

Information Mining - winter semester 2019**Exercise sheet 6**

Exercise 1: Gradient Descent

The file `ex1data1.txt`¹ contains the dataset for our linear regression problem. The first column is the population of a city and the second column is the profit of a food restaurant in that city. A negative value for profit indicates that the restaurant does not do profit but loses money. Use this data to fit a linear model: $h(x) = b + mx$. As shown in the lecture you can replace b and m with w_0 and w_1 . To learn w_0 and w_1 you should use your own implementation of Gradient Descent. Make sure you update w_0 and w_1 simultaneously. Run the process with 1500 iterations. Use 0.05 for the learning rate. You can initialize $w_0 = w_1 = 1$.

Exercise 2: Stochastic Gradient Descent

Repeat the above question now with stochastic gradient descent. Report the loss/error of your final model and compare that of the loss/error of the model obtained using batch gradient descent.

¹http://www.is.inf.uni-due.de/courses/im_ws19/uebung/ex1data1.txt