

기계가 어떻게 학습을 하지?

강원대학교

AI소프트웨어학과

이 두 호

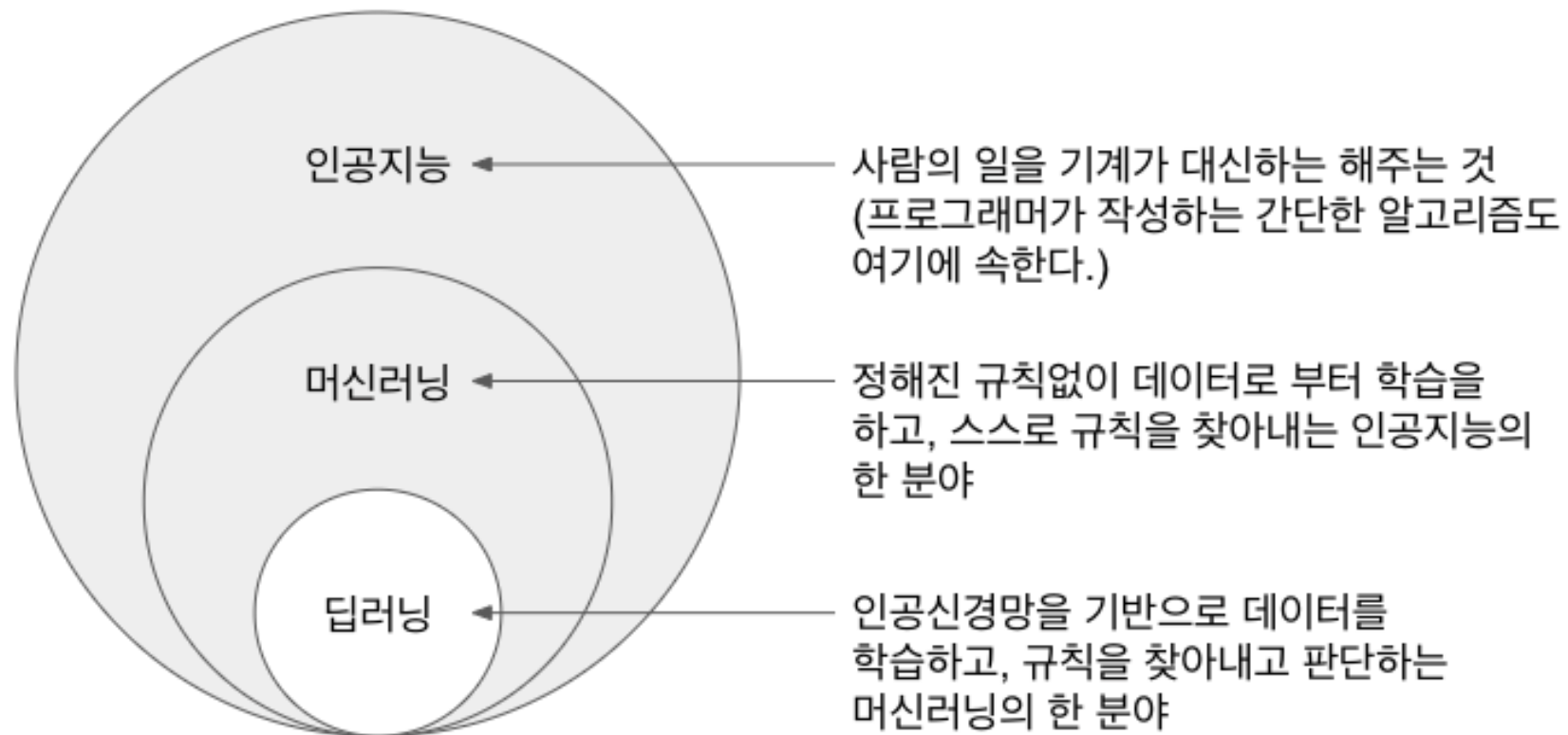
인간이 가지고 있는 지적 능력을 인공적으로 구현하는 기술

인간의 지능으로 할 수 있는 사고/학습/자기계발 등을 기계(컴퓨터)로 구현하는 방법에 대해 연구하는 정보통신 기술

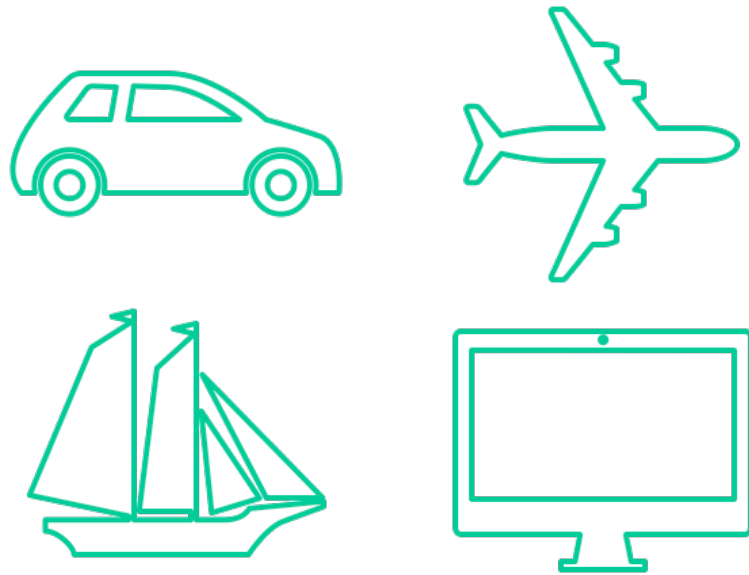
컴퓨터가 인간의 지능적인 행동을 모방하게 하는 데 목적이 있음



인공지능 vs 기계학습 vs 딥러닝



기계 Machine



학습 Learning

데이터를 통해
패턴(pattern),
경향(trend) 또는
규칙(rule)을
찾아내는 일!

Machine Learning


Machine learned

by computer languages


to perform the algorithm

created by human

인간과 컴퓨터가
소통하기 위한 수단



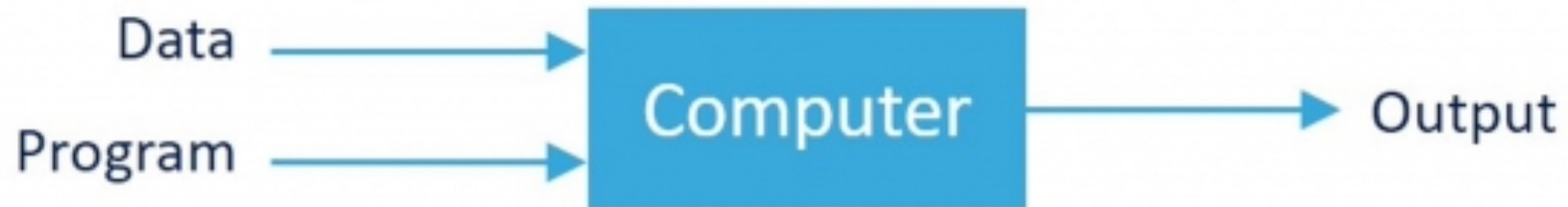
문제를 해결하기 위한
방법과 절차들의
체계적인 순서 또는 모임



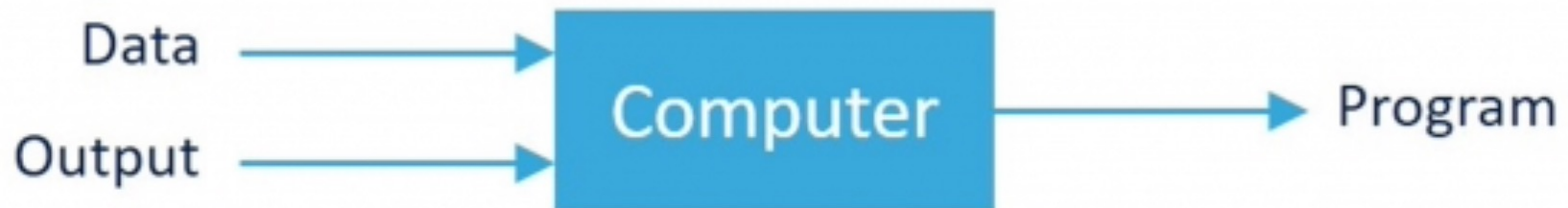
인간이 개발한 **알고리즘**을 **컴퓨터 언어**를 통해
기계에게 학습시키는 행위

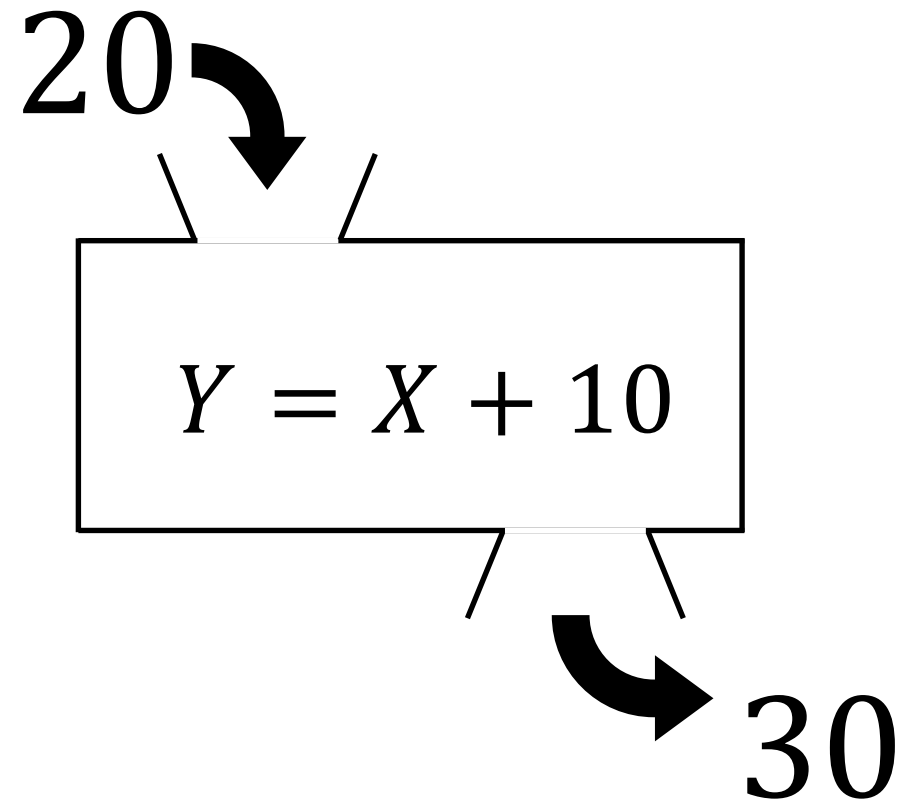
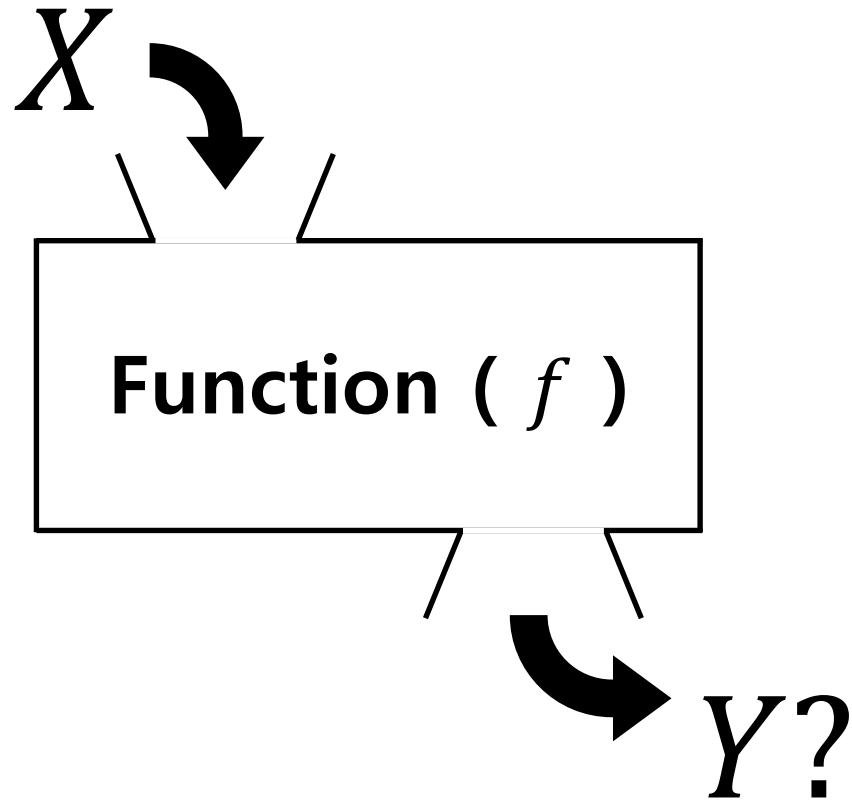
기계학습 (Machine Learning)

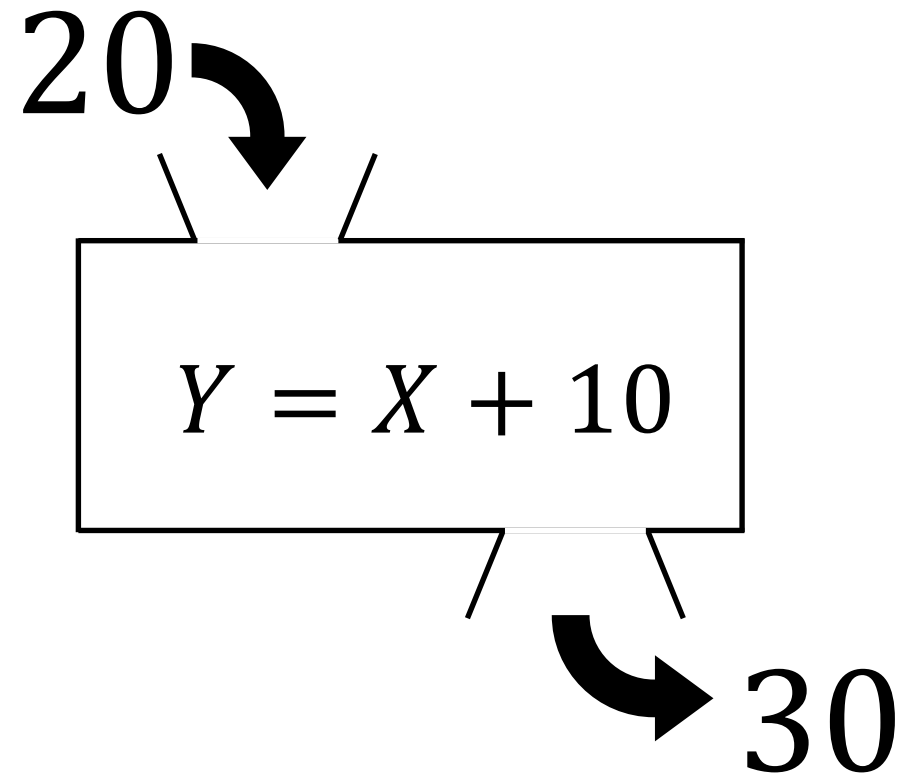
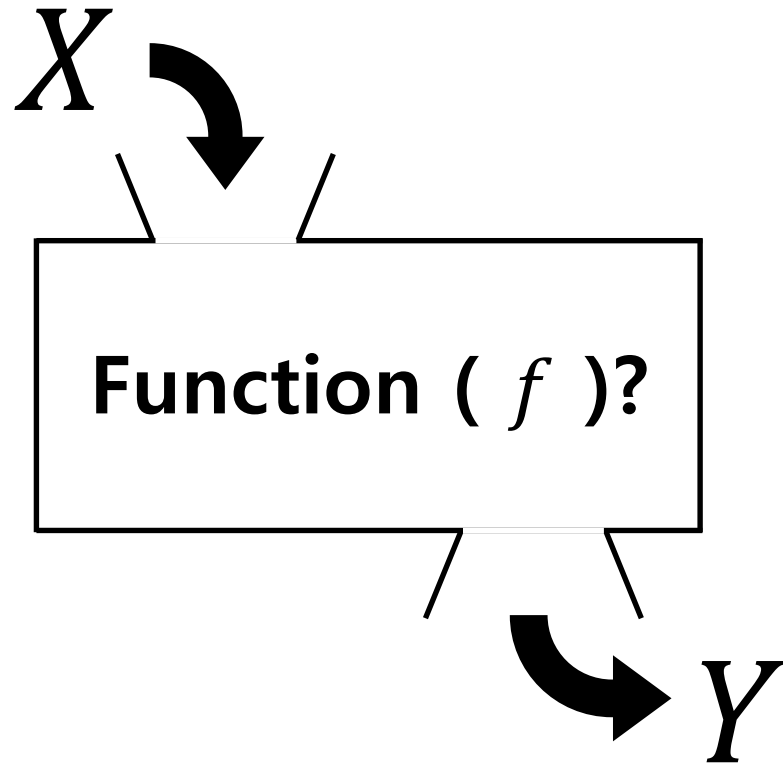
Traditional Programming



Machine Learning







①

$X \xrightarrow{f} Y$

1	2
2	4
3	6
4	8

②

$XY \xrightarrow{f} Z$

0	0	0
0	1	1
1	0	1
1	1	1

③

$XY \xrightarrow{f} Z$

0	0	0
0	1	0
1	0	0
1	1	1

④

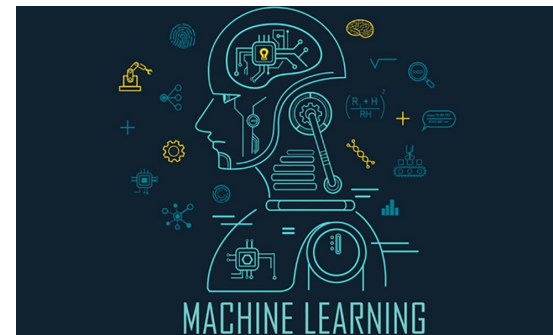
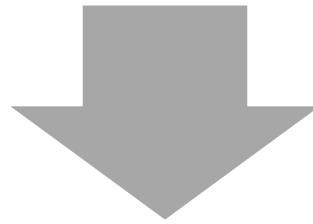
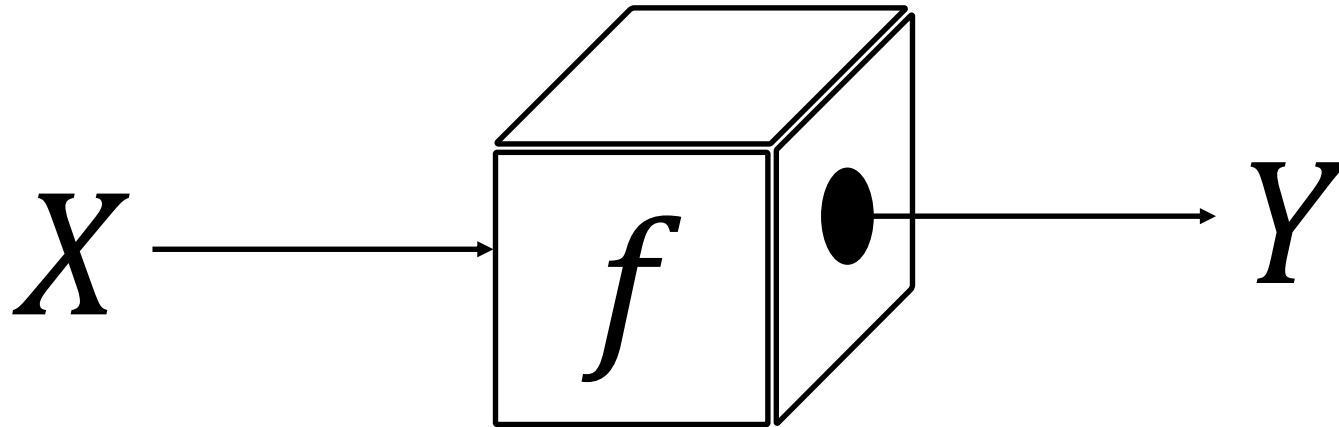
$XY \xrightarrow{f} Z$

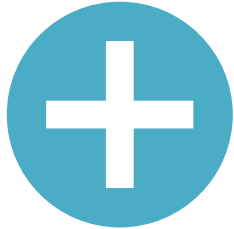
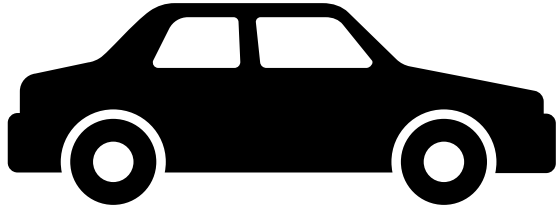
0	0	0
0	1	1
1	0	1
1	1	0

빅데이터 모델링 및 예측 (Prediction)

X	f	Y
1		2
2		4
3		6
4		8
10		?

빅데이터 모델링 및 예측



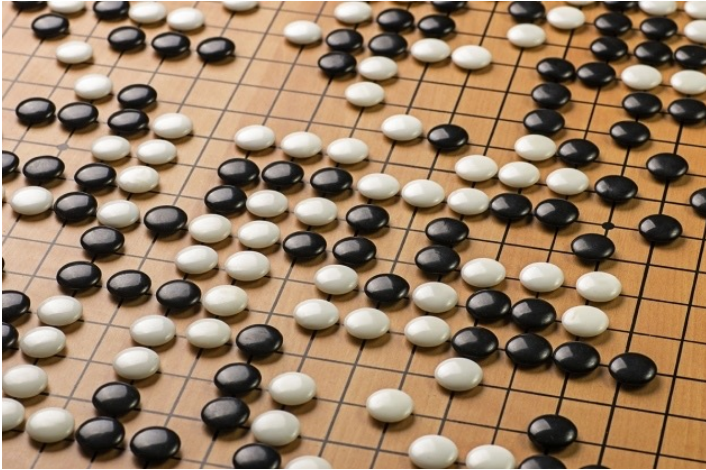


$$f(X) = \frac{1}{1 + e^{-(w_0 + w_1 X_1 + w_2 X_2)}}$$



테슬라 완전자율주행 (Tesla's Full Self Driving)

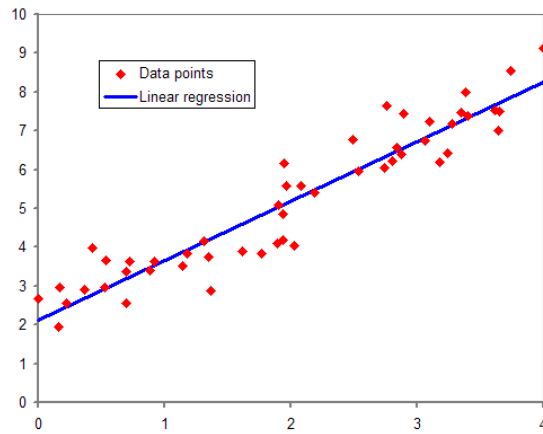
인공지능



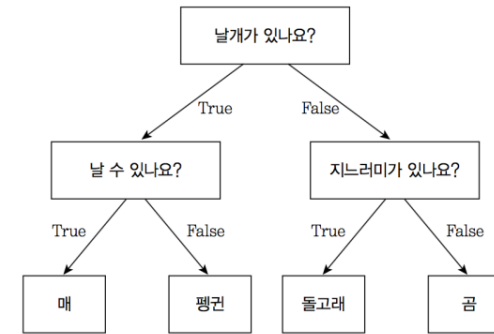
$$f(X) = \frac{1}{1 + e^{-\left(w_0 + \frac{w_1}{1 + e^{-(w_{01} + w_{11}X_1 + w_{21}X_2)}} + \frac{w_2}{1 + e^{-(w_{02} + w_{12}X_1 + w_{22}X_2)}}\right)}}$$



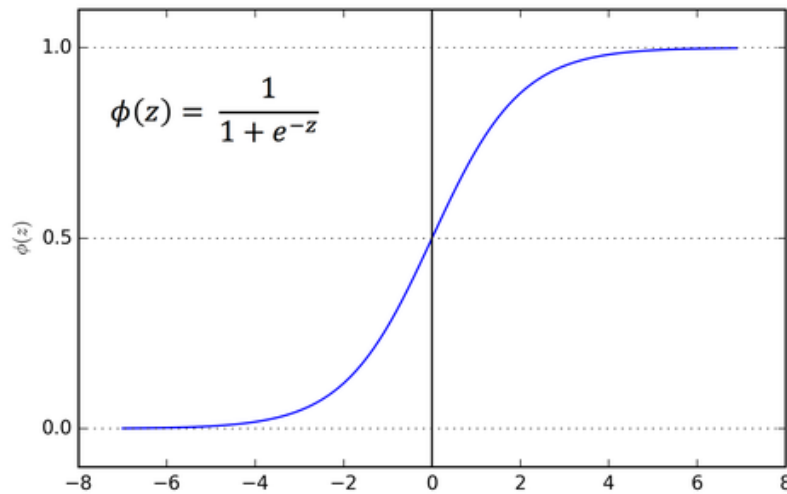
학습 모델 $f(X)$ 의 종류



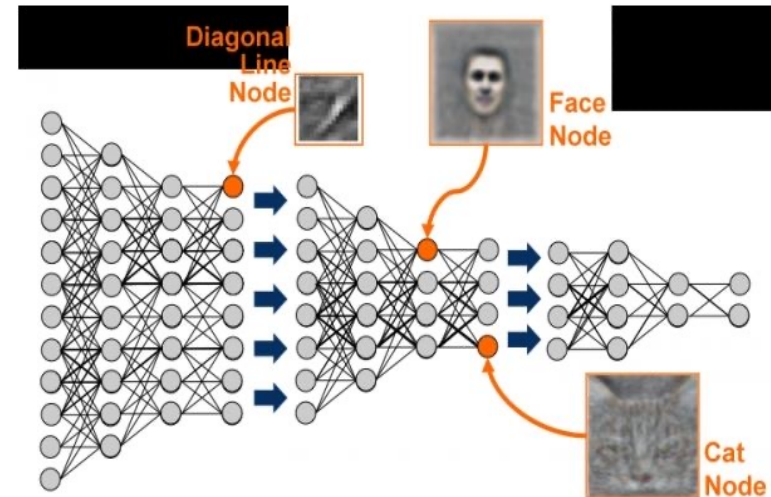
회귀분석



의사결정나무



로지스틱 회귀분석



인공신경망 (심층 학습)