

AML 2023: Assignment 2

CMI

Due Date: Nov 10, 2023

1. The Fashion MNIST dataset consists of 28x28 grayscale images from 10 categories of images of clothes, shoes etc. Construct a variational autoencoder for them.
<https://www.kaggle.com/datasets/zalando-research/fashionmnist>
 - a. Show 5 examples of images produced by random samples from the latent space
 - b. Show 5 examples of transitions between two images in the dataset, as we saw in class.
2. Create a GAN for MNIST dataset which has 28x28 grayscale images of 10 digits.
<https://www.kaggle.com/datasets/hojjatk/mnist-dataset>
 - a. Show 10 images generated from random codewords.
 - b. Show 5 examples of the following: Pick two random codewords, a and b, and pick 10 uniformly spaced points between a and b on the line from a to b. Show the images generated from these 12 points
3. Create a Conditional GAN for MNIST.
 - Recall that, in a conditional GAN, we give the generator a random codeword from the latent space, as well as a label indicating which class of image we want, and the generator tries to create an image of this class.
 - The Discriminator is given pairs of (Image, Label) to classify as real or fake
 - For each class, show 4 examples of generated images from random codewords

Instructions:

- You have to submit a jupyter notebook (ipynb) with all your code and outputs of the code
- You should also submit a 1 page writeup documenting what you have done
- If you don't include the outputs you will get partial credit
- You can work in groups of 2 or 3
- Only one member of the group should submit the assignment
- Please mention the names and roll-numbers of all group members
- You are free to build upon examples shown in class
- Please confirm with the TAs that your submission has been received on time.
- No requests for re-submitting the assignment later because of various reasons will be entertained.