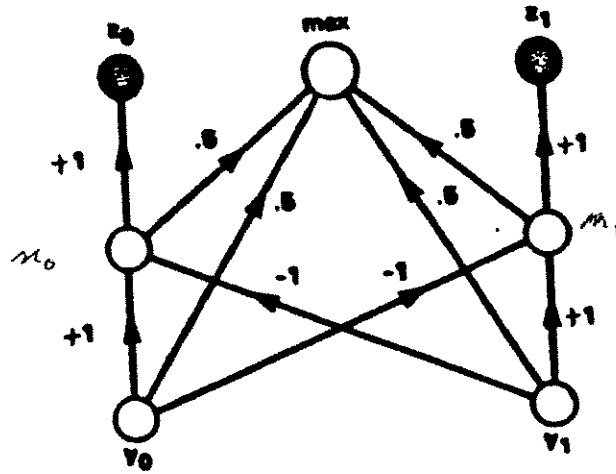


from Lippman, R.A.  
 31 May 1987  
 MIT Tech. Rep 769



$$m_0 = (y_0 - y_1) \cdot 1(y_0 - y_1)$$

$$m_1 = (y_1 - y_0) \cdot 1(y_1 - y_0)$$

$$max = \frac{1}{2} \{ m_0 + y_0 + m_1 + y_1 \}$$

$$z_0 = 1(m_0), \quad z_1 = 1(m_1)$$

$$1(x) = \begin{cases} 0 & x \leq 0 \\ 1 & 0 < x \end{cases}$$

Figure 5. Comparator subnet that selects the maximum of two inputs. Internal thresholds on both hard-limit nodes (filled circles) and analog-threshold logic nodes (open circles) are zero.

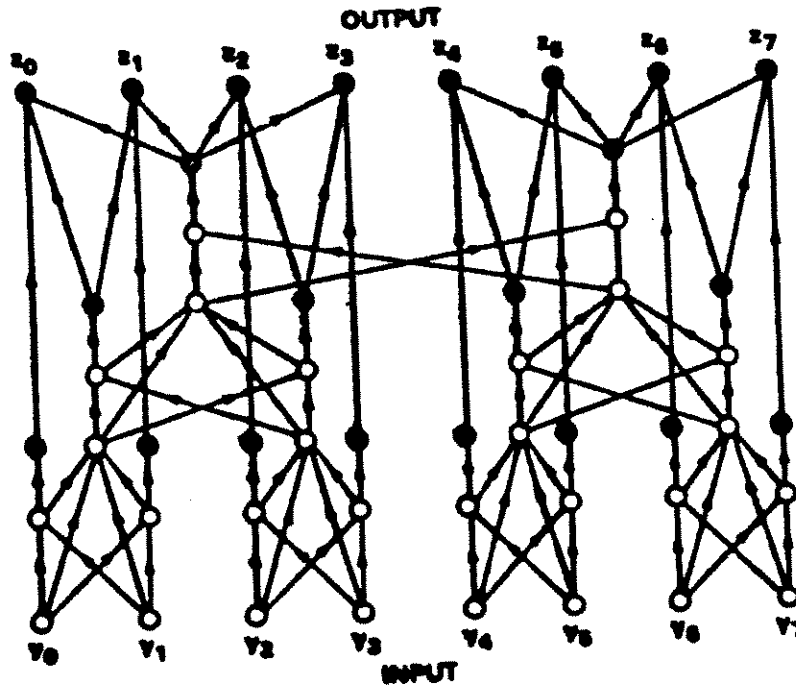


Figure 6. Feed-forward neural net that determines which of eight inputs is maximum using a binary tree and comparator subnets from Figure 5. Internal thresholds on both hard-limit nodes (filled circles) and analog-threshold logic nodes (open circles) are zero except for the output nodes. Internal thresholds on nodes  $z_0, z_1, \dots, z_6, z_7$  are  $-2.5$ . Weights for all comparator subnets in this net are as in Figure 5. All other weights are  $+1$ .