python, keyboard, monitor

* Theory :-

1. Fundamental unit of deep neural networks is called artificial neuron/ perceptron.

2. First computational model of neuron was proposed by Warren McCulloch and Walter Pitts.



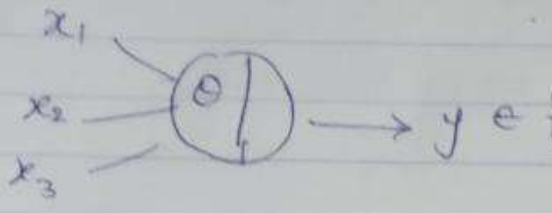
$x_n \in \{0, 1\}$.

3. First part g takes an input and performs an aggregation and based on aggregated value second part, f makes decision.

1. Now using M-P neuron we can represent a fe boolean functions.

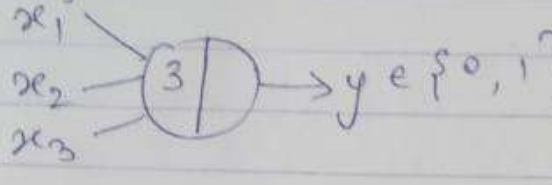
5. The neuron is trying to learn boolean function.

Let x_1, x_0, x_3 be Boolean input functions.



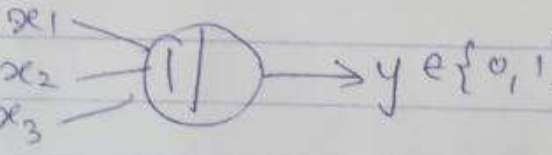
(1) AND :-

AND gives high output when all inputs are high.
i.e. $g(x) >= 3$.



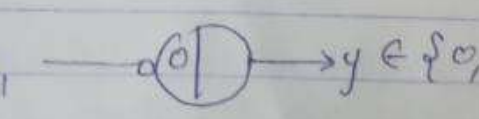
(2) OR :-

OR gives high output is ANY input is ON. i.e. $g(x) >= 1$.



(3) NOT :-

It gives opposite value of given input boolean function.



* Limitations of M-P neuron :-

1. Cannot take non-boolean inputs.
2. Handcoding of threshold.

* Conclusion :- I successfully implemented and studied basic logic gates using Mc-Culloch Pitts neuron.