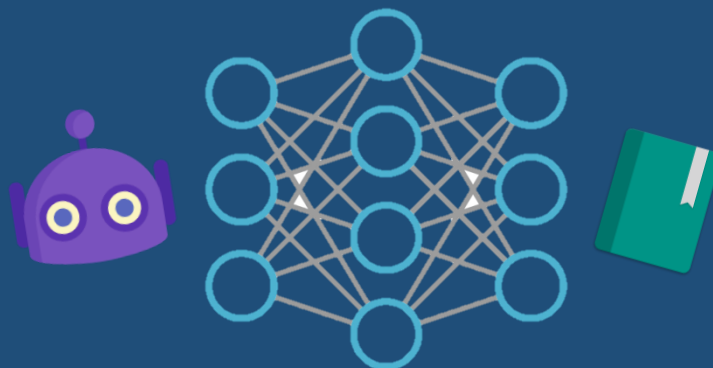


Deep Learning

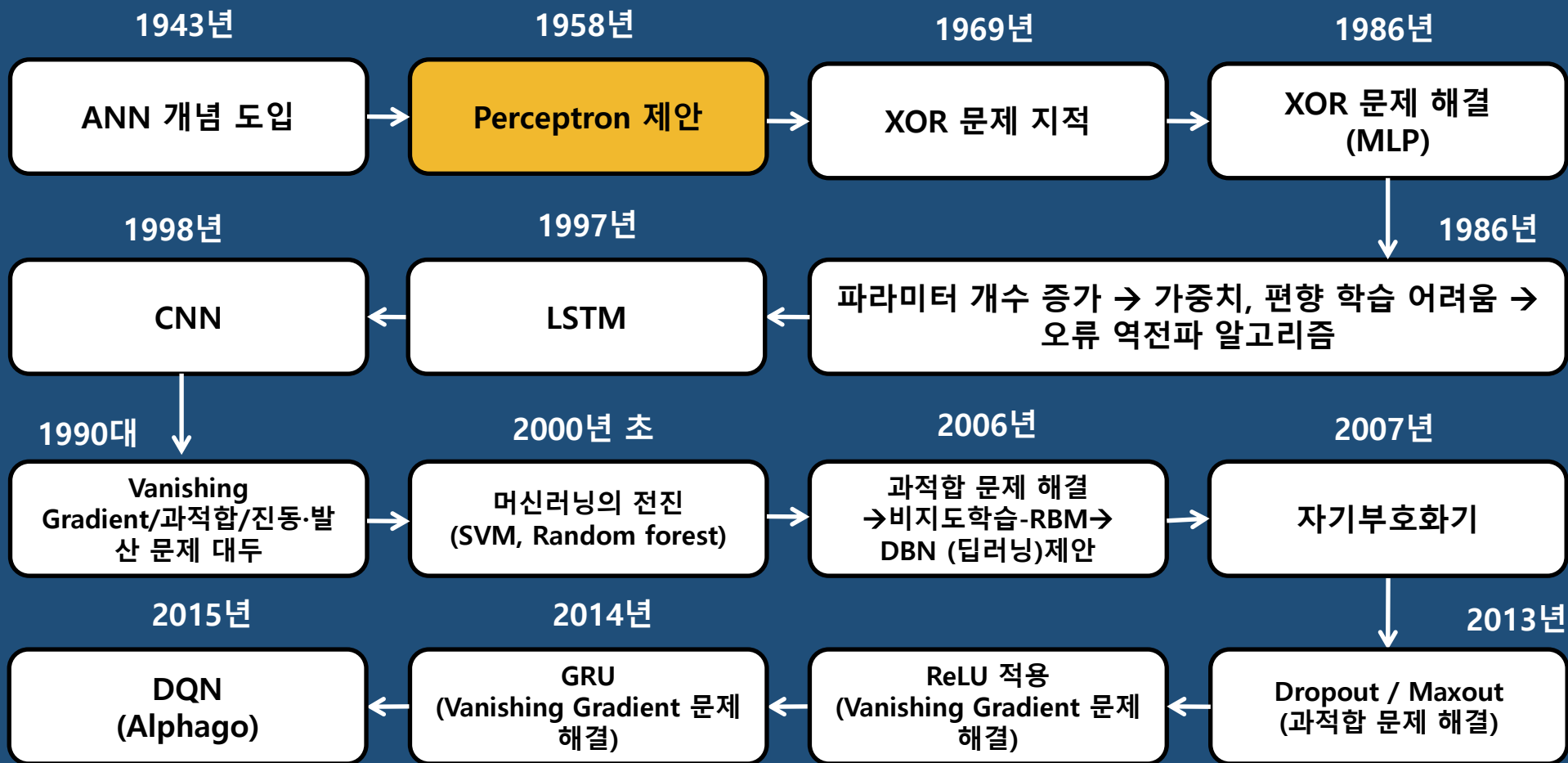
Chapter 2 퍼셉트론, 다층 퍼셉트론(Perceptron, MLP)

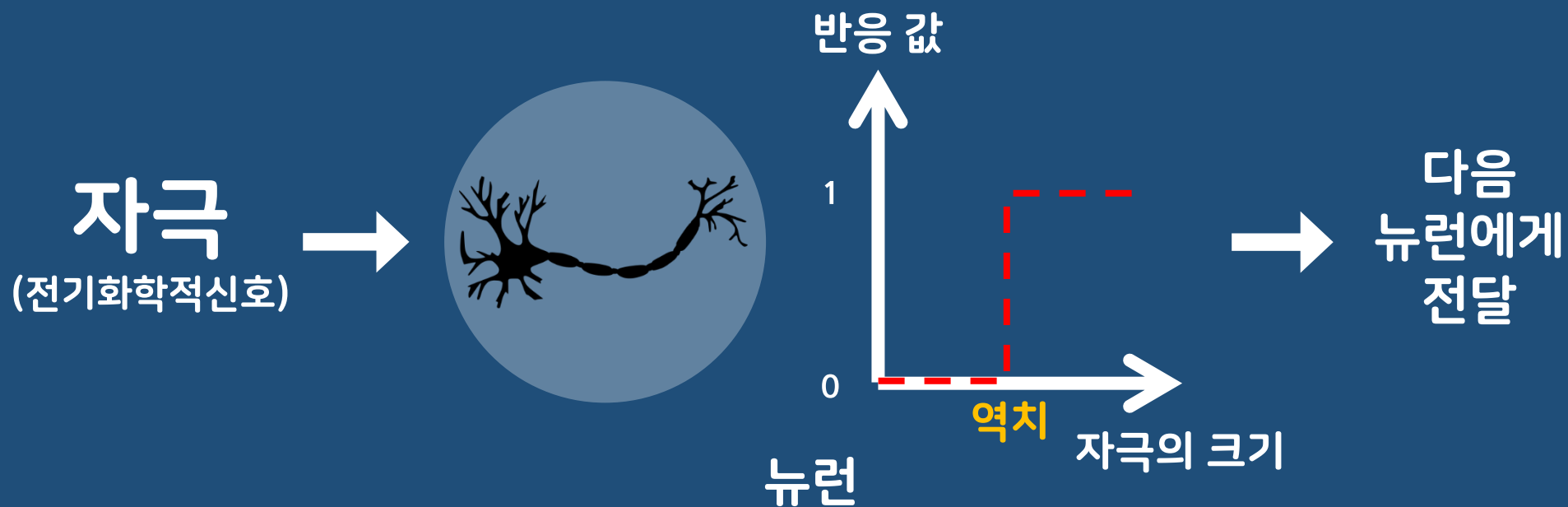


START

- 퍼셉트론의 개념을 이해 할 수 있다.
- 다층 퍼셉트론의 개념을 이해 할 수 있다.

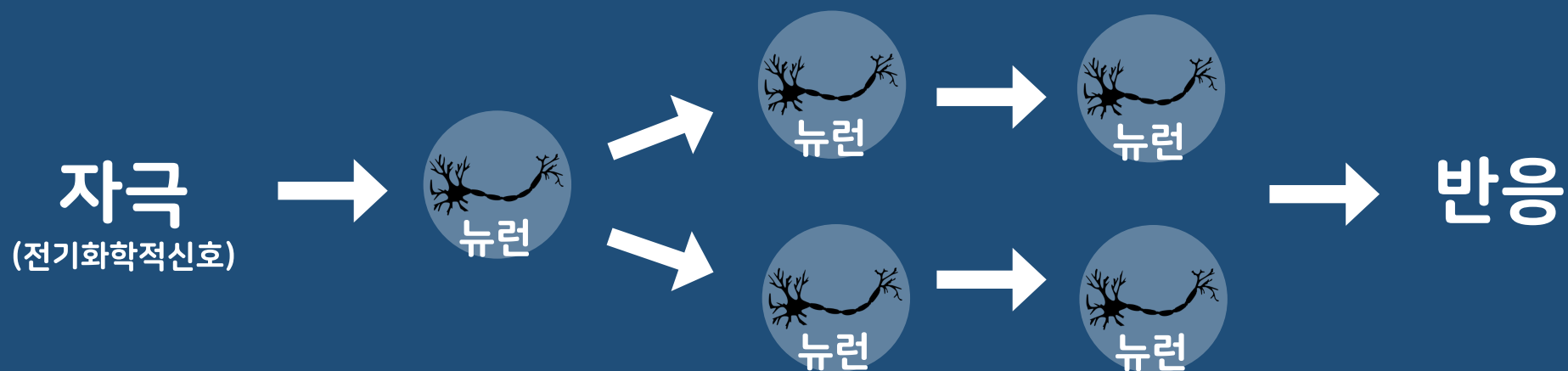
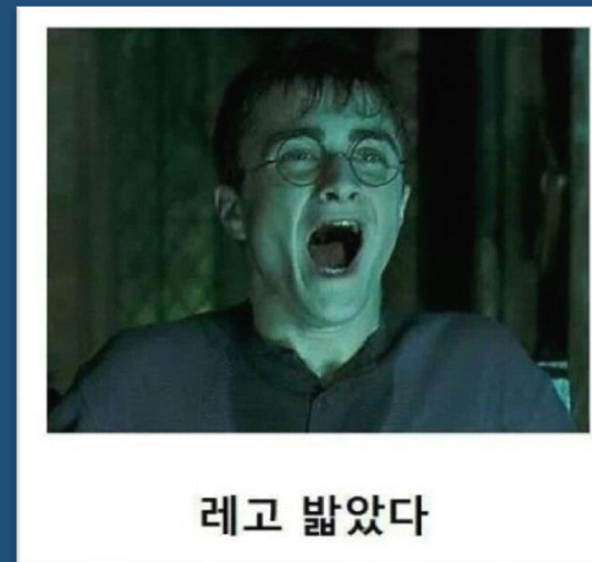
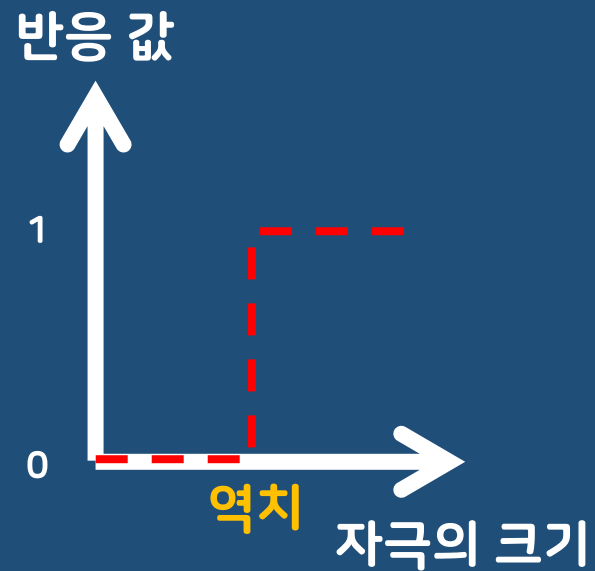
딥러닝 역사 - 퍼셉트론 제안

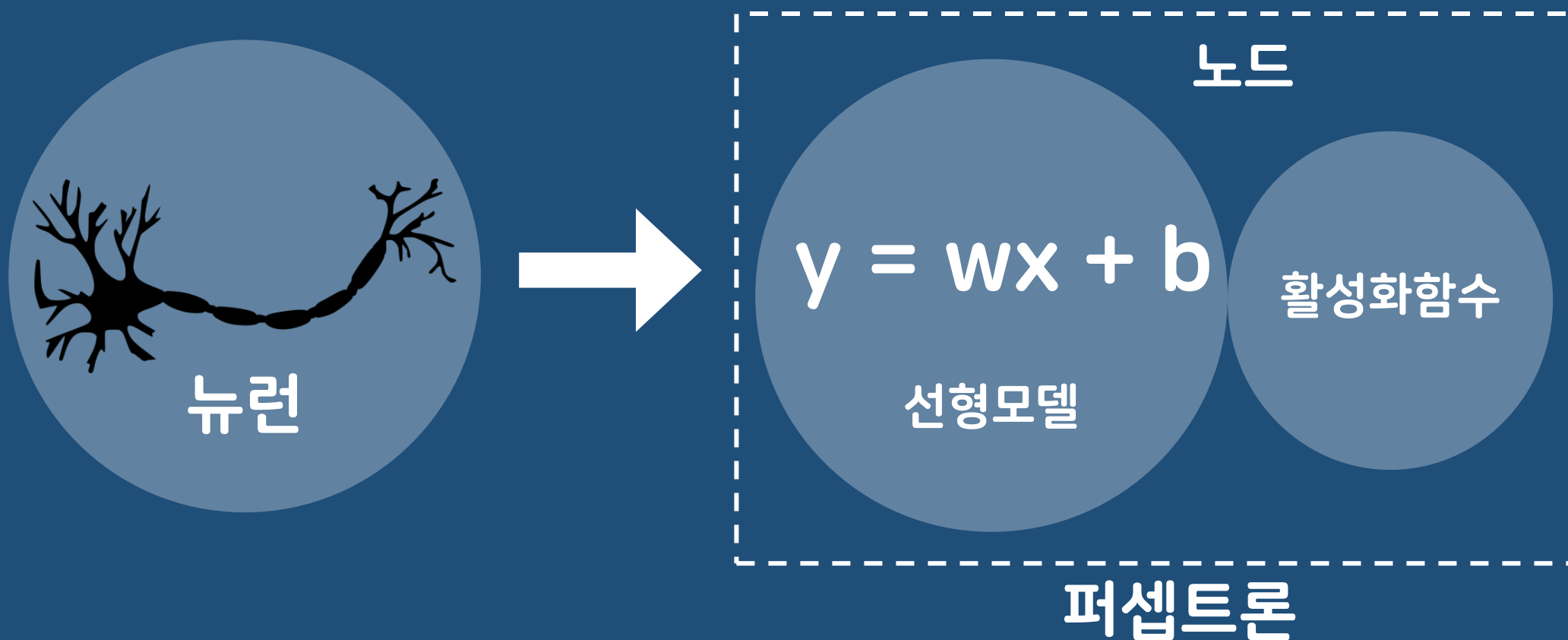




신경의 흥분이 전달되기 위해서는 뉴런에 전달되는
자극의 크기가 **역치 이상**이 돼야함

인공신경망 - 퍼셉트론(Perceptron)



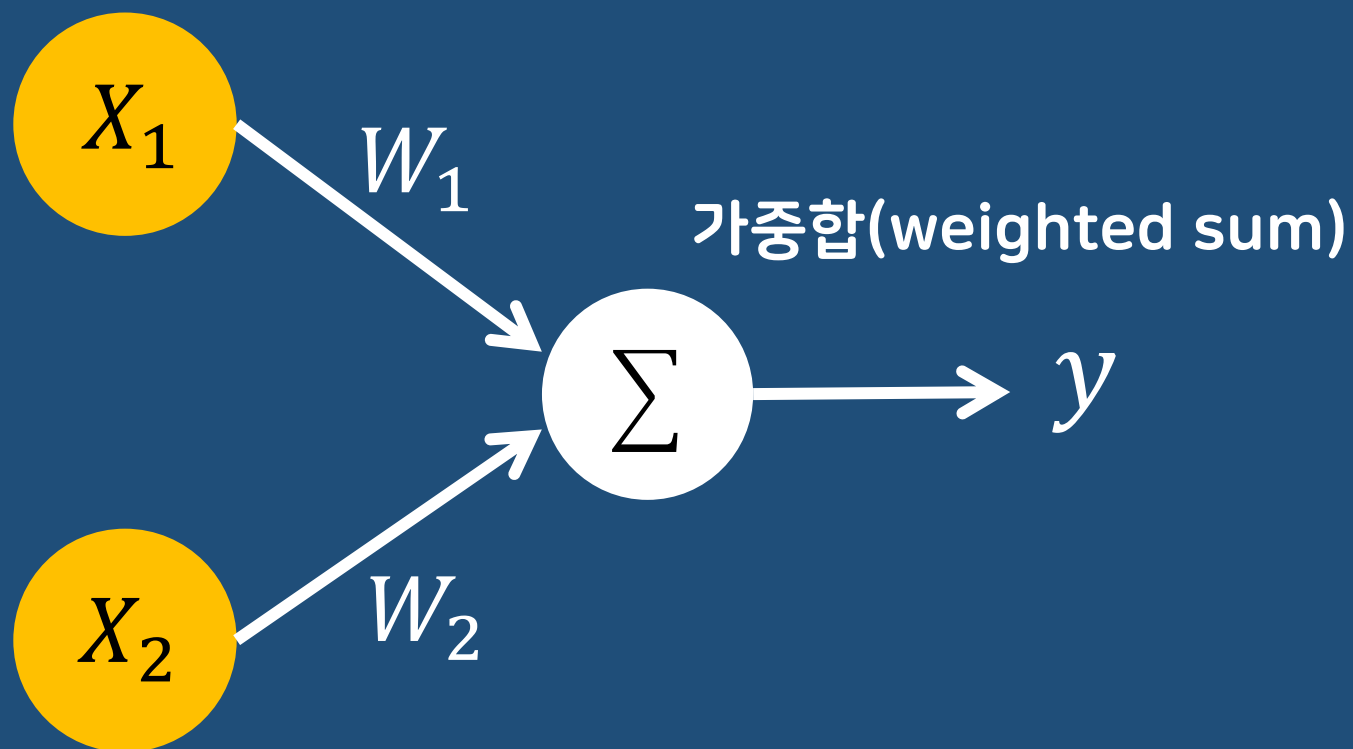


퍼셉트론 (Perceptron)

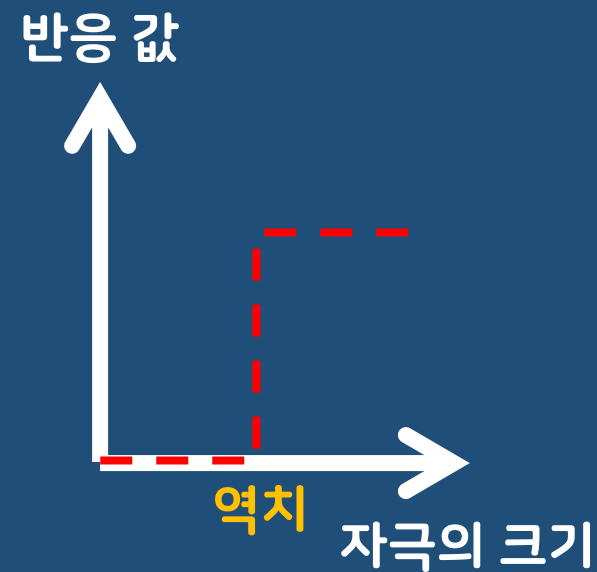
프랑크 로젠블라트가 1957년에 고안한 알고리즘

The Perceptron: A Probabilistic Model for Information Storage and Organization in the Brain

$$y = W_1X_1 + W_2X_2 + b$$



$$y = W_1X_1 + W_2X_2 + b$$

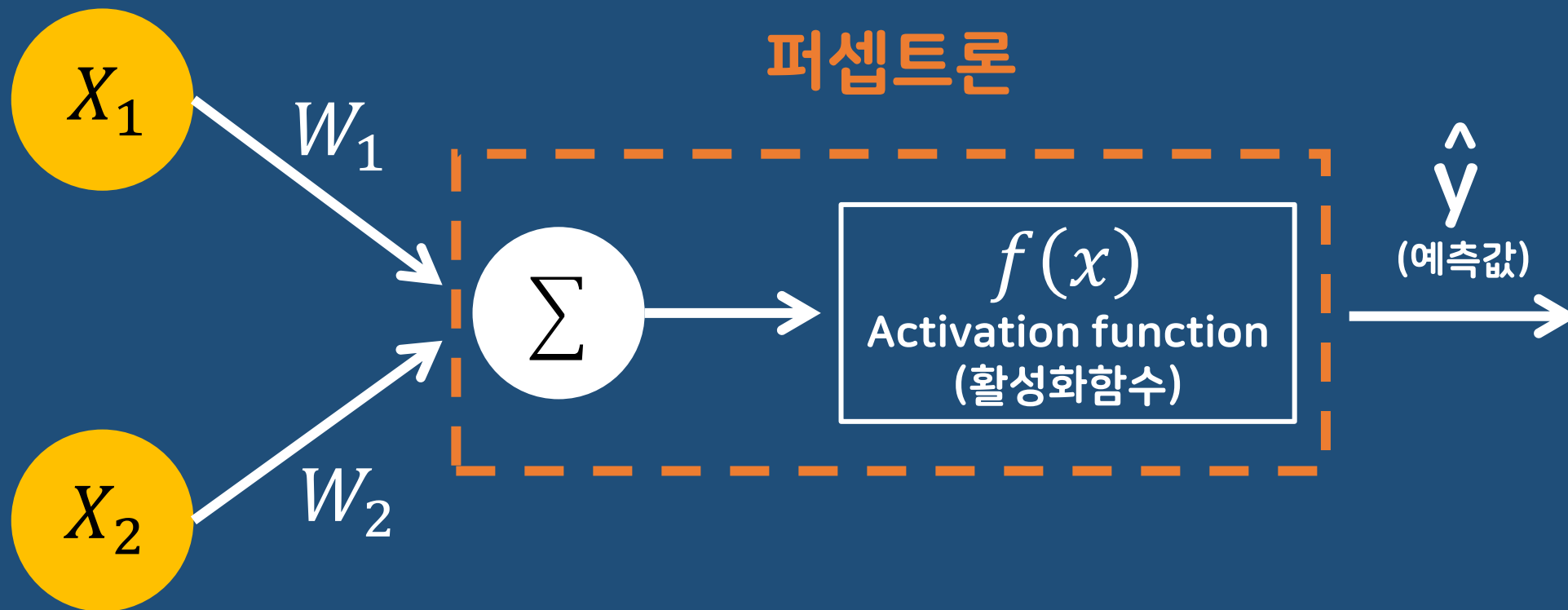


$f(x)$
Activation function
(활성화함수)

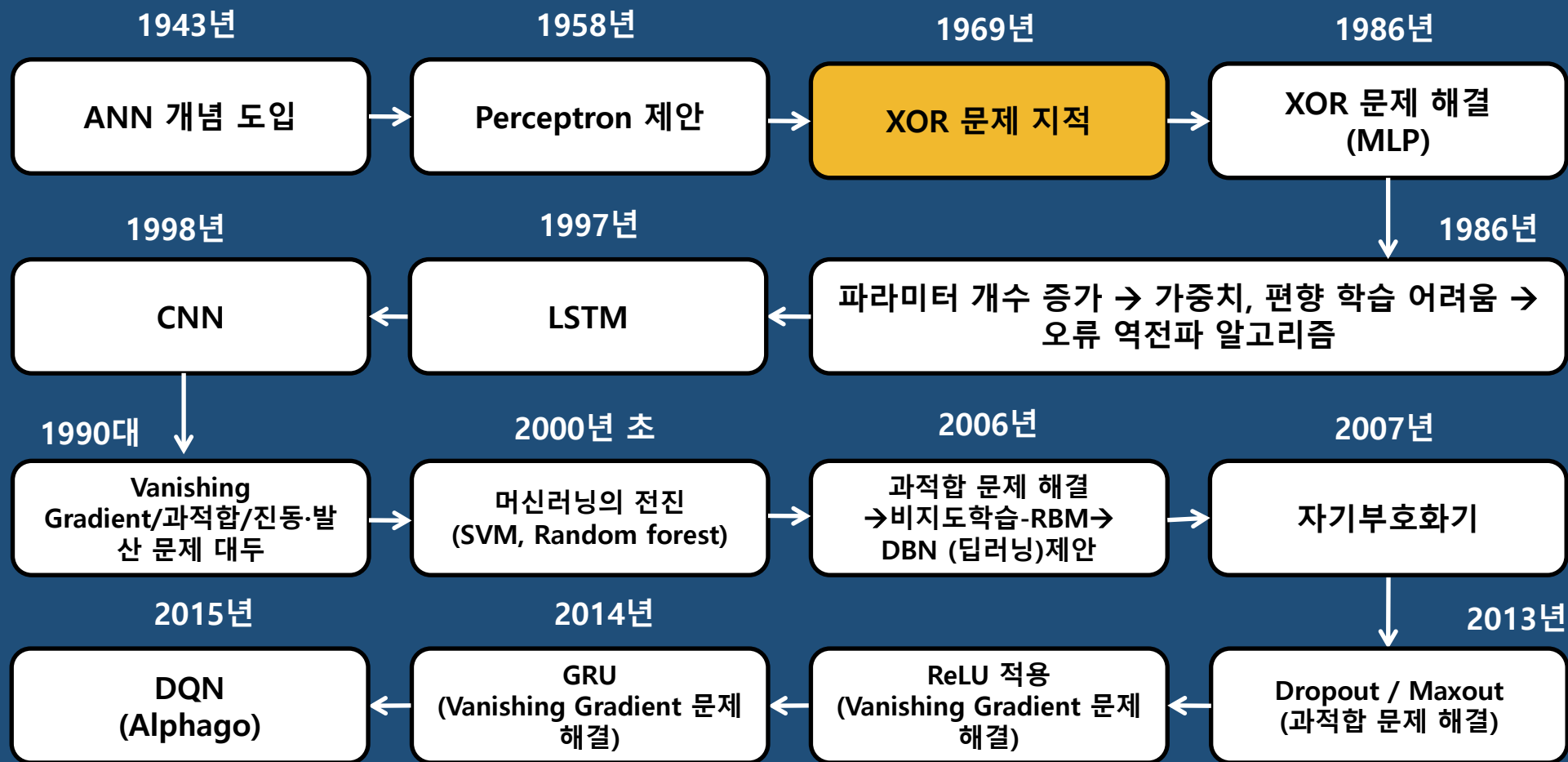
$$y = \begin{cases} 0, & (W_1X_1 + W_2X_2 + b \leq 0) \\ 1, & (W_1X_1 + W_2X_2 + b > 0) \end{cases}$$

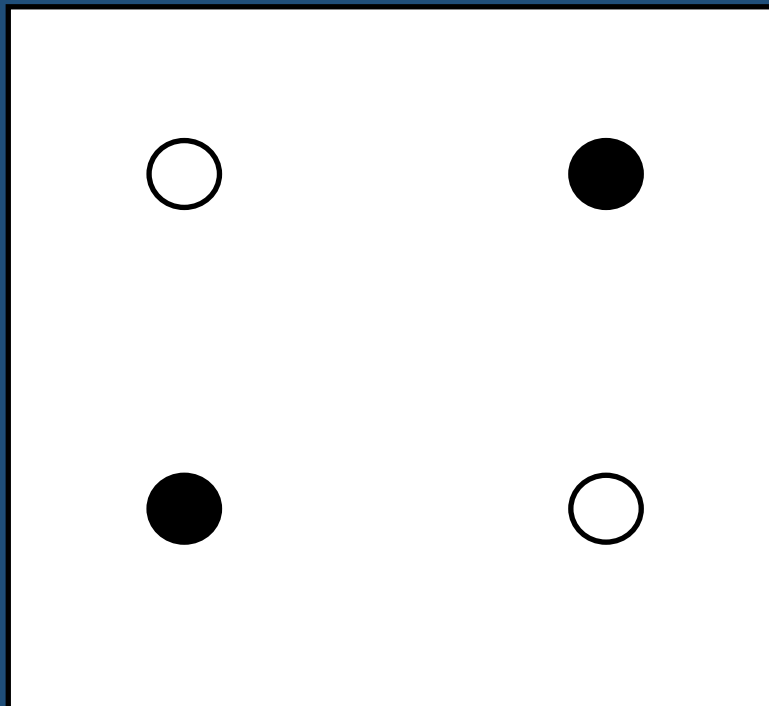
W_1, W_2 : 가중치 (weight) - 각 입력 신호가 결과에 주는 영향력을 조절하는 매개변수

b : 편향 (bias) - 뉴런이 얼마나 쉽게 활성화하느냐를 조절하는 매개변수



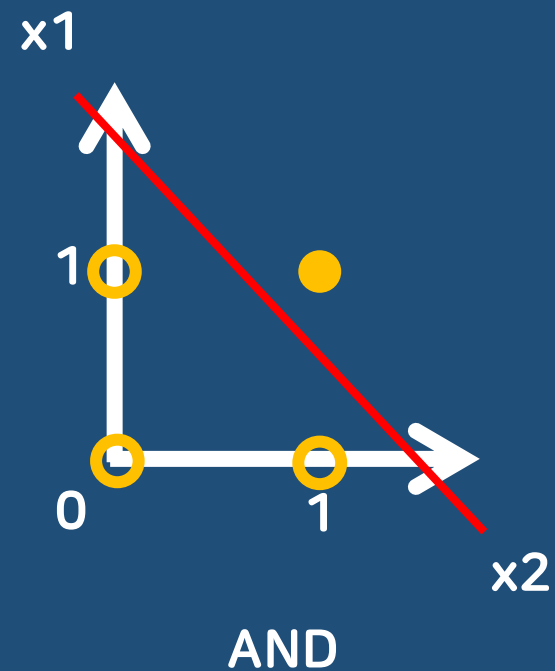
딥러닝 역사 - XOR 문제





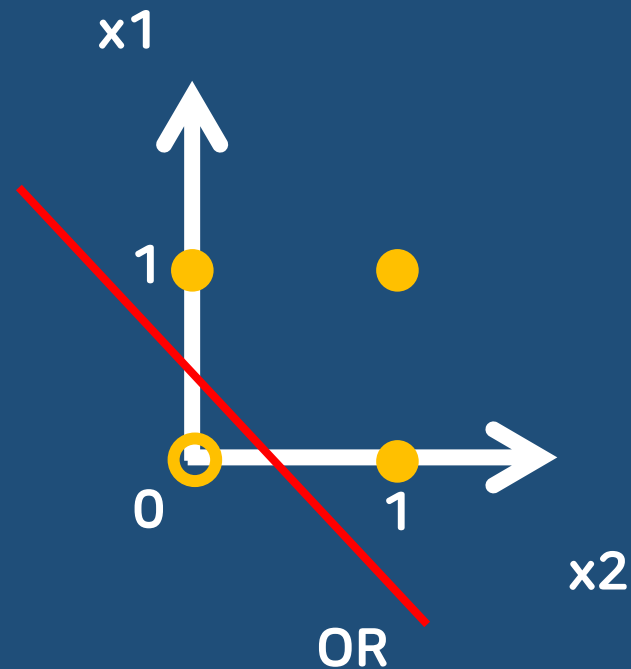
AND 게이트

x1	x2	AND
0	0	0
0	1	0
1	0	0
1	1	1



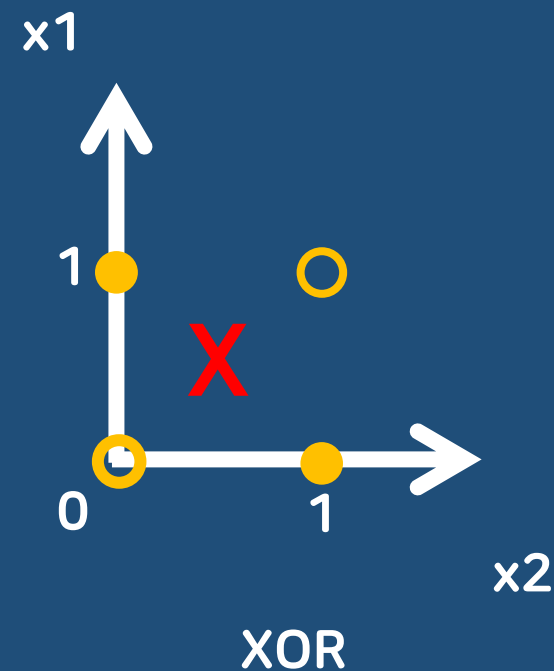
OR 게이트

x1	x2	OR
0	0	0
0	1	1
1	0	1
1	1	1



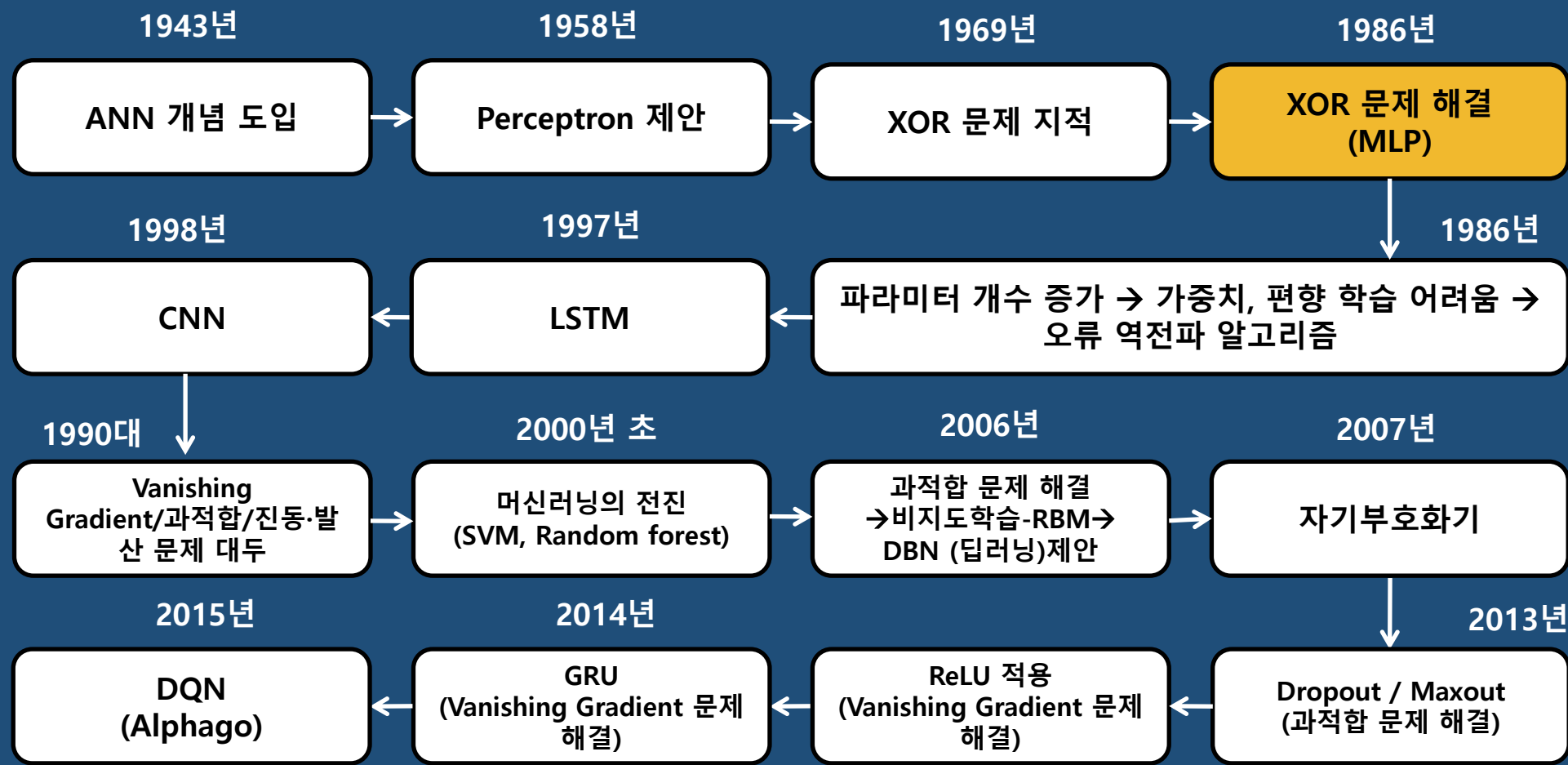
XOR 게이트

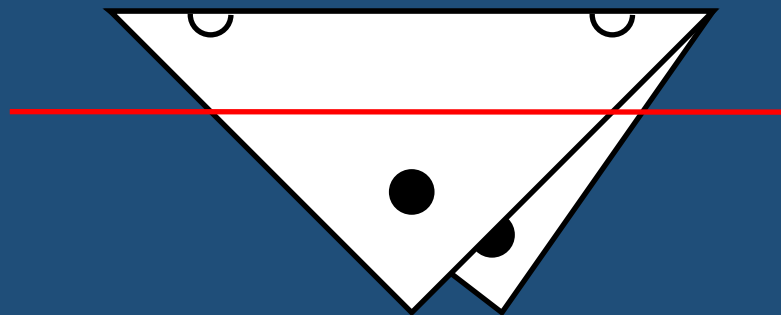
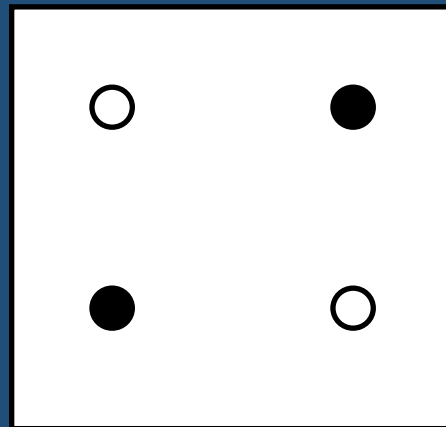
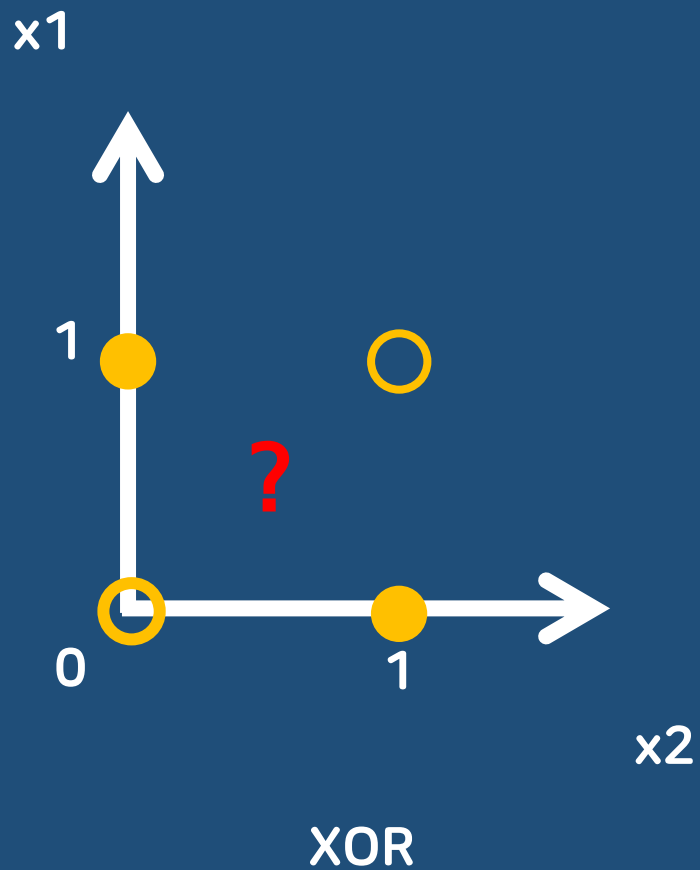
x1	x2	XOR
0	0	0
0	1	1
1	0	1
1	1	0



AND,OR는 해결이 가능하지만
간단한 XOR 문제를 해결 할 수 없었다..!

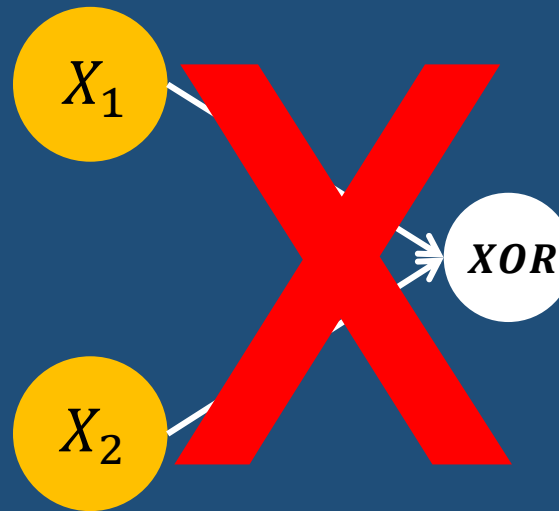
딥러닝 역사 - XOR 문제 해결(MLP)

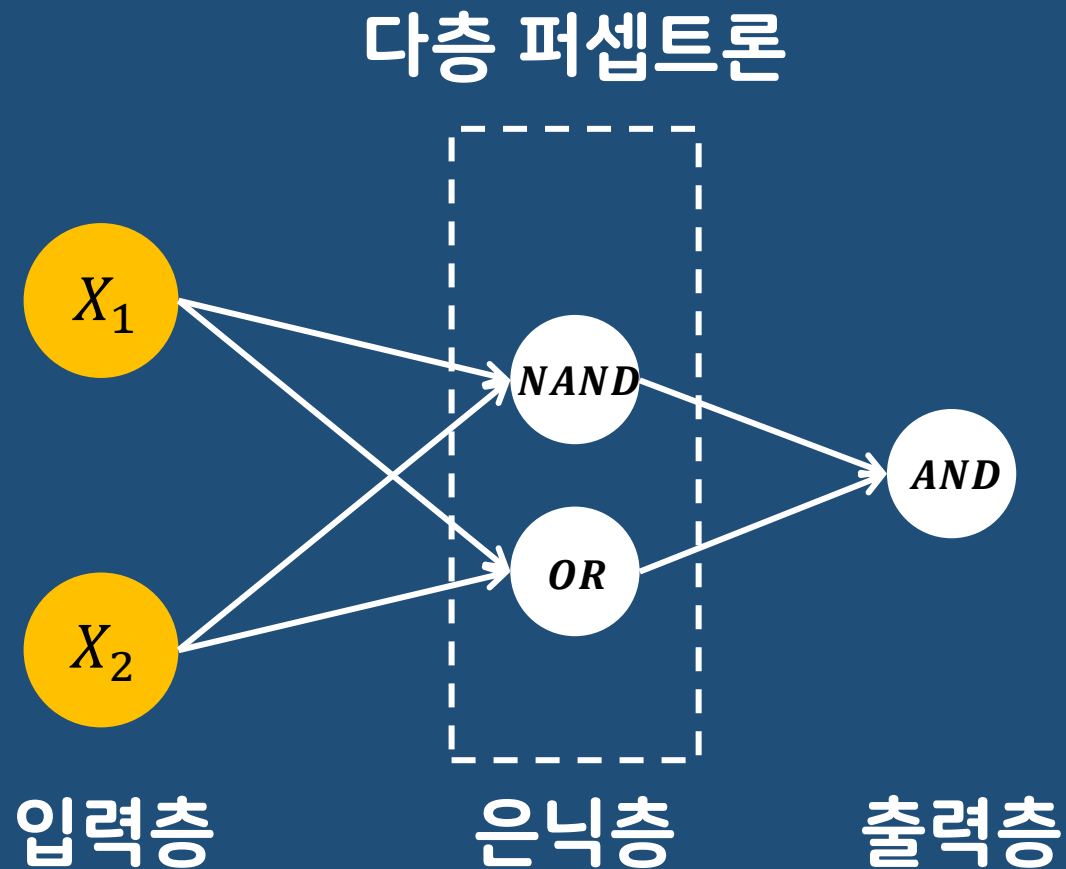




다층 퍼셉트론(Multi Layer Perceptron)

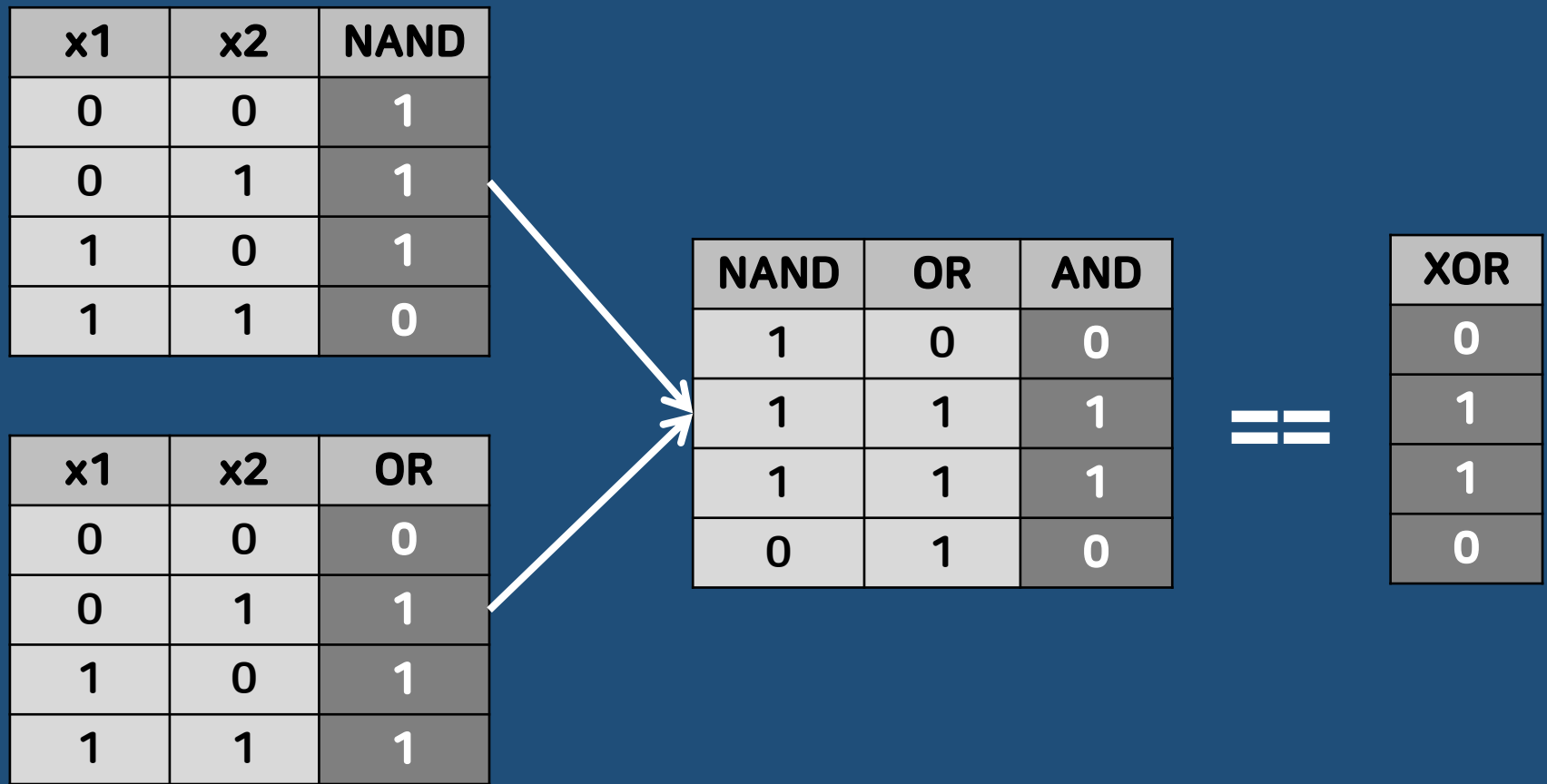
퍼셉트론을 여러 개의 층으로 구성하여 만든 신경망



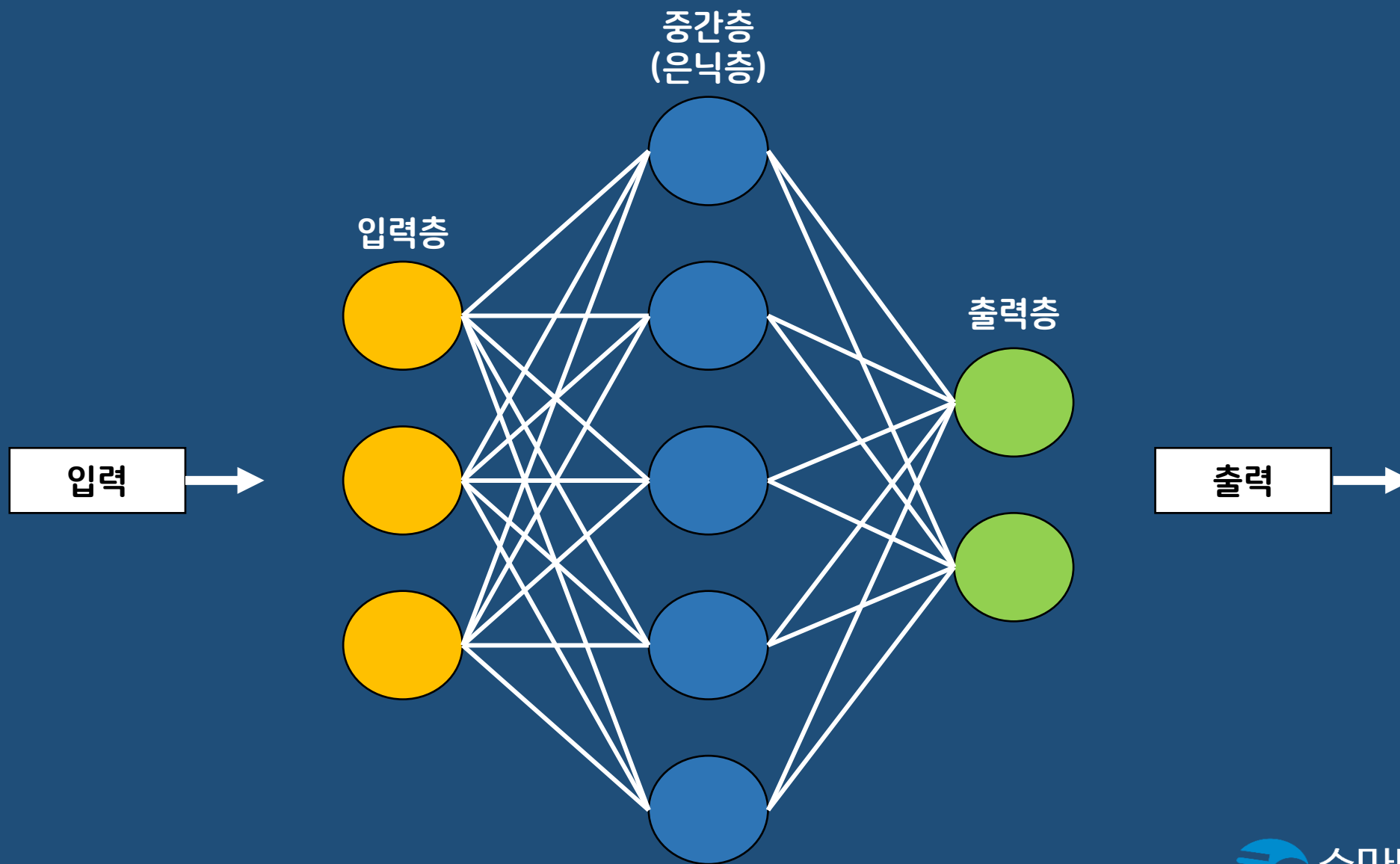


NAND 게이트

x1	x2	NAND
0	0	1
0	1	1
1	0	1
1	1	0



다층 퍼셉트론(Multilayer Perceptron)



- 비선형 데이터를 분리 할 수 있다.
- 단층에 비해 학습시간이 오래 걸린다.
- 가중치 파라미터가 많아 과대적합되기 쉽다.