Logikai függvények implementációja

2016. szeptember 21., szerda 13:16

implementálható = lineárisan szeparálható

N	2^N	2^{2^N}	impl
2	4	16	14
3	8	256	
...			
10	1024	2^{1024}	

Cover-tétel:

$$L(P,N) = 2 \cdot \sum_{i=0}^{N} \binom{P-1}{i}$$

P: általános pontok száma; N: dimenzió

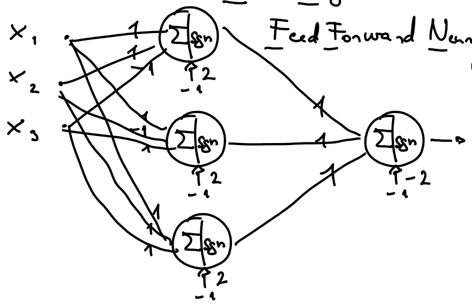
pl: $L(4,2) = 2 \cdot \left[\binom{3}{0} + \binom{3}{1} + \binom{3}{2}\right] = 14$

$L(8,3) = 2 \cdot \left[\binom{7}{0} + \binom{7}{1} + \binom{7}{2}\right] = 128$

Példa 1.4.

Multi Layer Perceptron (MLP)

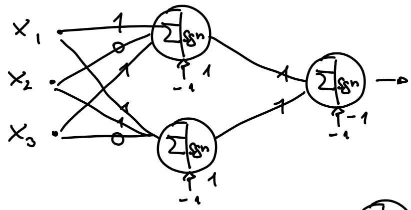
Feed Forward Neural Network (FFNN)

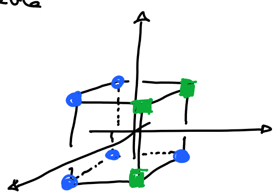


Minimális súly? => Karnaugh-tábla

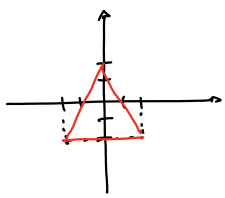
		x_1	
-1	-1	1	-1
-1	1	1	-1

x_3 (második sor), x_2 (3–4. oszlop)



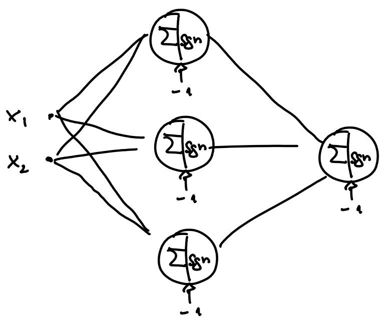


Példa 1.6:

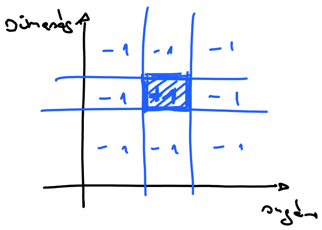


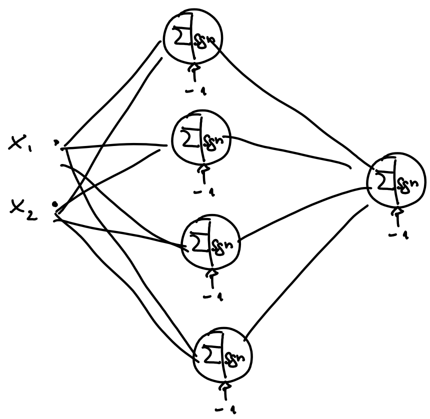
$$x_2 = \frac{4}{3} x_1 + 2 \Rightarrow -2 - \frac{4}{3} x_1 + x_2 = 0$$

$$w = \left[2 \quad -\frac{4}{3} \quad 1\right]$$

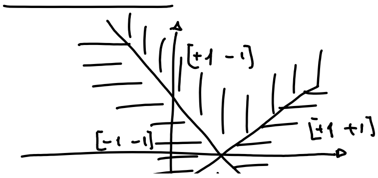


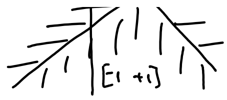
Példa 1.7:



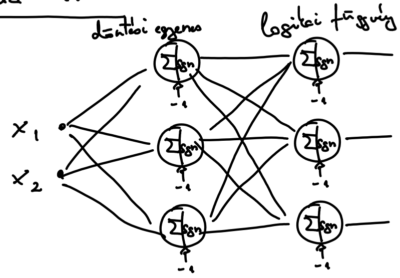


Példa 1.8:





Példa 1.14:



Példa 1.9.

$$w_{ij}^{(l)} = 1 \quad \forall i, j, l$$

$$y_1^{(1)} = sgn\{w_{11}^{(1)} x_1 - w_{10}^{(1)}\}$$

$$y_2^{(2)} = sgn\{w_{11}^{(2)} y_1 + w_{12}^{(2)} \cdot x_2 - w_{10}^{(2)}\}$$

$y_1^{(1)} = -1$

$x_1 < 1$

$$y_1^{(2)} = sgn\{-1 + x_2 - 1\}$$

$$x_2 - 2 = 0$$

$$x_2 = 2$$

$y_1^{(1)} = 1$

$x_1 \geq 1$

$$y_1^{(2)} = sgn\{1 + x_2 - 1\}$$

$$x_2 = 0$$