Indian Institute of Technology Indore

Discipline of Computer Science & Engineering

CS 403/603 Machine Learning

Lab Assignment - Radial Basis Function Neural Network

Some general instructions:

- Plagiarism in any form will not be tolerated.
- You are not allowed to use in-built libraries related to neural network. Code everything from scratch.
- You are allowed to do only one submission before the deadline. However, in the case of multiple submissions, only the last submitted file will be used for evaluation.
- Submission of the assignment should be made using the Google Classroom platform only.
- Last date for submission of the assignment: **27th Oct 2021**

Question 1: Use the "IRIS" dataset to perform Classification using Radial Basis Function Neural Network. Measure the performance of your network in terms of accuracy. Do the following tasks and analyze the results:

a. Effect of changing the cluster centres.
b. Effect of changing the size of training and testing data.
c. Effect of changing the radial function. (Try with Gaussian and Multiquadric).
d. Effect of change of initial weight values.
e. Effect of changing the number of cluster centres/ number of hidden nodes.
f. Perform Classification on the same dataset using Perceptron. Compare and analyze the results between the two models.

Question 2: Use the "MNIST" dataset to perform Classification using Radial Basis Function Neural Network. Measure the performance of your network in terms of accuracy. Do all the tasks mentioned in Question 1 and report your results.

Results:

Attach your code file and include a single write-up (pdf) file which includes a brief description for each question explaining what you did. Include any observations and/or plots required by the question in this single write-up file.