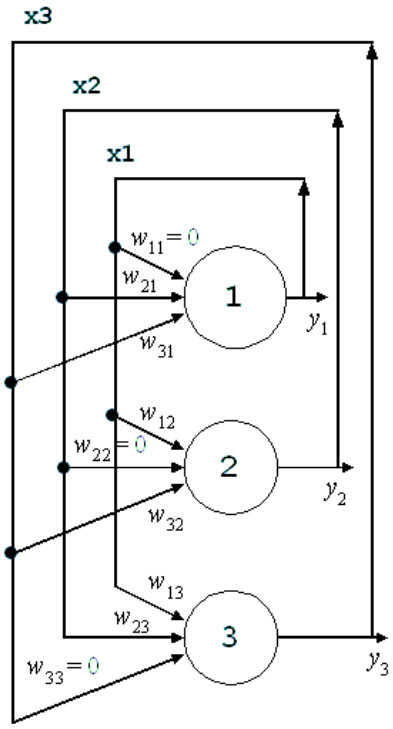
Retele Hopfield

- Reteaua neurala Hopfield este o retea neurala recursiva



- Reteaua se comporta ca o memorie asociativa (adresabila prin continut).

Fie o retea Hopfield cu N intrari:

Antrenare cu M sabloane:

1. Calculul ponderilor (folosind cele M sabloane de antrenare):

$$w_{ij} = \begin{cases} \sum_{s=1}^{M} x_i^s x_j^s, \ i \neq j, \quad i,j = 1..N \\ 0, \ i = j, \ i,j = 1..N \end{cases}$$

$$w_{ii} = 0$$

$$w_{ij} = w_{ji}$$

Recunoastere sabloane

1. Initializeaza reteaua cu sablonul necunoscut l_i : $x_i(t_0) = l_i$, i=1,N
2. repeta pana la convergenta ($x_j(t_{k+1}) = x_j(t_k)$ j=1..N)

$$x_j(t_{k+1}) = \begin{cases} 1, \text{daca} \sum_{i=1}^{N} w_{ij} x_i(t_k)) > 0, \ j = 1..N \\ -1, \text{altfel} \end{cases}$$

3. x este sablonul cautat

Bibliografie:

Demo retele Hopfield: http://www.heatonresearch.com/articles/61/page1.html