Linear Regression 까지 요약(모두의 딥러닝)

2021310821 정현일

Contents

- Machine Learning
- Linear Regression

Machine Learning

WHY?

Machine Learning

WHY? Explicit Programming의 한계

(programmer가 rule을 일일히 만들 수 없음.)

Machine Learning

종류

Machine Learning

종류

Supervised learning

Unsupervised learning

Machine Learning

Supervised learning

- regression
- Binary classification
- Multi-label classification

Linear Regression

Linear Regression

- Hypothesis
- Cost function
- Gradient descent algorithm

Linear Regression

Hypothesis

Linear Regression

Hypothesis $H(x) = wx + b$

Linear Regression

-matrix를 이용한 표현-

Hypothesis $H(X) = XW$

X is (n*m) matrix
W is (m*k) matrix
H(X) is (n*k) matrix

Linear Regression

Cost Function

Linear Regression

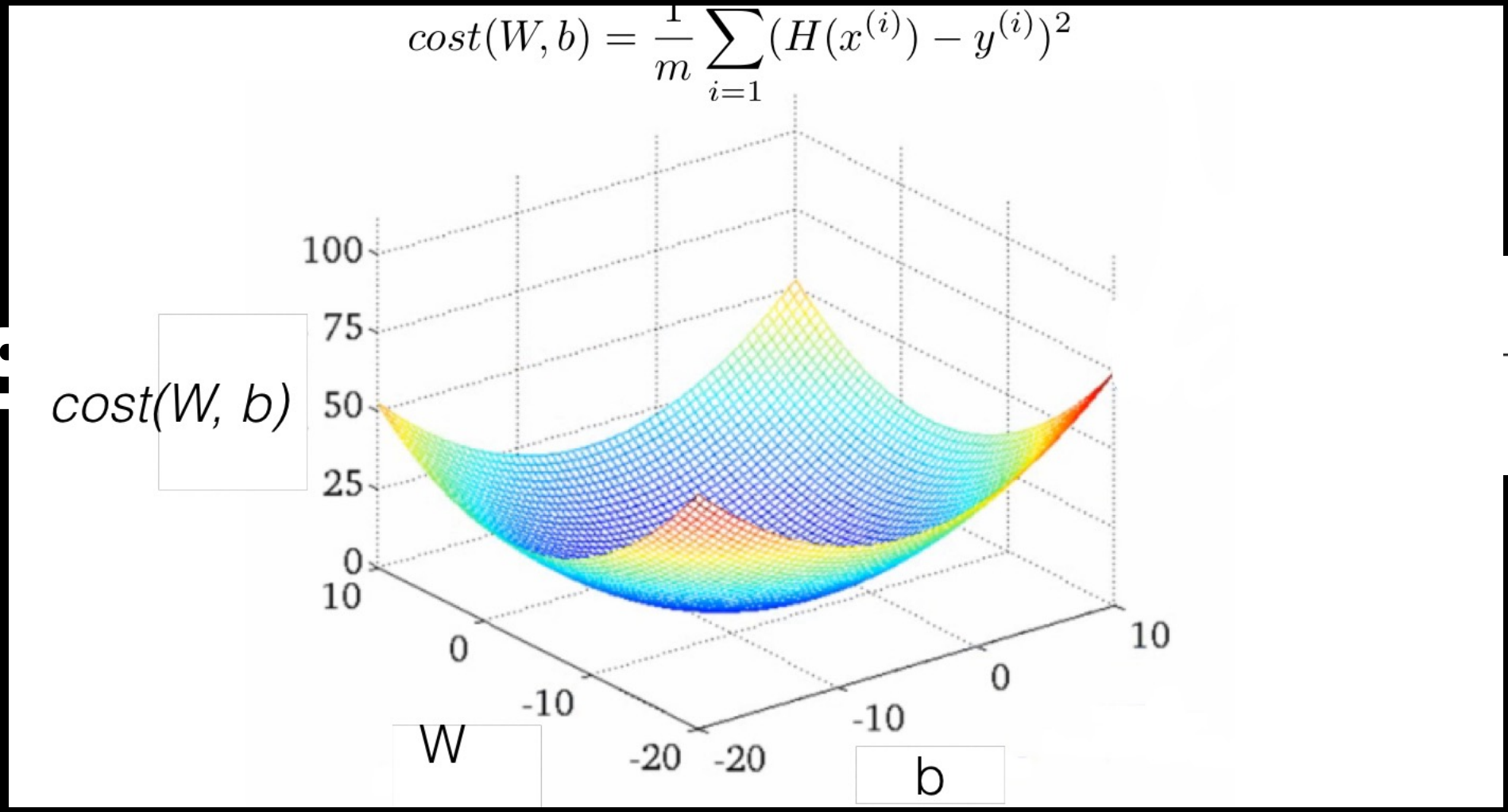
Cost Function

$$cost(W, b) = \frac{1}{m} \sum_{i=1}^{m} (H(x^{(i)}) - y^{(i)})^2$$

Linear Regression

Cos

$$cost(W,b) = \frac{1}{m}\sum_{i=1}(H(x^{(i)}) - y^{(i)})^2$$



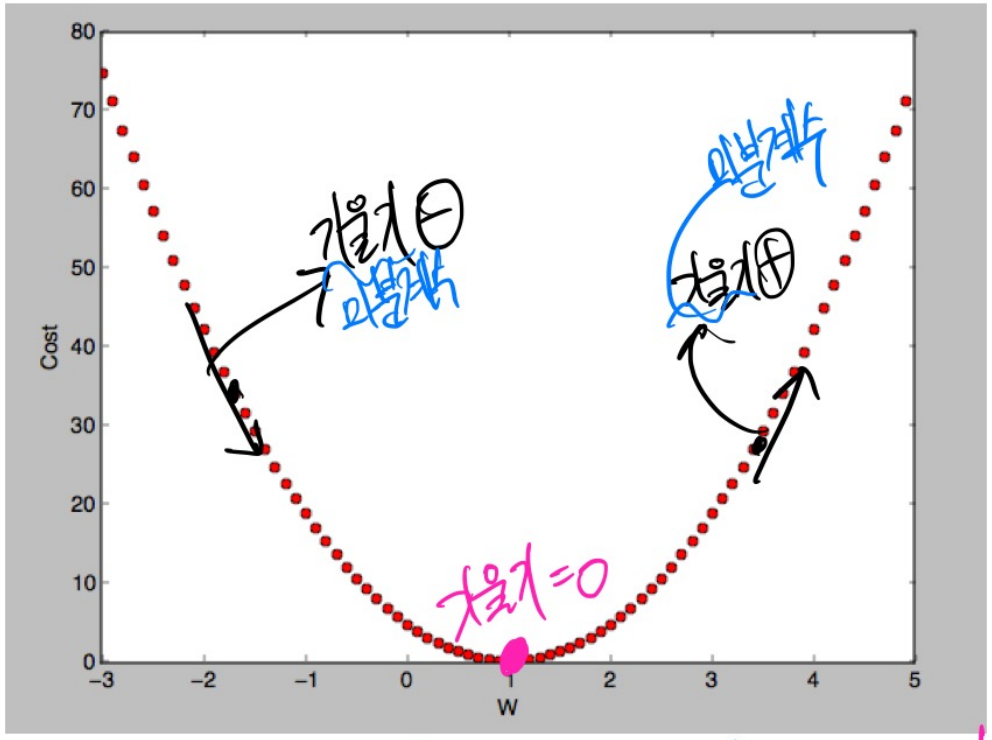
$$- y^{(i)})^2$$

Linear Regression

Gradient Decsent Algorithm

Linear Regression

Gradient Decsent Algorithm



$$W = W - \left\{ \frac{\partial}{\partial W} cost(W) \right\} \times \alpha$$

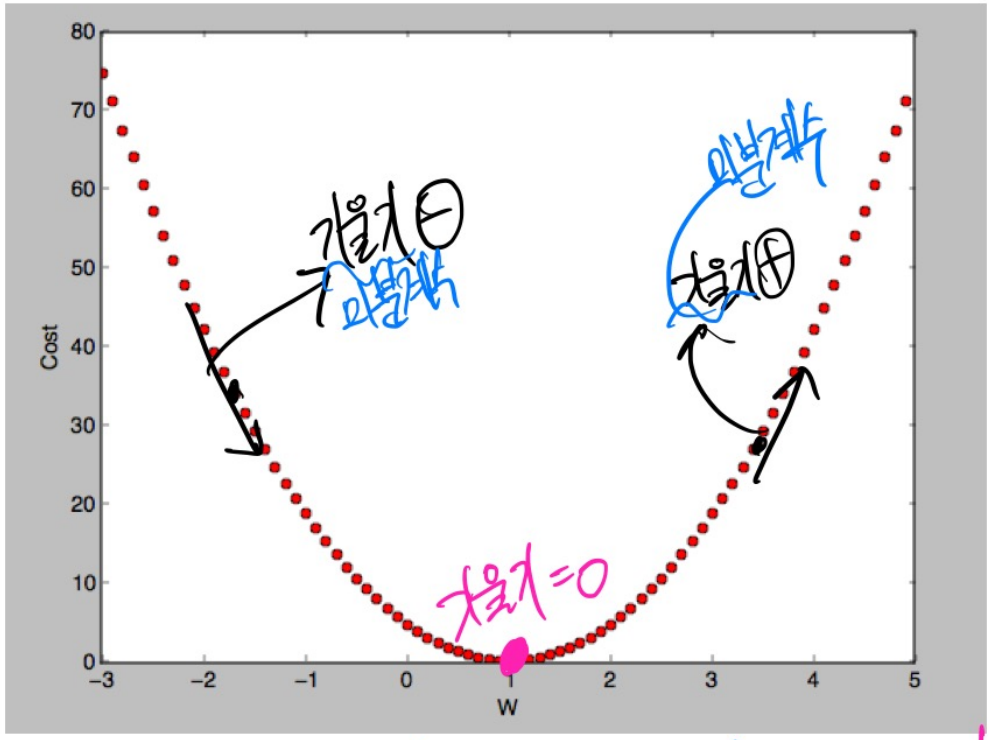
learning rate

임의의 점에서 미분계수가
음수인 경우 -> w증가
양수인 경우 -> w감소

=>
Cost가 최소인 점을 향해서
w값 조정

Linear Regression

Gradient Decsent Algorithm



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learning rate

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w값 조정

$$W := W - \alpha \frac{1}{m} \sum_{i=1}^{m} (Wx^{(i)} - y^{(i)}) x^{(i)}$$

End!