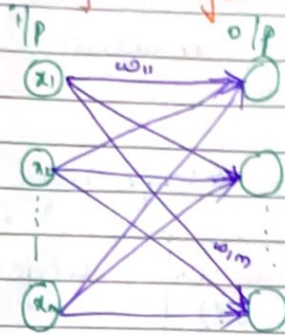


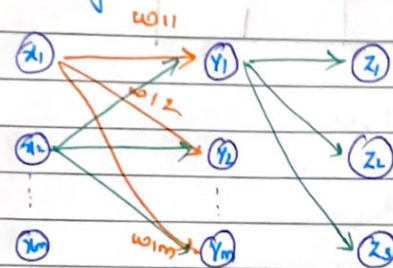
ANN Architecture

DATE 08 10 2021

1. Single layer Feed Forward.

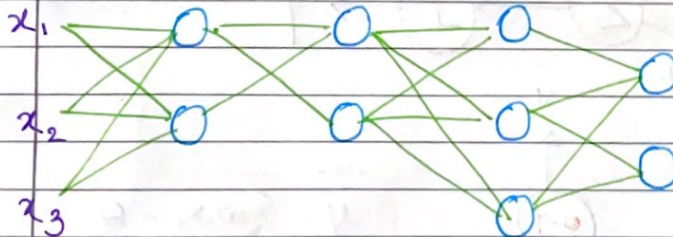


2. Multilayer Feed forward n/w



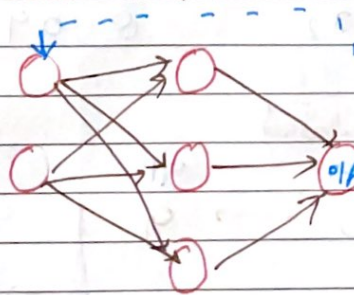
computationally more stronger

3. Multilayer Perceptron (fully three or more layers connected)



To classify non-linear separable data

4. Feed back ANN



Feedback is provided to adjust parameters

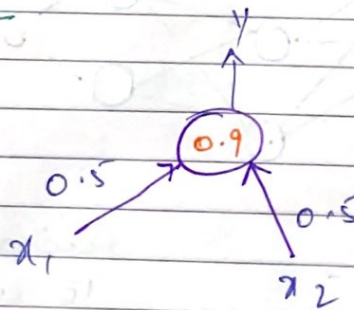
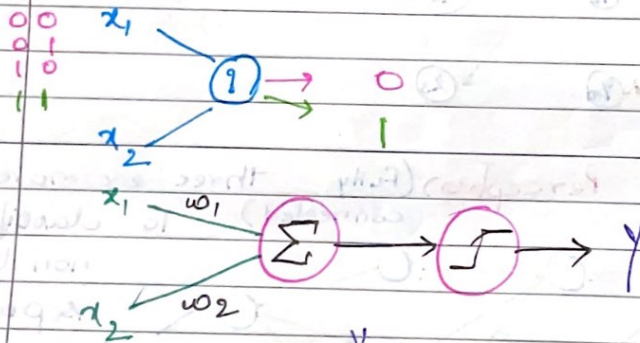
1. Single layer feed forward
2. Multilayer feed forward
3. Recurrent n/w

① \Rightarrow

AND PROBLEM - Single layer feed forward
acyclic.

Inputs		output
x_1	x_2	(Y)
0	0	0
0	1	0
1	0	0
1	1	1

\rightarrow Pattern Recognition



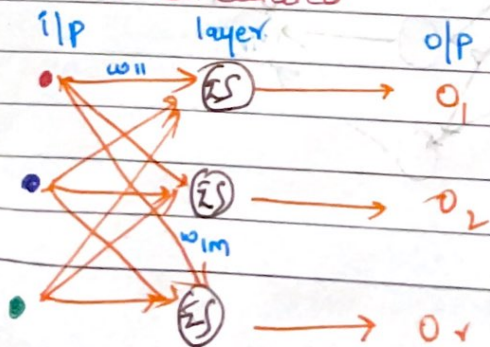
$$Y = \sum w_i x_i - \theta$$

$$w_1 = 0.5$$

$$w_2 = 0.5$$

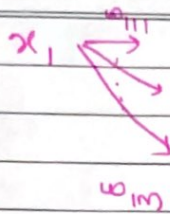
$$\theta = 0.9$$

How ' θ ' is calculated



$m \times n$

VISION



- ⇒ 1. Each neuron has same transform function
 2. The weights are the parameters
 3. How η/ω can be trained
 4. The Hidden layers give intermediary computation

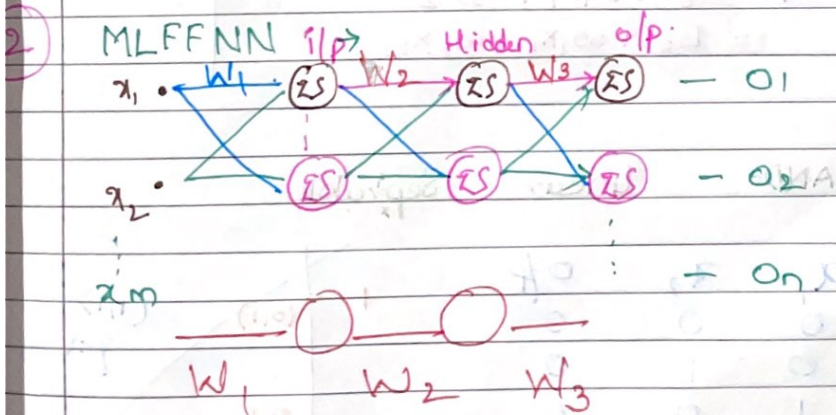
Modelling SLFFNN

$$W = \begin{bmatrix} w_{11} & \dots & w_{1n} \\ w_{21} & & w_{2m} \\ \dots & & \dots \\ w_{m1} & & w_{mn} \end{bmatrix}$$

o/p of k^{th} neuron

$$O_K = F_K \left(\sum_{i=1}^m (w_{ik} x_i) - \theta_K \right), \quad K = 1, 2, 3, \dots, n$$

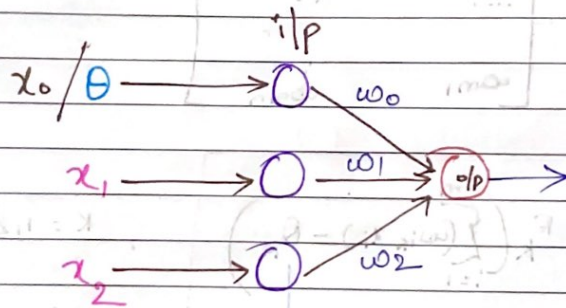
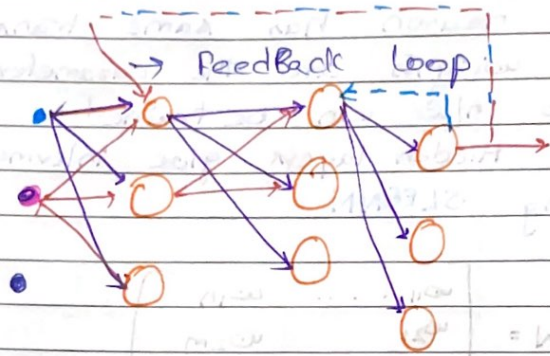
Threshold Value.



Modelling

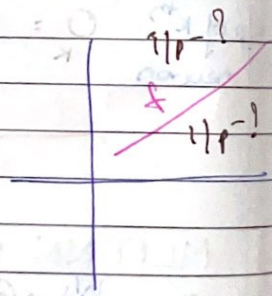
$$O_i^l = f_i^l \{ \omega_i^l x_i + \theta_i^l \}$$

③ Recurrent neural network



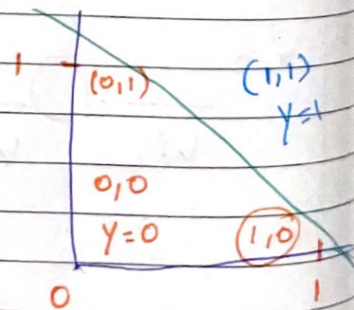
$$f = w_0 \theta + w_1 x_1 + w_2 x_2$$

$$= b_0 + w_1 x_1 + w_2 x_2$$



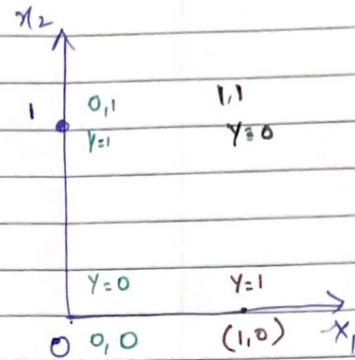
AND= linear Separable

x_1	x_2	o/p
0	0	0
0	1	0
1	0	0
1	1	1

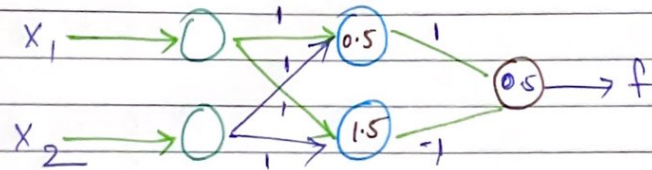


XOR

x_1	x_2	O/P
0	0	0
0	1	1
1	0	1
1	1	0



\Rightarrow linear non-separable.



\Rightarrow MLFFNN should be used