ECE 403 – Pre Lab 2

Ashlynn Steeves

V00850631

1. *Are the labels used in the provided function LRBC\_newton(****X,y,k****), i.e.,* ***y****, the true labels for the samples X?*

Not exactly. The labels provided to LRBC\_newton via **y** simply indicate whether a given sample belongs to the class in question or not. Regardless of the number of classes a sample could belong to it will only receive one of two labels in **y** (1 if it belongs to the class in question and -1 if not). For example, if we are looking at class 1, any sample from class 2 or class 3 will have the same label in **y**, which is why **y** does not represent the true labels for the samples X.

1. *How many parameter vectors do you need to train this 3-Class classification and what is the size of each parameter vector?*

This will require a total of 6 initial parameters, P1, N1, P2, N2, P3, N3. Where the P parameters represent a single class, each with 35 training samples and the N parameters represent the union of the remaining classes, each containing 70 training samples.

1. *What is the size of the confusion matrix and what will the confusion matrix look like if all test samples have been correctly classified?*

For a three-class classifier, we would expect a 3x3 confusion matrix. If all samples are classified correctly we would expect the matrix to look similar to an identity matrix where the values on the diagonal correspond to the number of samples from each respective class.