

Homework 7

Reading:
Perceptron Materials
Patrick Loeber [video](#) / [code](#)
Due Wed, Jan. 17, 17:00

Submission Instructions

Submit exercise files to Moodle as usual. Show your work for full credit. Please write legibly.

Exercise 1 (4 pts)

Suppose that after training a perceptron model, the final weights and bias are:

$$\mathbf{w} = \begin{bmatrix} 1 \\ .4 \\ -1.5 \end{bmatrix} \quad bias = .2$$

Calculate the model's predicted value of the following test sample.

$$\mathbf{X_test} = [-.2 \quad .3 \quad .1]$$

Exercise 2 (6 pts)

Suppose you are training a perceptron model. The current weights and bias are:

$$\mathbf{w} = \begin{bmatrix} .1 \\ .2 \\ .3 \end{bmatrix} \quad bias = .2$$

Calculate the weights and bias after one iteration of training the following training sample \mathbf{x} . Note that \mathbf{x} is one row vector in the training data, and y is the gold value for sample \mathbf{x} . Use a learning rate of .01.

$$\mathbf{x} = [5 \quad 4 \quad -2] \quad y = 0$$