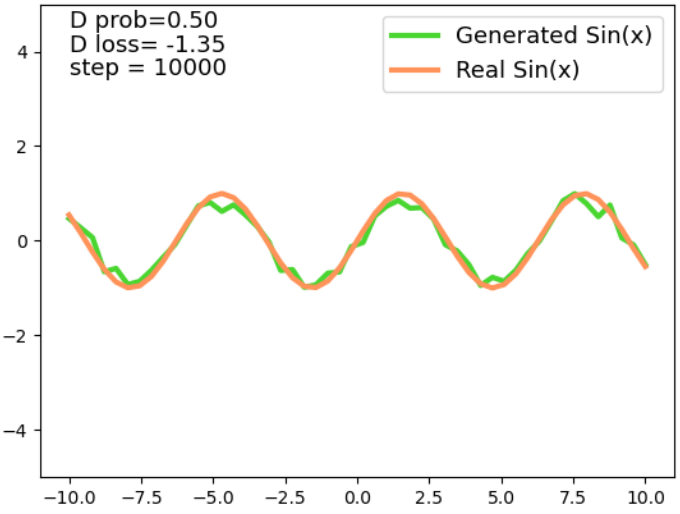
Lab8-Generative Adversarial Network

CIS694/EEC693/CIS593 Deep Learning

Cleveland State University

This lab will use GAN to teach neural network how to draw a Sin(x) function. The example output is shown as the following figure.



We have a real artist who draws the real painting for Sin(x) function. GAN wants to train a Generator to draw fake paintings for Sin(x) function, which is very similar to the real one so as to fool others.

You are asked to accomplish some tasks in this lab.

Question1: Please search for To-do1 and To-do2 and finish them

Question2: If it works, congratulations! Then, please think about the logic for loss functions

Question3: What will be prob_artist0 when D is converged?

Hints:

Generative Adversarial Network

- Minimax objective function:

$$\min_G \max_D V(D,G) = \mathbb{E}_{\boldsymbol{x}\sim p_{\text{data}}(\boldsymbol{x})}[\log D(\boldsymbol{x})] + \mathbb{E}_{\boldsymbol{z}\sim p_{\boldsymbol{z}}(\boldsymbol{z})}[\log(1 - D(G(\boldsymbol{z})))]$$