

CSc 59929

Introduction to Machine Learning

Assignments for Week 3

Due September 12

- **Read pages 49-69 of Chapter 3 in the textbook**
- **Complete the programming exercise described on the following charts.**

Programming Exercise

- Download the Jupyter Notebook that I ran in class
 - It's labeled **The Perceptron** in the **Code** Section of Blackboard
- Review the code and run it to become familiar with it and to make sure that it runs in your environment.
- Modify the code to provide access to the weight vector that is calculated at each iteration.
- Use the code you downloaded and modified as the starting point for the following.

Programming Exercise

- Note that, for the case with two features, $w_0 + w_1x_1 + w_2x_2 = 0$ defines the line that is the decision boundary that separates the two classes of samples.
- Pick two cases from the Iris data set, one that's linearly separable and one that's not.
- For each of the two cases, plot the decision boundary for each iteration. Change the learning rate (eta) and see how that changes your results.

Programming Exercise

- Upload your code (as a Jupyter Notebook) in the **Uploads** section of Blackboard using **Attach File**.
- Be prepared to demo and talk about your code in class.
- If these instructions are not clear or you run into major problems, please email me.