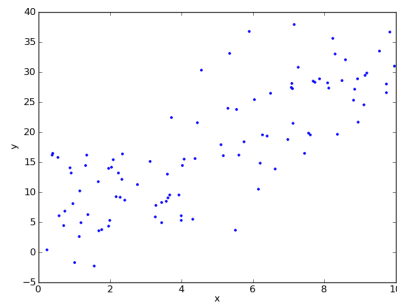


Assignment 4

Submit individually to prof4155@cs.dal.ca with subject line A4 Thursday, October 11, 4pm.

1. Given are training data shown in the figure below. These data are available through the course web site in file `A4Q1_data.npy`. Provide an appropriate hypothesis with explanation and use a gradient descent method to estimate the parameters of your model. Plot a learning curve and provide the values of your estimates. What is your prediction of the output value for $x=20$?



2. The file `A4Q2_test.npy`, which is available through the course web site, contains three feature values for training data, and the file `A4Q2_test_labels.npy` contains the corresponding labels. Your task is to predict as good as you can the labels for the test data with the features given in file `A4Q2_train.npy`.
3. (For graduate students only)

Given are data from two classes, $C = 1$ and $C = 2$. The data in each class are Gaussian distributed with mean μ_1 and $\mu_2 = \mu_1 + d$ respectively. Calculate the maximal possible classification accuracy as a function of d .