PGR207 Deep Learning - Mandatory assignment (individual assignment)

What are you required to do?

1. **Submit a Python Notebook file:** Provide a Jupyter Notebook file with complete step-by-step procedures. (Find more details at https://jupyter.org/)
2. **Submit a Wandb report:** Prepare a report via https://wandb.ai/ with the complete results and corresponding discussion sections. Remember to invite me to your Wandb project via my email: vajira@simula.no.
3. **Write a paper about your findings, including graphs, tables etc. (You must follow this template: https://www.overleaf.com/latex/templates/ieee-conference-template/grfzhhncsfqn, Max pages = 8)**

Where can you find the dataset to train your models?

Utilize the following dataset with official train and test splits:
https://pytorch.org/vision/main/generated/torchvision.datasets.MNIST.html#torchvision.datasets.MNIST

What do you need to do with the above dataset?

Train Deep Learning (DL) models and analyze the following aspects:

1. Three different data augmentation techniques.
2. Three different models with three different numbers of layers.
3. Three different models with three different activation functions.
4. Three different types of DL models (MLP, 1-D, and 2-D convolution, respectively).
5. Three different optimization methods.

What do you need to submit?

1. Complete Jupyter notebook(s).
2. Links to the Wandb project.
3. Paper.