

DL/DLOps (2023)

Lab Assignment 7

Deadline: 09/04/2023, 23:59:59

There will be a 25% penalty for each day of late submission.

Guidelines for submission:

1. Perform all tasks in a single colab file.
 2. The colab file should be named appropriately with your complete roll number(ex: **"B19EE036_Lab_Assignment_7.ipynb"**).
 3. Submit a well-documented report highlighting the performance of the model on different datasets in terms of the accuracy and training time. Also analyse the effect of tuning various hyperparameters on the performance metrics. Name the report properly(ex: **"B19EE036_Lab_Assignment_7.pdf"**).
 4. Submit a video demonstration showcasing the use of slurm to submit a job and explaining the complete codeflow. Please limit your video demonstrations to a maximum of 5 minutes. Name the file properly(ex: **"B19EE036_demo.mp4"**).
 5. Write compact code with proper comments.
 6. Strict disciplinary action will be taken if indulged in plagiarism.
-

Q1. In this assignment you are required to train a Convolutional Neural Network on two datasets using slurm and submit the jobs [**100 marks**]

- a. If the last digit of your roll number is even:
Train ResNet-18 on FashionMNIST dataset [**10 marks**]
 - b. If the last digit of your roll number is odd:
Train MobileNet_V2 on CIFAR-10 dataset [**10 marks**]
- Download the datasets and extract them to folders on the GPU server and preprocess the data. [**10 marks**]
(Use default PyTorch dataloader function mentioning the dataset path and utilize different transforms for preprocessing [**compulsory**])
 - Set the loss function, optimiser, and metrics and compile the model [**30 marks**]
 - Use Slurm to submit a job for training the model on the GPU server [**15 marks**]
 - Also measure the training time (use timeit module for instance) for 10 and 15 epochs [**10 marks**]
 - Try to identify the set of hyperparameters that results in similar performance as compared to the best performance in the previous step but with lower training time [**25 marks**]