Hamming Net

Hamming Distance → dissimilarity of 2 vector.

$x_i^T x$ = No of sim. = No of dissimilarity

= No of sim ← Hamming Distance

No of similarity of HD = Total no. of elements

$x_i^T x = \underbrace{n - HD}_{\text{no. of similarity}} - HD = n - 2HD$

$-HD = \frac{1}{2}[x_i^T x] - n/2$

$O = WX + \Theta$ (bias)

output

$W = \frac{1}{2} x_i^T = \frac{1}{2}\begin{bmatrix} x_1^T \\ x_2^T \\ \vdots \\ x_p^T \end{bmatrix}$ $\Theta = \frac{1}{2}\begin{bmatrix} -n \\ -n \\ \vdots \\ -n \end{bmatrix}$

Conn. from j^{th} input node to i^{th} output node carries a weight, $w_{ij} = x_{ij}/2$.

Each upper level node is associated with threshold $\theta = -n/2$.