**Hands-on Assignment 9**

**Due Date: See web**

In the diffusion model tutorial, you have seen a diffusion model implementation, which was tested on the MNIST dataset. In this hands-on assignment, you are asked to do more experiments on the MNIST dataset and report the results.

In your experiments, start with the baseline model from the tutorial and

* Vary the noise schedule (at least two options)
* Vary the number of diffusion time steps (at least two options)
* Vary the sampling method (DDPM vs. DDIM)

In total, you will need to run at least 8 experiments. Write a simple report to summarize the results. Your report should not only discuss the changes made in the experiments and the corresponding results, but also analyze the results. Consider using the Inception Scores and the Fréchet Inception Distance (FID) Score to measure the quality of the generated images. The report should be well organized and must be in docx or pdf format.

Diffusion models map real data to the unit Gaussian distribution in the latent space. Consequently, the quality of the generated images should be poor if we start from a latent vector far away from the origin. Demonstrate this using the best model that you have trained.

Please submit the report on Canvas. There is no need to submit your code. Similarity scores will be computed for this assignment.

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