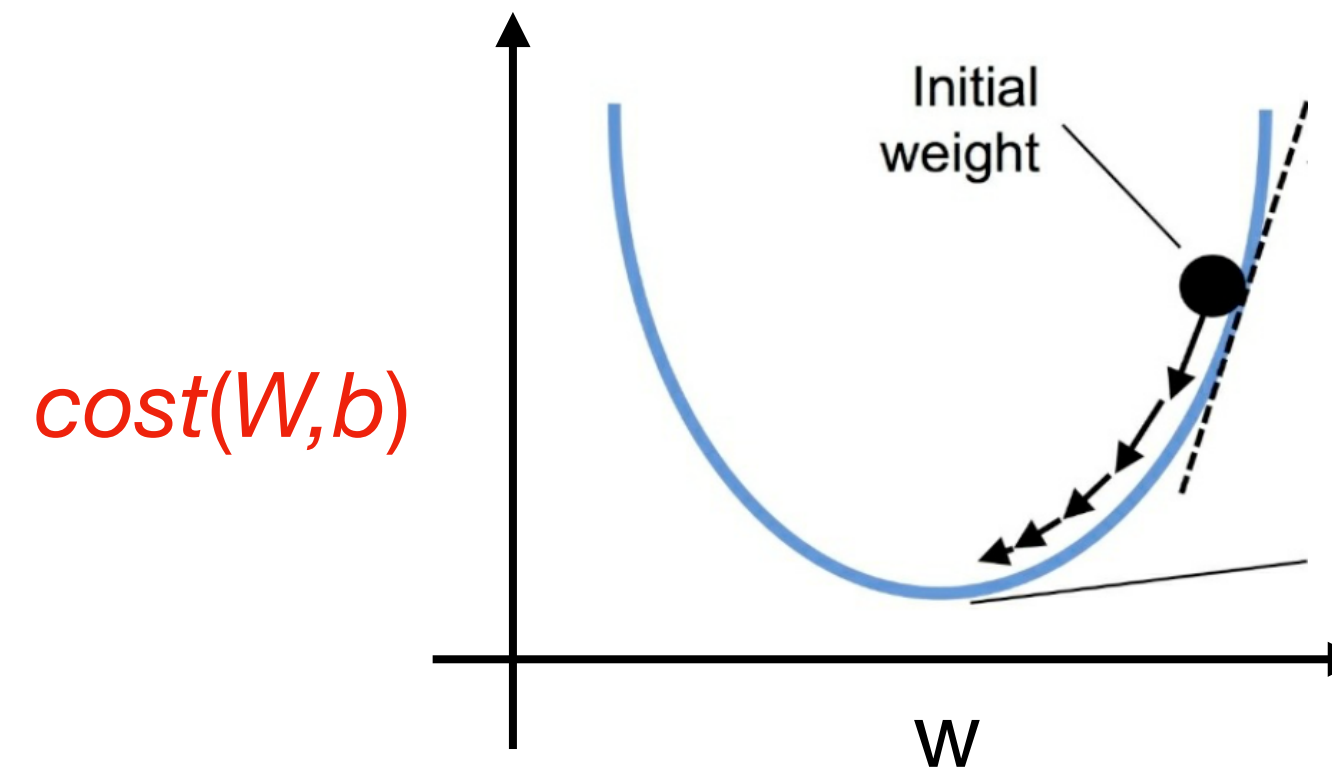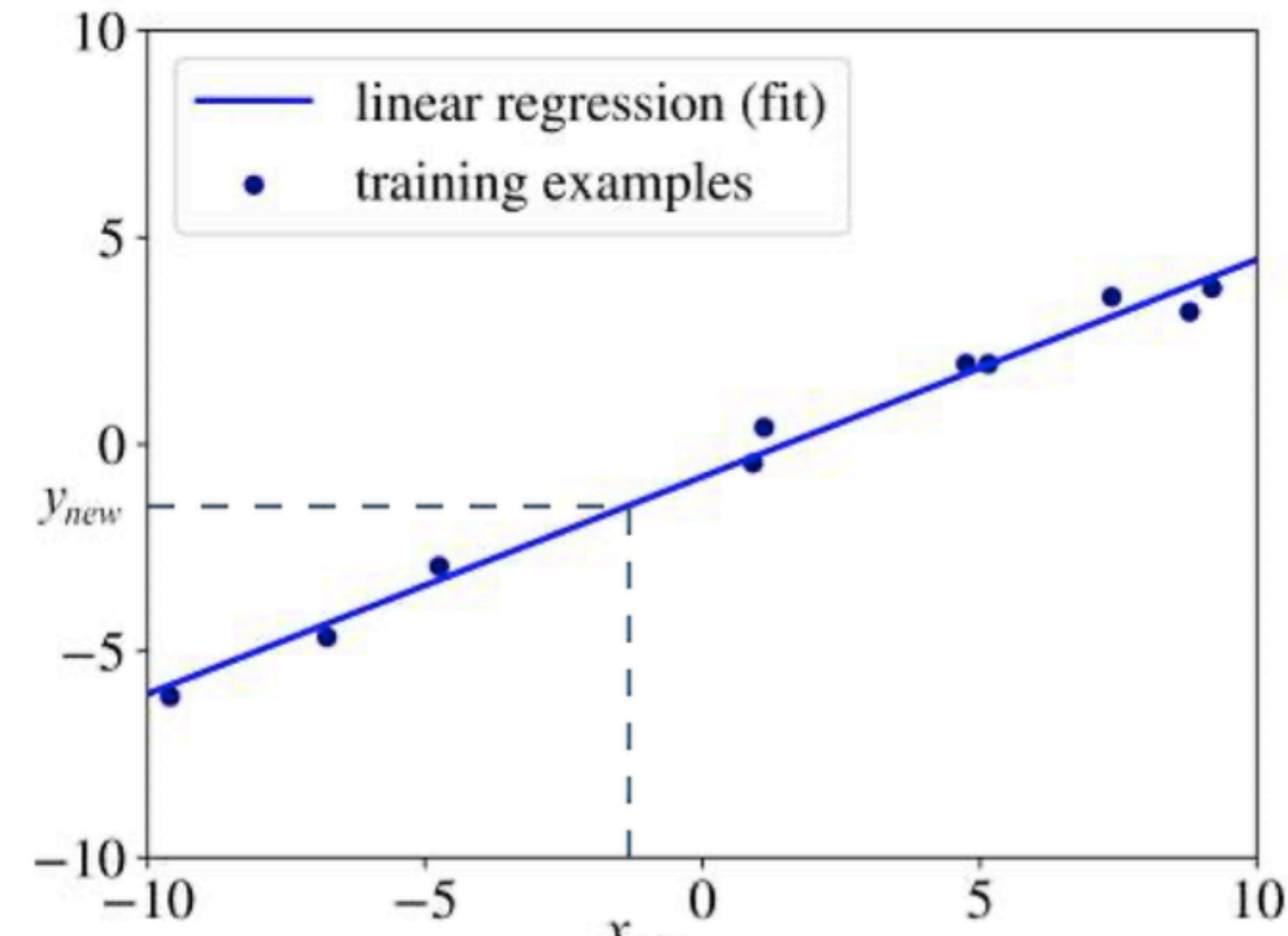# Linear Regression Lab

Jin Hyun Kim

Review

- Linear Regression

$cost(W,b)$

$$cost(W, b) = \frac{1}{N} \sum_{i=1}^{N} ((Wx^{(i)} + b) - y^{(i)})^2$$

- Start with initial guesses
  - Start with random value
  - Keeping changing W and b a little bit to try and reduce cost(W, b)
- Each time you change the parameters, select the gradient which reduces cost(W, b) the most possible
- Repeat until it converges to a local minimum

Review

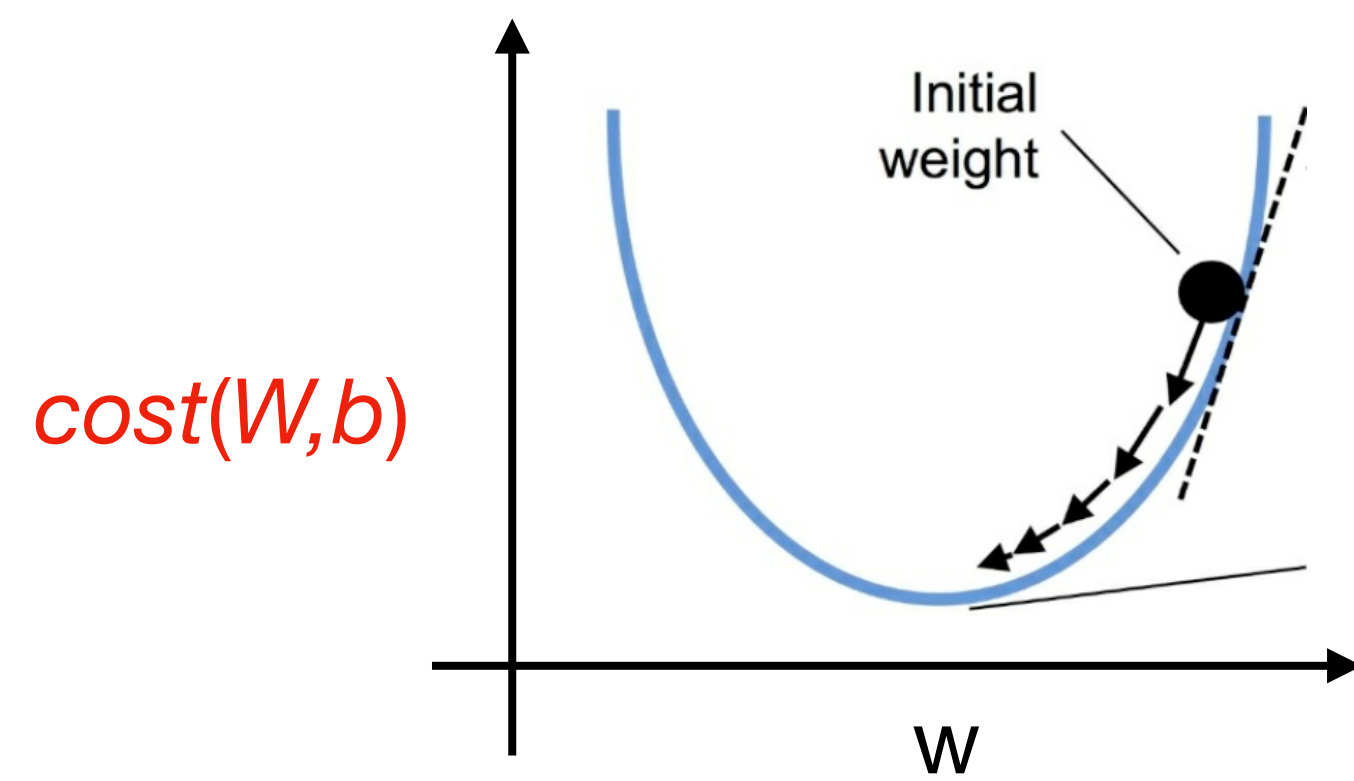- Linear Regression

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  - Keeping changing W and b a little bit to try and reduce cost(W, b)

- Each time you change the parameters, select the gradient which reduces cost(W, b) the most possible

- Repeat until it converges to a local minimum

$$W = W - \alpha \frac{\partial}{\partial W} cost(W, b)$$

$$\frac{\partial}{\partial W} cost(W, b) = \frac{2}{N} \sum_{i=1}^{N} x^{(i)}((Wx^{(i)} + b) - y^{(i)})$$

$$b = b - \alpha \frac{\partial}{\partial b} cost(W, b)$$

$$\frac{\partial}{\partial b} cost(W, b) = \frac{2}{N} \sum_{i=1}^{N} ((Wx^{(i)} + b) - y^{(i)})$$

Programming Assignments #3

- Update the program of Gradient Descendent Algorithm that we discussed in class so that it guesses petal length or width for given sepal length and width of Irish

  - Divide data by Setosa, Versicolor, Virginica

Next

- Logistic Regression