written2

February 19, 2026

1 STP598 Advanced Deep Learning Models

1.1 Written Assignment 2

1.1.1 Due 11:59pm Sunday Mar. 1, 2026 on Canvas

1.1.2 name, id

1.2 Question 1

List 3 common things shared by GAN and VAE. List 3 things different in GAN and VAE. (Exact copy of GPT answer may result in 0 point!)

1.3 Question 2

Train a GAN and a VAE on CIFAR-10 respectively without using the label information.

- Compare their generated images qualitatively. You can plot these images side by side.

- Now compare their generated images quantitatively. A common metric is the **Frechet Inception Distance (FID)**. Refer to this function.

1.4 Question 3

Now build a **conditional** GAN on CIFAR-10 using its label data.

- Plot a few generated images. Are they better than those by GAN?

- Compute the FID score. How does it compare with that of GAN?