CS454-554 Homework 1: Parametric Classification
Fall 2023/2024

In this homework, your task is to implement parametric classification where class densities are assumed to be Gaussian.

You are provided with two dataset files. As their names imply, the **training.csv** file will be used for training and the **testing.csv** file will be used for testing. Each row of the files corresponds to one instance. You have 150 instances per file. The first column of the row contains the double value representing the input x and the second column contains class C label (1, 2, or 3) of that instance.

You should use the training instances to estimate the parameters, which are the class priors and the parameters of the Gaussian densities, namely means and variances. The test instances, unused during training, is used to estimate the generalization performance of your model.

1) Plot the likelihood and posterior distributions, together with the training and test data instances on the same plot. Use different colors/symbols for different distributions and classes.

2) Calculate the performance of the model: Assume 0/1 loss and calculate the 3x3 confusion matrices of your model on both the training and the test instances.

This homework is due **Nov 2nd (Thursday), 23:00**. Remember that late submissions are not allowed.

Your submission should include a short report of your findings, the plot, and your source code. Upload your report **as a pdf file** to LMS alongside your .py/.m code file. You are **not** allowed to use any library function for statistical calculations.