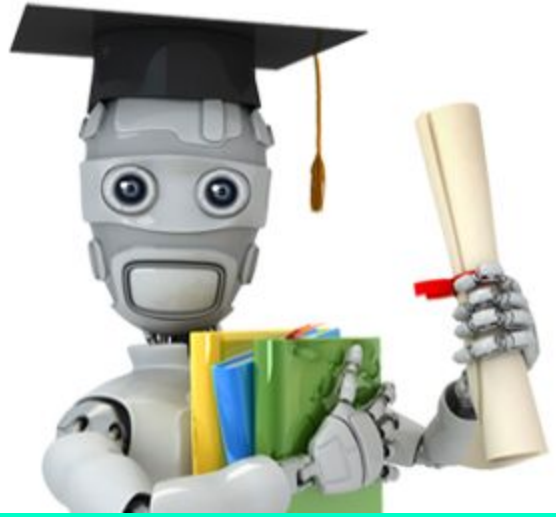
Semillero de inteligencia artificial



#AI is the new Electricity

REVIEW

- Supervised learning
- Regression Problems
- Linear Regression
  - Hypothesis / Function
  - Parameters / Model
  - Cost function
  - Gradient descent

VECTORIZED SOLUTION

HYPOTHESIS

$$h_\theta(x) = \theta_0 + \theta_1 x$$

COST FUNCTION

$$J(\theta_0, \theta_1) = \frac{1}{2m} \sum_{i=1}^{m} \left(h_\theta(x^{(i)}) - y^{(i)} \right)^2$$

PARAMETERS

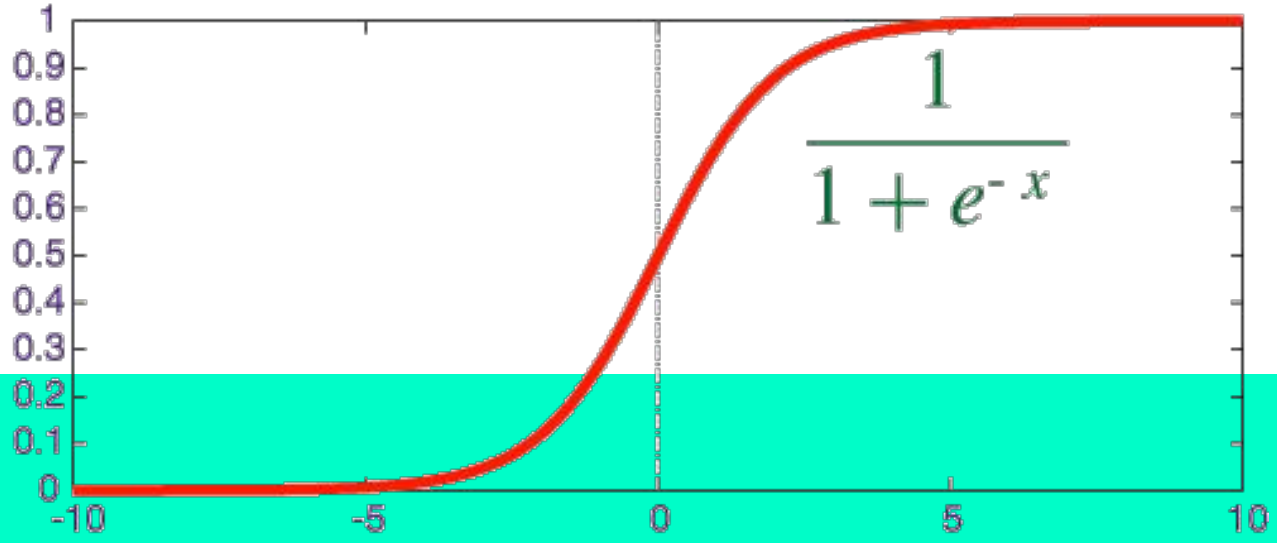
$$\theta_0, \theta_1$$

GOAL

$$\underset{\theta_0, \theta_1}{\text{minimize}}\ J(\theta_0, \theta_1)$$

CLASSIFICATION PROBLEMS

Logistic Regression



Cost Function:

$$\theta_{min} = arg\min_{\theta} \frac{1}{m}\sum_{i=0}^{m-1}(y^{(i)} - g(\theta \mathbf{x}^{(i)}))^2$$

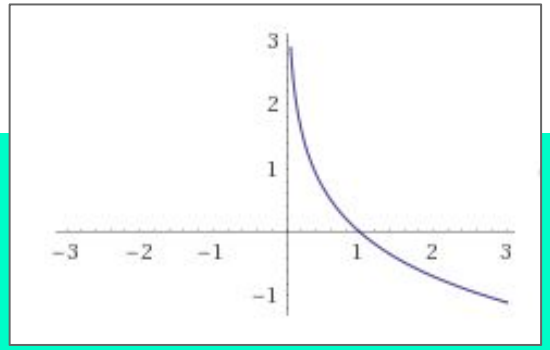
STATISTICS

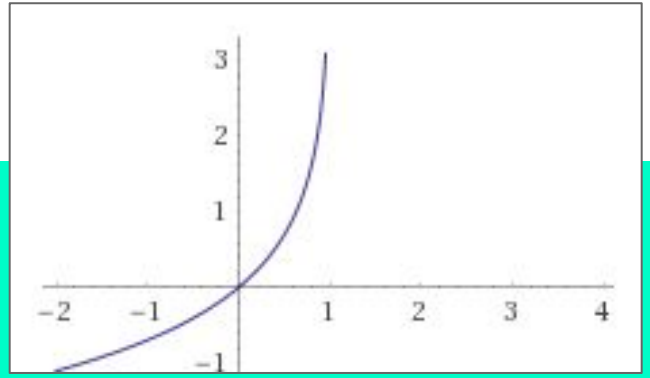
$$P(y = 1 \mid x; \theta) = g(x * \theta)$$
$$P (y = 0 \mid x ; \theta) = 1 - g(x * \theta)$$

$$:=$$

COST FUNCTION

$$\text{Cost}(h_\theta(x), y) = \begin{cases} -\log(h_\theta(x)) & \text{if } y = 1 \\ -\log(1 - h_\theta(x)) & \text{if } y = 0 \end{cases}$$





COST FUNCTION

$$J(\theta) = -\frac{1}{m}[\sum_{i=1}^{m} y^{(i)} \log h_\theta(x^{(i)}) + (1 - y^{(i)}) \log (1 - h_\theta(x^{(i)}))]$$

Reference

https://github.com/rramosp/20182.ml/blob/master/Notes%2003%20-%20Logistic%20Regression.ipynb

Machine Learning - Coursera [Andrew Ng]