

$$\max \quad \frac{1}{\|w\|_2}$$

$$\min \quad \frac{1}{2} \|w\|_2^2$$

$$\text{s.t.} \quad \underline{\ln y(x_n)} \geq \underline{1}$$

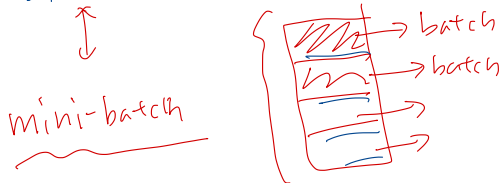
$$y(x) = x_1 + x_2 + 1$$

$$\frac{|x_1 + x_2 + 1|}{\sqrt{2}}$$

$$y(x) = 2x_1 + 2x_2 + 2$$

$$\frac{|2x_1 + 2x_2 + 2|}{2\sqrt{2}} \Rightarrow 1$$

batch : ~~데이터를~~ → ⊕ 2 한 번 업데이트



Stochastic : ~~샘플을~~ → ⊕ 2 한 번 업데이트

$$SSE = \|X\Theta - y\|_2^2$$

$$MSE = \frac{1}{N} \|X\Theta - y\|_2^2$$

$$\underline{RMSE} = \sqrt{\underline{\frac{1}{N} \|X\Theta - y\|_2^2}}$$

$$\frac{d}{d\theta} \text{RMSE} = \nabla_{\theta} J(\theta)?$$

$$= \frac{d}{d\theta} \sqrt{\frac{1}{N} \|X\theta - y\|_2^2}$$

$$= \frac{1}{2} \left(\frac{1}{N} \|X\theta - y\|_2^2 \right)^{\frac{1}{2}}$$

$$\bullet \frac{2}{N} X^T (X\theta - y)$$

SSE

MSE

RMSE ←

$$\sum (\theta^T x - y)^2$$
$$\sqrt{\frac{1}{N} \sum (\theta^T x - y)^2}$$

~ y

$$x \sim N(\mu, \sigma^2)$$

$$x \sim N\left(\underbrace{\bar{\mu}}_{\in \mathbb{R}^D}, \underbrace{\Sigma}_{\in \mathbb{R}^{D \times D}}\right)$$

$\begin{matrix} 2 \times 1 & 2 \times 2 \times K \\ \downarrow & \end{matrix}$

$$\sum \underline{\hat{y}_j} = \frac{1}{N} \underbrace{(x_i - \mu_i)} \underbrace{(x_j - \mu_j)}$$

$$\sigma^2 = \frac{1}{N} (x - \mu)^2$$

x	$\hat{y}$	y
0	1	0
1	2	1
2	3	3
2	2	2
1	3	2
2	4	5
3	5	4
4	5	6
4	6	8
	6	7

$$\hat{y} - y = \Phi^T \hat{x} - y$$

1
1
0
0
1
-1
1
-1
-2
-1

$$-2\eta \left\{ \begin{aligned} &[-1] \begin{bmatrix} 5 \\ 1 \end{bmatrix} \\ &+ (-2) \begin{bmatrix} 5 \\ 1 \end{bmatrix} \end{aligned} \right\}$$

+ -

$$\sum(\Phi) = 11$$

2
동 간 2시간

04/15 (토)

신용핵심 3107호

15:00 - 17:00

연강 X.

cheat sheet A4 1장.

계산기 X,

