04

인공지능 개념

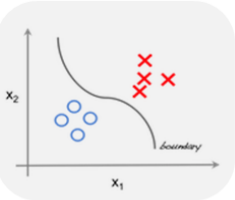
1. 인공지능 기본개념

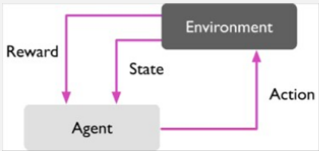
인공지능 기본개념 머신러닝

머신러닝 개념

머신 러닝
Machine Learning

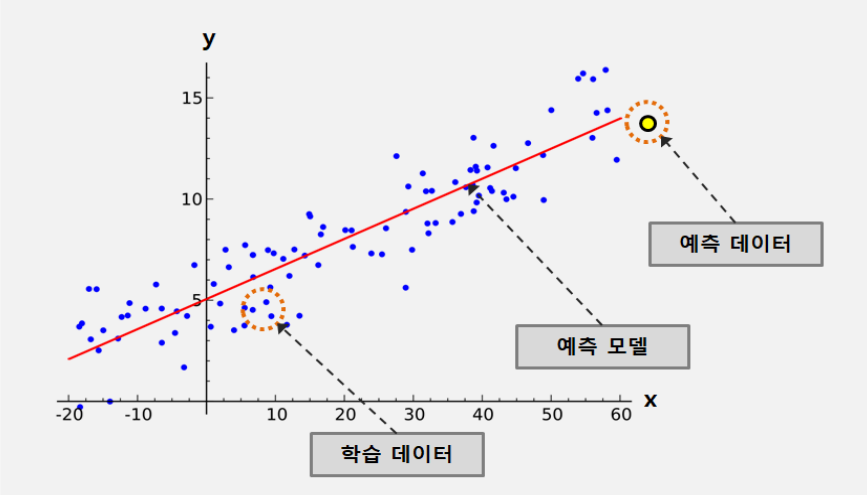
- 비지도 학습 Unsupervised Learning
- 지도 학습 Supervised Learning
- 강화 학습 Reinforcement Learning





인공지능 기본개념 머신러닝

선형 회귀 분석 – 개념



선형 회귀 모델	Y = W*X + b

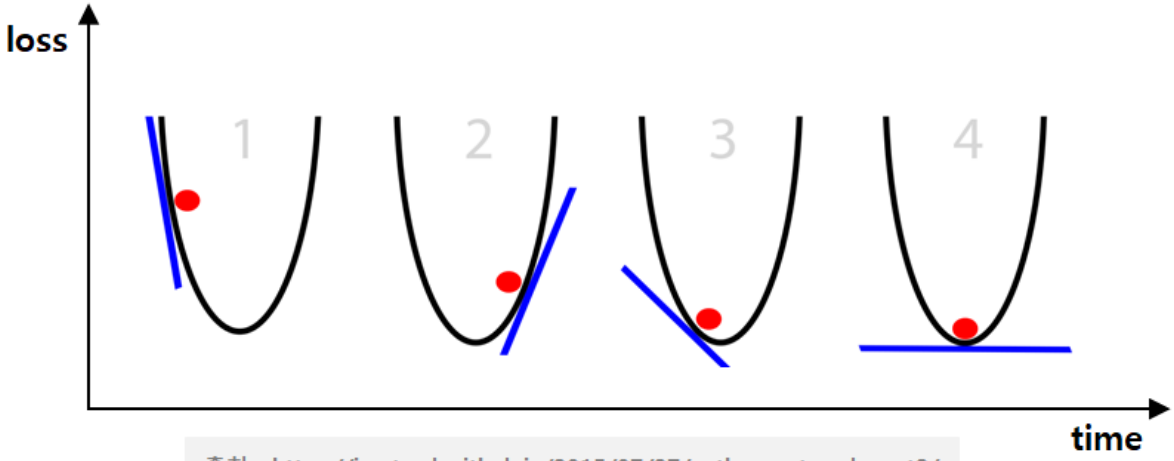
인공지능 기본개념 머신러닝

선형 회귀 분석 - 비용함수

모델	Y = W*X + b
데이터	(x, y) = (10, 6)
랜덤	Y = X + 3 (W = 1, b = 3)
오차	데이터(6) – 계산 값(13) = -7
손실 함수	(데이터 – 계산 값)^2 의 평균
학습	손실 함수가 최소화 되는 방향으로 학습

인공지능 기본개념 머신러닝

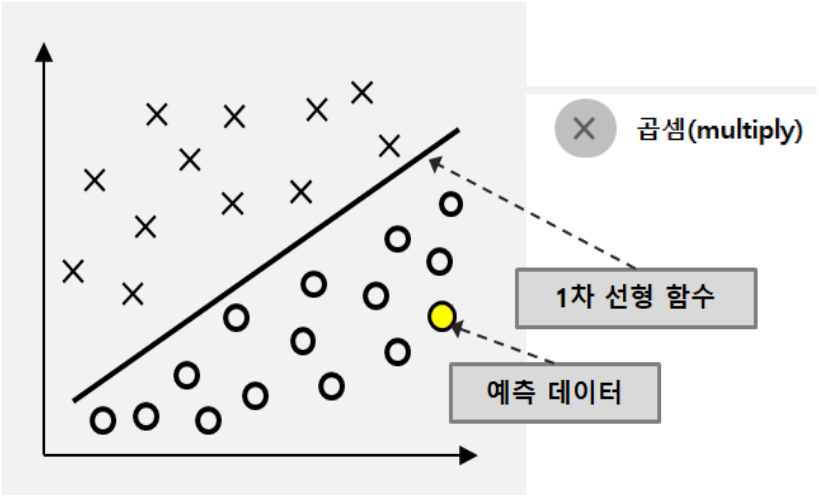
선형 회귀 분석 - 경사하강법

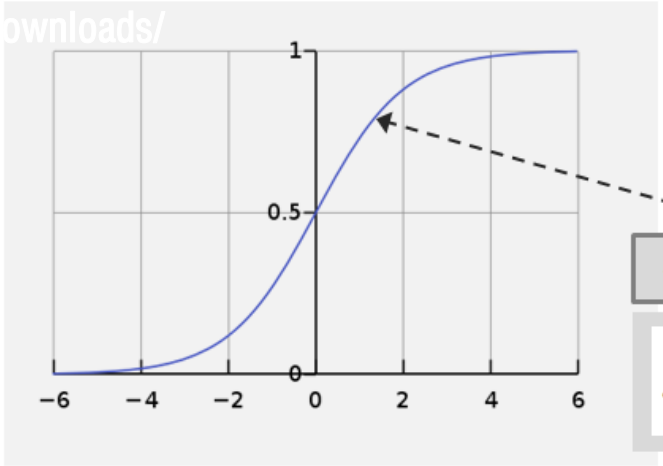


출처 : https://iamtrask.github.io/2015/07/27/python-network-part2/

인공지능 기본개념 머신러닝

분류 회귀 분석 – 개념





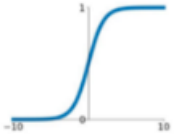
인공지능 기본개념 머신러닝

분류 회귀 분석 – 이진분류함수

Activation Functions

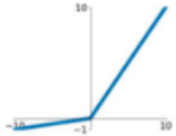
Sigmoid

$\sigma(x) = \frac{1}{1+e^{-x}}$



Leaky ReLU

$\max(0.1x, x)$



tanh

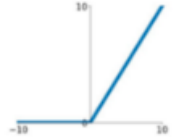
$\tanh(x)$

Maxout

$\max(w_1^T x + b_1, w_2^T x + b_2)$

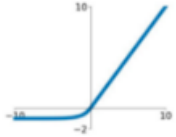
ReLU

$\max(0, x)$



ELU

$$\begin{cases} x & x \geq 0 \\ \alpha(e^x - 1) & x < 0 \end{cases}$$

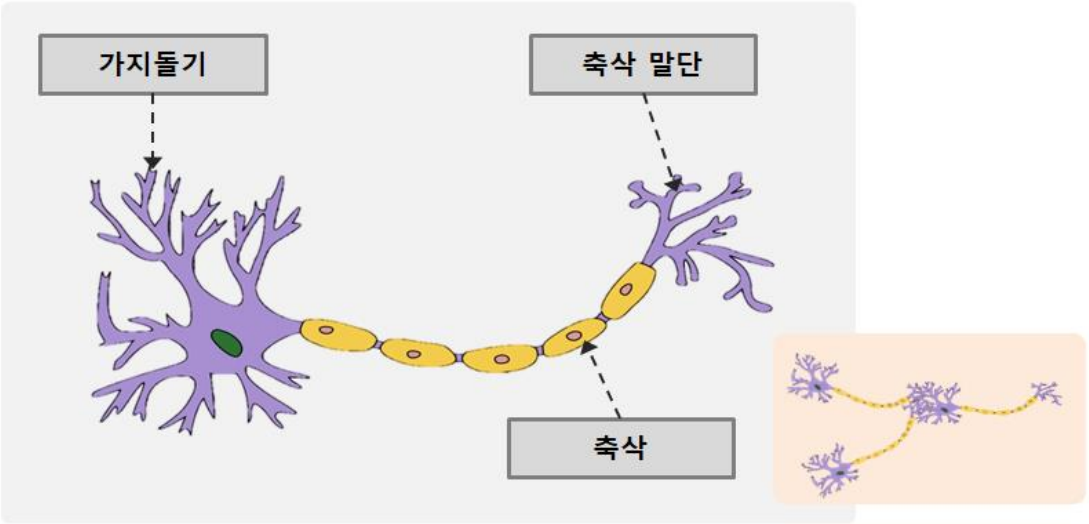


Different Activation Functions and their Graphs

참조 : https://m.blog.naver.com/handuelly/221824080339

인공지능 기본개념 딥러닝

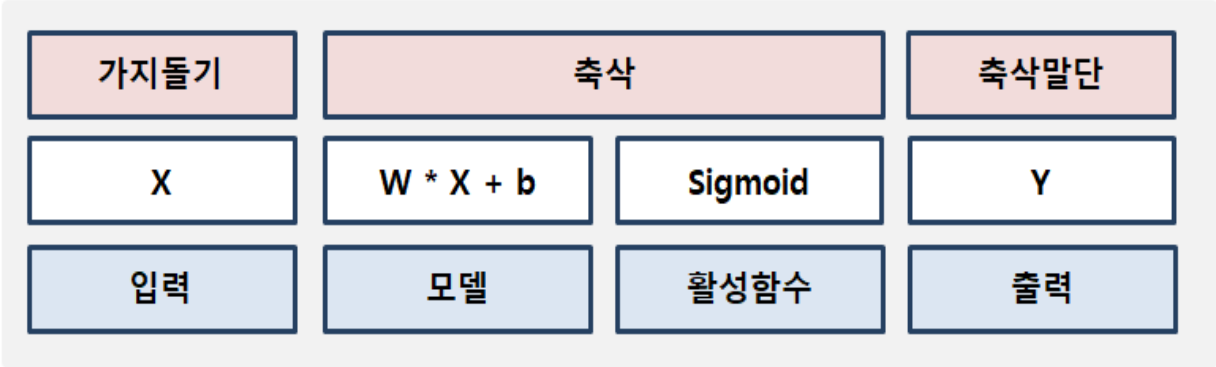
뉴런



출처 : https://ko.wikipedia.org/wiki/신경_세포

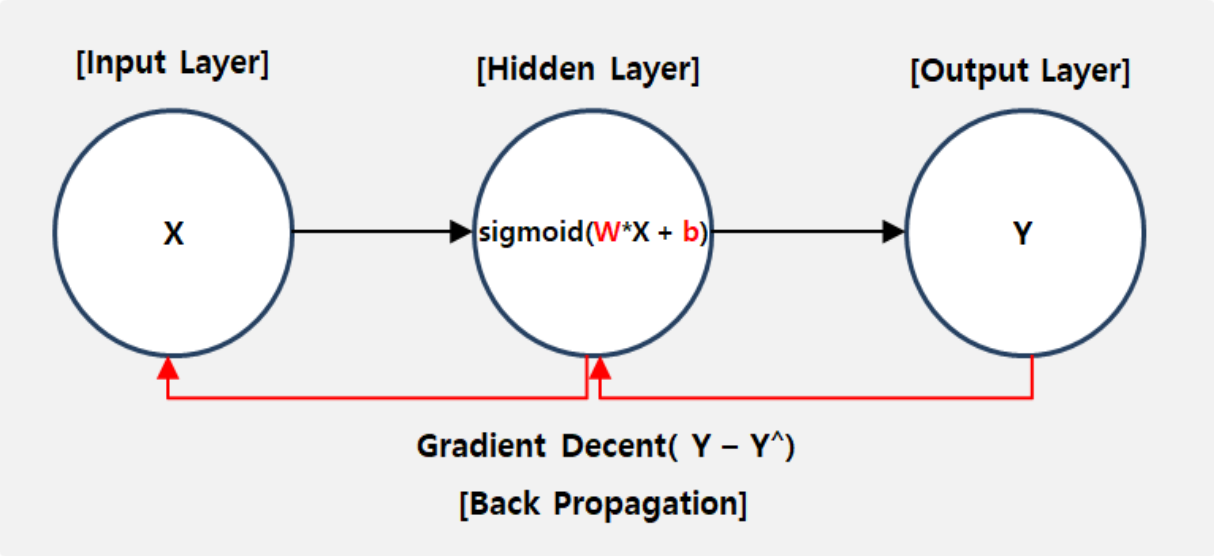
인공지능 기본개념 딥러닝

뉴런과 인공신경망



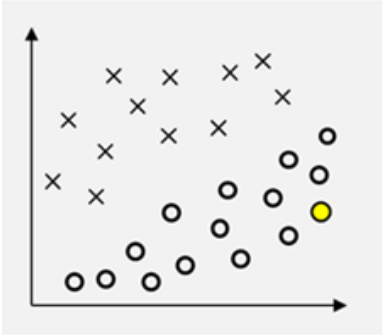
인공지능 기본개념 딥러닝

단일 인공신경망



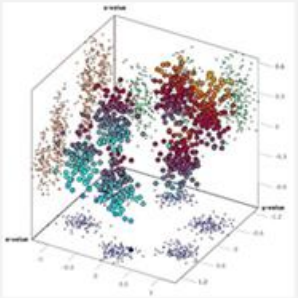
인공지능 기본개념 딥러닝

다차원 분류문제

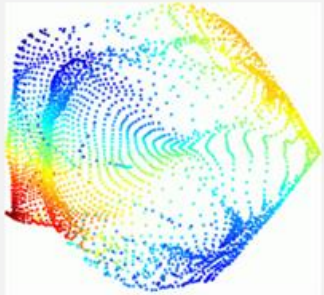


2차원 이진 분류 → 이진 분류 알고리즘

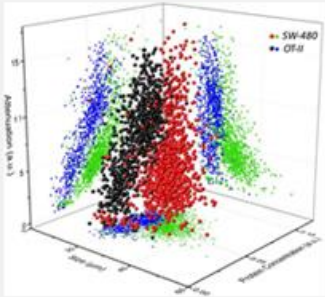
다차원 분류 → 심층 신경망



http://www.doka.ch



https://www.simula.no



https://www.nature.com

인공지능 기본개념 딥러닝

심층 신경망