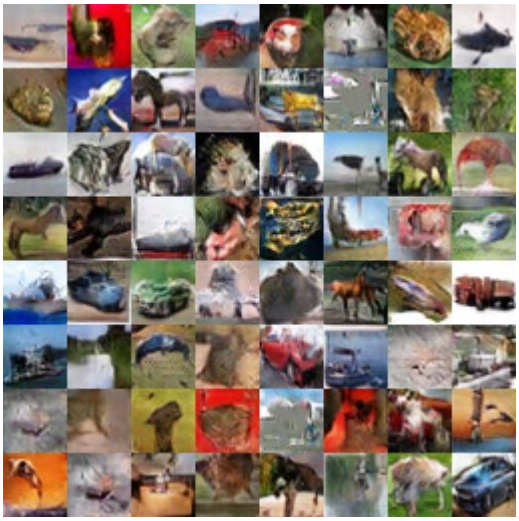
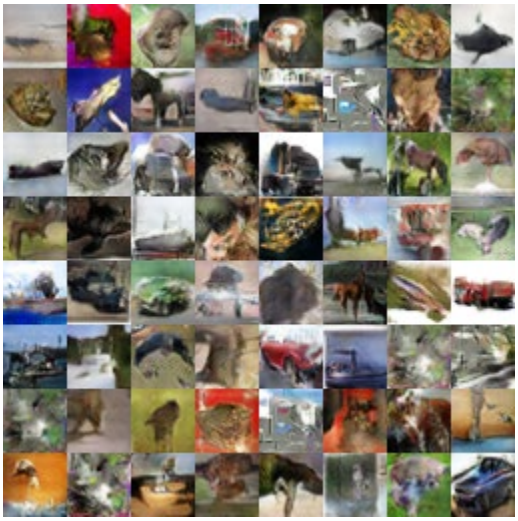
CpSc 8810 Homework 3

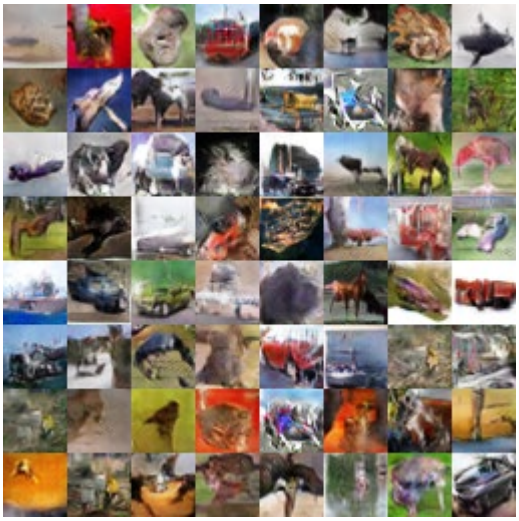
Kexuan Zhai

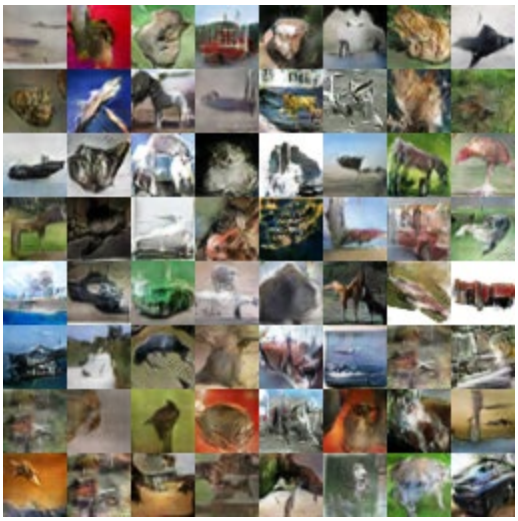
1. 10 best generated pictures:

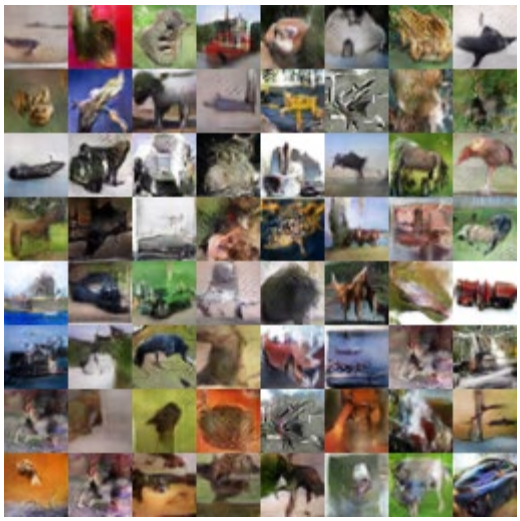
1.1 DCGAN

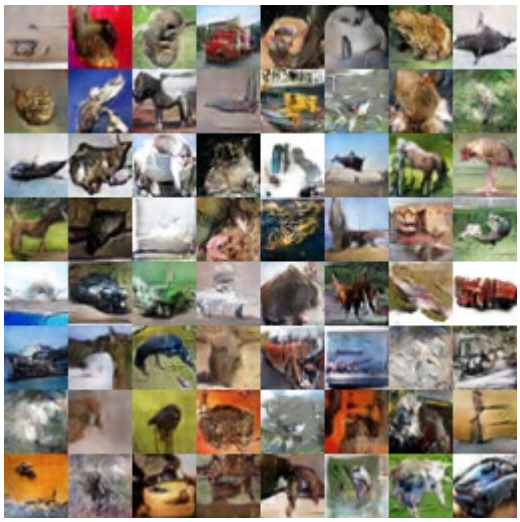


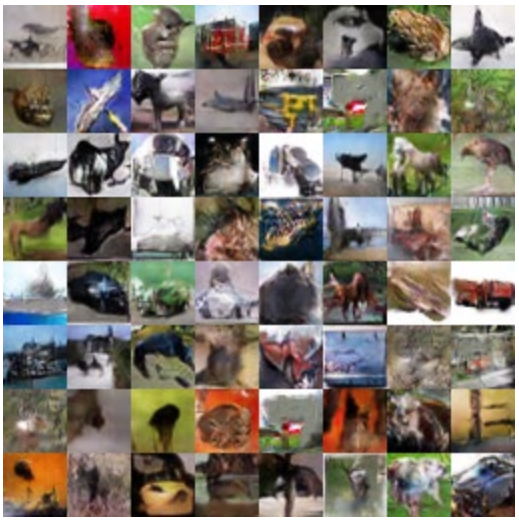








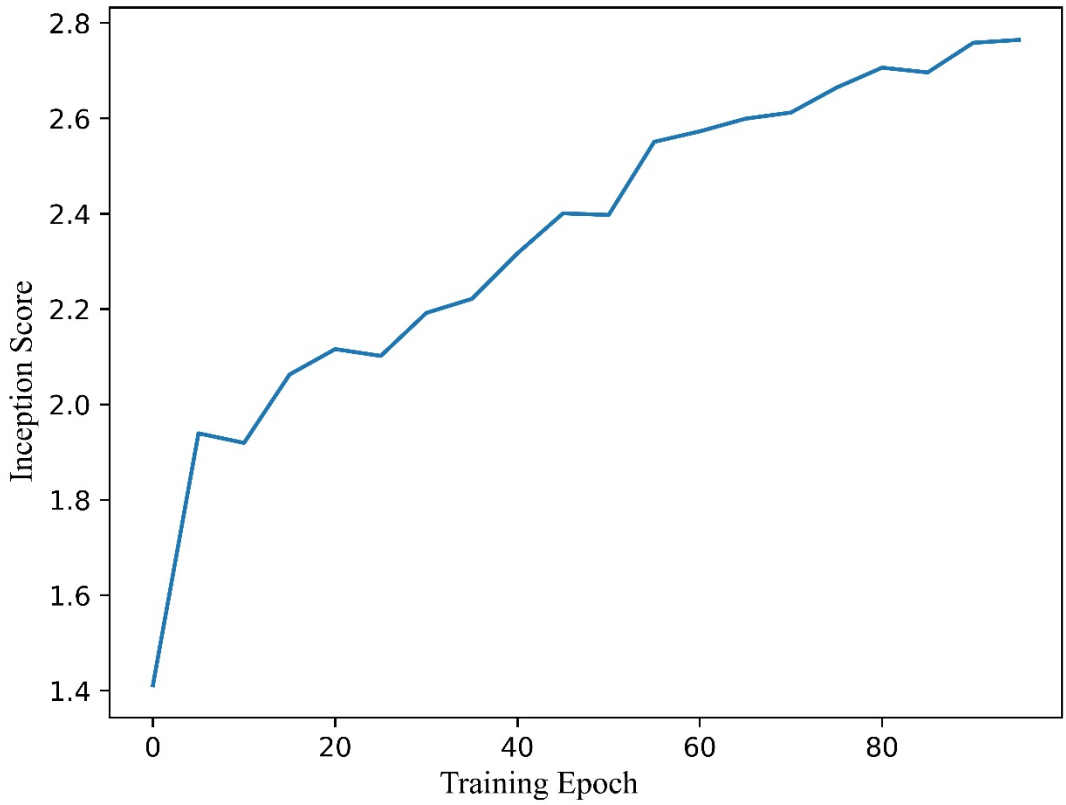




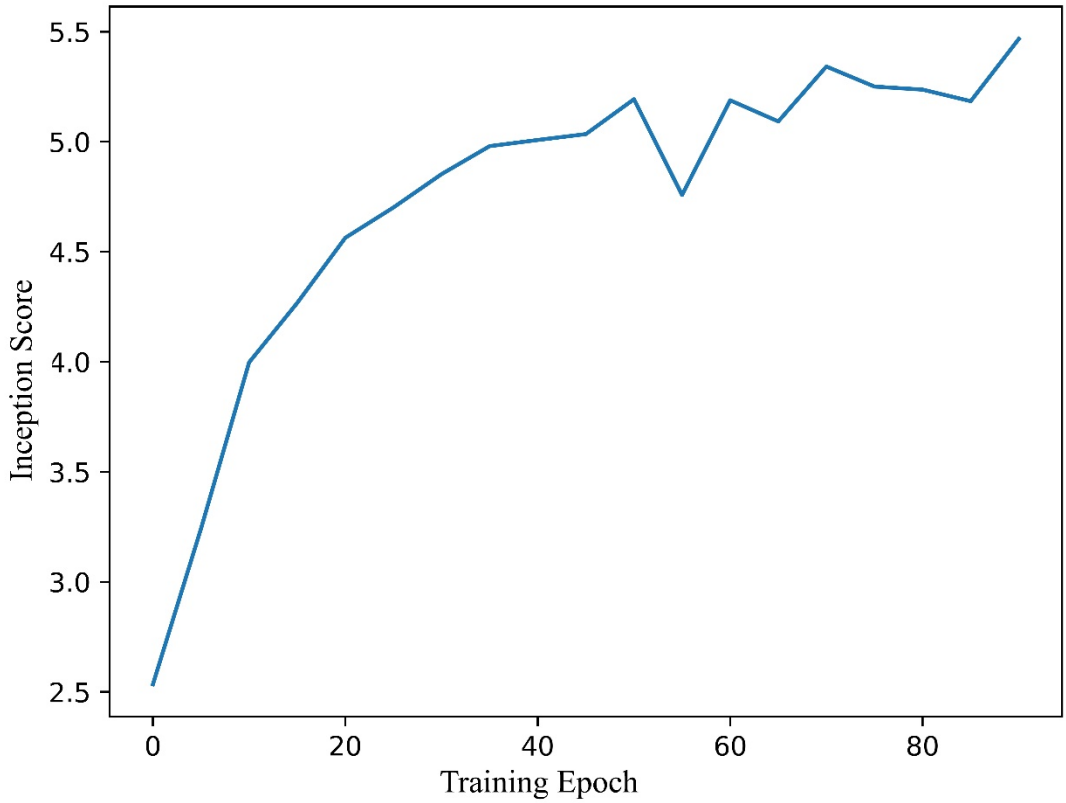
1.2 WGAN

2. Performance comparison between DCGAN and WGAN

2.1 WGAN



2.2 DCGAN



As is shown in the figure, the inception score of WGAN is 2.8, while the inception score of DCGAN is 5.5. From the result, we can say that the training effectiveness of DCGAN is better than WGAN in this scenario. However, we could not simply reach to the conclusion that DCGAN is better.

According to the slides, WGAN is mainly improved from the loss function point of view, the improved loss function WGAN can get good performance results even on the full link layer. This is not the same as the results of our training. Therefore, more research is needed.

One plausible explanation is that the sample size of the dataset is so small that the

results might be different if several more datasets were used.

3. Running Instruction

Please put CIFAR10 dataset into the following folder:
hw_3\data\cifar-10

10 best results of both methods are also shown in the result folder.

To run DCGAN code:

```
!python main.py --dataset cifar-10 --gan_type WGAN --epoch 100 --
batch_size 100
```

To run WGAN code:

```
!python main.py --dataset cifar-10 --gan_type DCGAN --epoch 100 --
batch_size 100
```

4. Reference

https://github.com/carpedm20/DCGAN-tensorflow

https://github.com/AliceAria/Performance-comparison-of-GAN-on-cifar-10