Lecture Notes for Machine Learning in Python

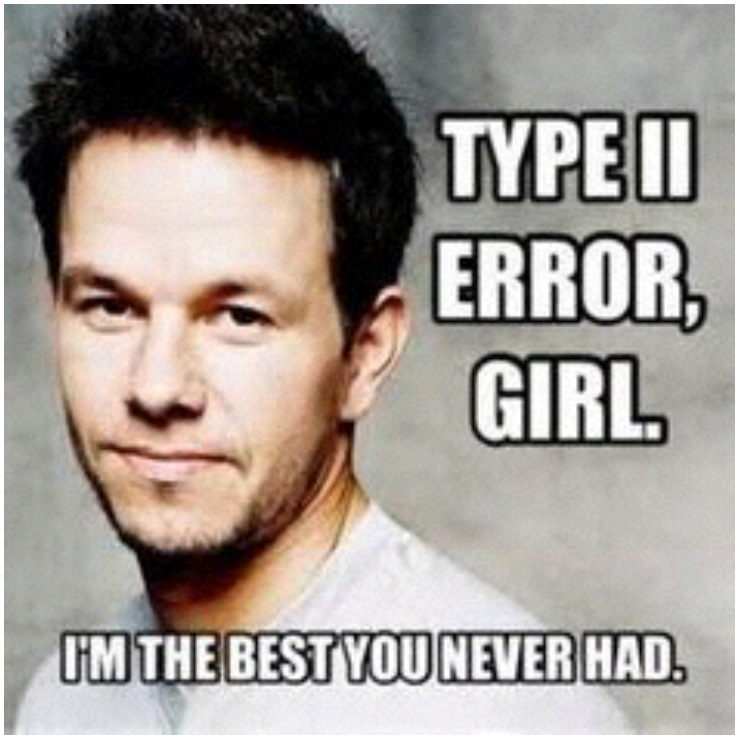
Professor Eric Larson

Week Five, Lecture B

Class Logistics and Agenda

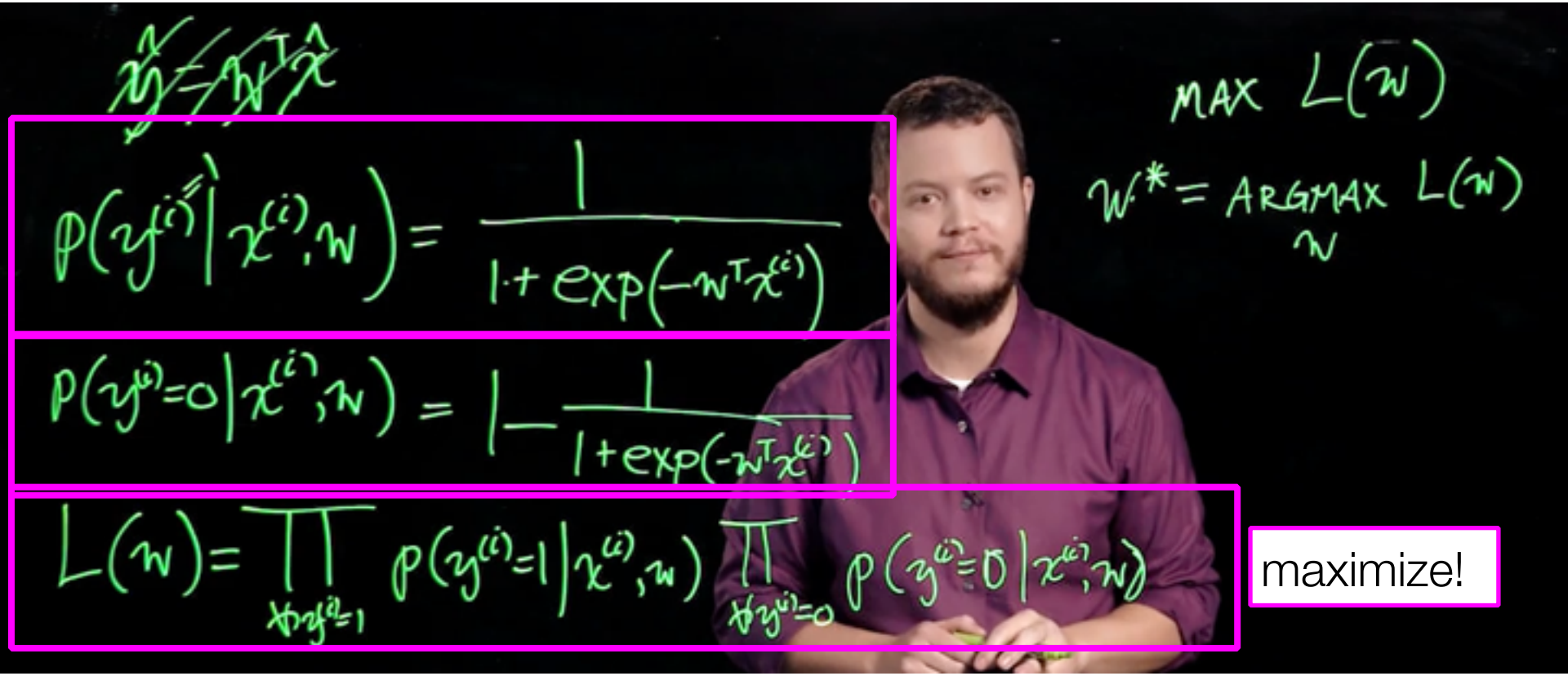
- Welcome back to lecture!
- Agenda
  - Logistic Regression
    - Solving
    - Programming

Logistic Regression



Setting Up Binary Logistic Regression

- From flipped lecture:



Binary Solution for Update Equation

- From supplement:

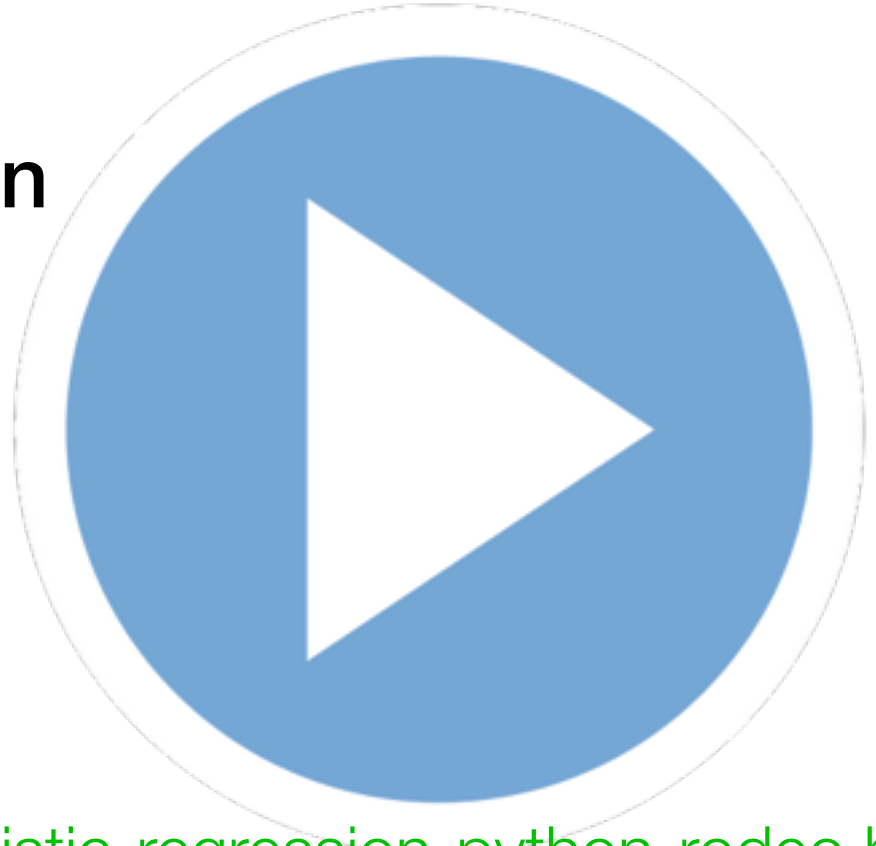
$$\underbrace{w_j}_{\text{new value}} \leftarrow \underbrace{w_j}_{\text{old value}} + \underbrace{\eta \sum_{i=1}^{M} (y^{(i)} - g(x^{(i)}))x_j^{(i)}}_{\text{gradient}}$$

$$w \leftarrow w + \eta \sum_{i=1}^{M} (y^{(i)} - g(x^{(i)}))x^{(i)}$$

Demo

Reinvent sklearn
Logistic Regression

Programming
Extended Example



Other Tutorials:

http://blog.yhat.com/posts/logistic-regression-python-rodeo.html

http://scikit-learn.org/stable/auto_examples/linear_model/plot_iris_logistic.html

For Next Lecture

- **Next time**: Gradient based optimization
- **Next Next time**: SVMs via in class assignment

Scratch Paper

Scratch Paper

Scratch Paper