DL/DLOps (2023)
Lab Assignment 3: Optimizers [30 Marks]
Deadline: 26/02/2023, 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 properly named with your complete roll number XYZ (ex: “XYZ_Lab_Assignment_3.ipynb”).
3. The report file should be named with your complete roll number XYZ (ex: “XYZ_Lab_Assignment_3.pdf”)
4. Try to write the code in functions and provide comments for readability wherever possible.
5. The report file should contain all relevant information including data pre-processing, observations, results, and analysis across the problem.
6. Submit the downloaded colab file [.ipynb] in the classroom along with a report (PDF).
7. Plagiarism will not be tolerated, and strict action will be taken as per institute policies.

Question 1 [30 Marks]

Use ResNet18 pre-trained on ImageNet (Pre-trained models can be found online). Finetune the model on X dataset for classification task and plot curves for training loss and training accuracy. Report the final top-5 test accuracy. Perform the above task with any 3 optimizers from the following list.

1. Adam
2. Adagrad
3. Adadelta
4. RMSprop

X = STL 10, if last digit of your roll no. is odd
X = CIFAR100, if last digit of your roll no. is even

In the report, analyze the results of each optimizer and mention the reason why one is better than the other, or why not. Further, for each optimizer, you need to vary the value of attributes and show its effect on the overall performance. Provide reasons for your observations in the report. (For ex - In Adam you can change the values of attributes like beta_1, beta_2, epsilon, momentum, weight_decay etc.)

Note - Use of TensorFlow is not permitted, and marks shall not be given for the same.