CSE 4238 - Soft Computing Lab

Assignment # 01

Course Instructor: Nibir Chandra Mandal

In this assignment, you will learn how to work with deep neural networks. There are two parts -

I. Coding Part
II. Report Writing Part

Here, each part contains individual marks.

I. Coding Part

1) Dataset

You will get a zip file. Drop all columns except 'filename' and 'class' from csv file.
Dataset

2) Model Creation

Experiments:

There are *two* experiments on the first dataset which will be as follows. You have to find the accuracy and make predictions for each experiment. Keep 20% data for testing purposes from your dataset.

Hyperparameter	Experiment # 01	Experiment # 02
Number of hidden layers	5	Build a CNN model and make necessary adjustments to increase the accuracy of Experiment # 01 at least 50%. **You must show all approaches you try.** Remember that your approaches and results ***must not be the same as others.***
Number of nodes in hidden layers	100(for all layers)	
iteration	2000	
Learning rate	0.001	
Batch size	20	
Activation function of hidden layers	Choose an activation function as your own and apply it for all hidden layers.	

Optimizer and Loss	Set as your wish	

II. Report Writing Part

01. Add a cover page.
02. Make necessary tables to show the comparison between two experiments for the first dataset and discuss them.
03. Show the Loss vs Iteration graph.
04. Make a comparison of the results between the first dataset and second dataset by tables/graphs/charts. Then discuss the results of those if they vary. Discuss the reasons behind them.
05. Upload your code in Github and share the link in your report.

Notes:

1. The report doesn't have any page limit.
2. Use any formatting tool latex/word/google doc to prepare your report.

Additional Guidelines:

★ Use the Pytorch library for implementation. You can follow the lab materials if you need them.

★ Write the report by following the instructions of the Report Writing Part.

★ Submit the report in pdf format by renaming it with your ID. *Example: 170104000.pdf*

★ Submit your codes as ipynb format by renaming it with your ID_exp_no. *Example: 170104000_exp_01.ipynb.*

★ If you have multiple .ipynb files for experiment # 02, rename them as *170104000_exp_02_1.ipynb* and so on.

★ Keep patience if it takes a longer training time.

★ **All of your assigned tasks must be unique. Plagiarism is strictly prohibited and punishable.**