ML Lab (CS360)

Assignment 6

Total marks: 20

1. Implementation of Single Layer Perceptron (SLP) (Total: 10 marks)

Classify the IRIS dataset by using the single layer neural network.

(a) Download iris data from UCI web repository. Click here

(b) Read the data: input features in one variable and class labels into another in a vector form suitable for a neural network class label representation **(2 marks)**

(c) Randomly select training and the test set: x% (begin with x=10) data from each class for training and all the rest for testing **(2 marks)**

(d) Compute training and testing accuracy using SLP for 10 independent simulations and store the results from the individual simulations programmatically in an excel sheet **(2 marks)**

(e) Compute training and testing accuracy by varying accuracy x (from 10% to 60%) as the following and report overall training and testing accuracy (average over 10 simulations): **(2 marks)**

1. Amount of randomly selected training data	**2. Training accuracy (Average over 10 simulations)**	**3. Testing accuracy (Average over 10 simulations)**
10%		
20%		
30%		
40%		
50%		
60%		

(f) Plot a graph keeping column 1 at x-axis and column 2 and 3 (at the same figure) at the y-axis. Use curves of different colors to denote curves for column 2 and 3. **(2 marks)**

2. Classify the IRIS dataset using a multi-layer perceptron neural network. Repeat the same steps as mentioned in Question-1 using MLP. (10)