

Statistical Machine Learning Winter 2022

Assignment - 4 Deadline : **14th May, 11 : 59PM**

April 2022

1 Instructions

- You are free to use either python or MATLAB for this assignment.
 - You can use inbuilt libraries for Math, plotting, and handling the data (eg. NumPy, Pandas, Matplotlib).
 - Usage instructions for other libraries can be found in the question.
 - Only (*.py) and (*.m) files should be submitted for code.
 - Create a (*.pdf) report explaining your assumptions, approach, results, and any further detail asked in the question.
 - You should be able to replicate your results if required.
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2 Question **[4 Marks]**

Use [FMNIST\(Fashion MNIST\)](#) dataset and follow below instructions to solve this question.

Create a feed forward Neural Network from with following instructions.

NOTE : You are allowed use **PyTorch** or **TensorFlow** and take advantage of all the functionality of these DL frameworks to implement this architecture. **Do not need to implement anything from scratch.**

- Input layer must have **784** nodes and output layer have **appropriate** number of nodes.
- use any number of hidden layers with any number of neurons depend on your computation power availability.

- Use **Multiclass Cross Entropy loss** function, **Stochastic Gradient descent(SGD)** optimizer and **random weight initialization** techniques to train the model.
- Report all the **hyperparameters** that you have assumed like batch size , learning rate etc.
- Plot epoch wise training loss.Report testing accuracy and classwise testing accuracy.