Report

Info

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Repo

https://github.com/Chen2886/CS390-Lab5

Resources

GANS slides from class

Parts completed:

- [80] GANs.
    - [50] Complete the GAN to generate legible F-MNIST records. Generate from 3 classes.
    - [10] Use a convnet for the GAN networks.
    - [10] Save a plot of loss over training steps for each network.
    - [+~5] EC: Generate very detailed F-MNIST records (there is no metric for this, just do your best).
    - [+20] EC: Generate legible cifar records from 3 classes.
- [20] Report.

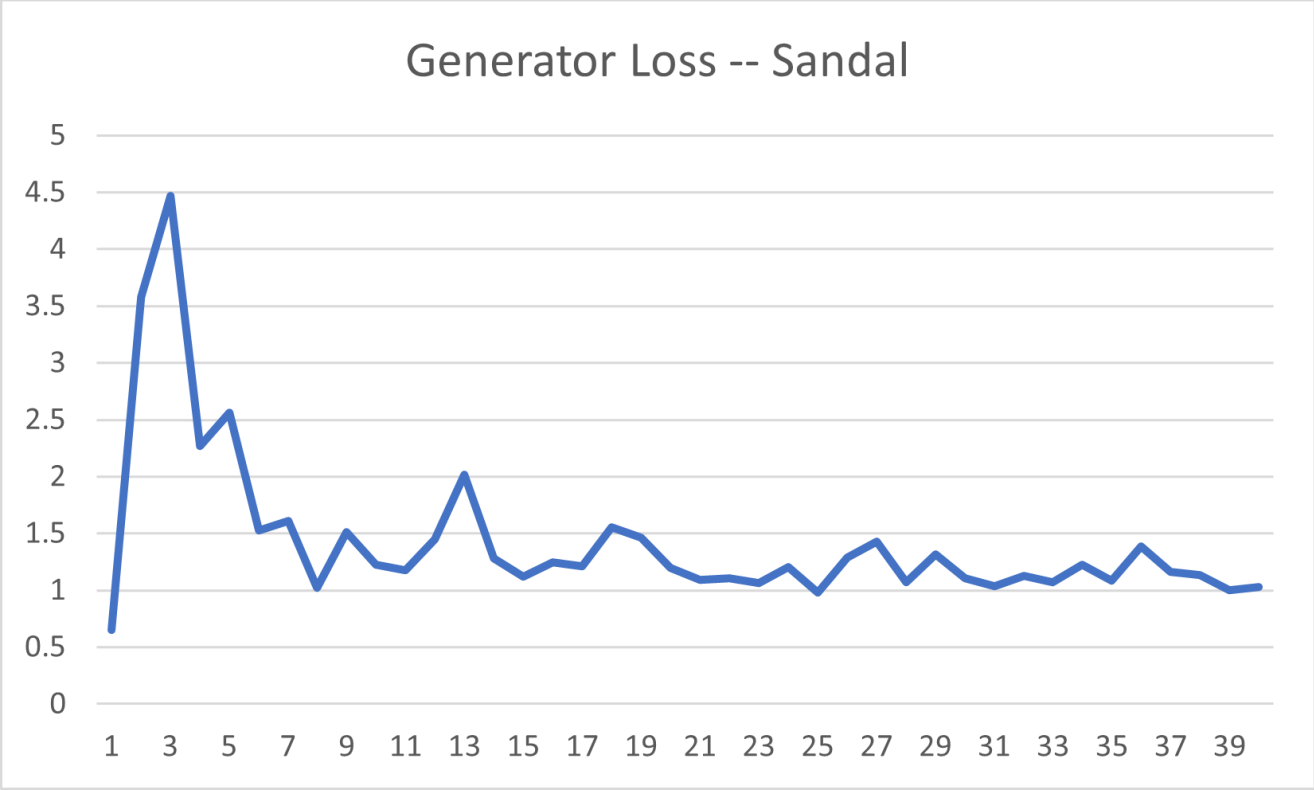
Question

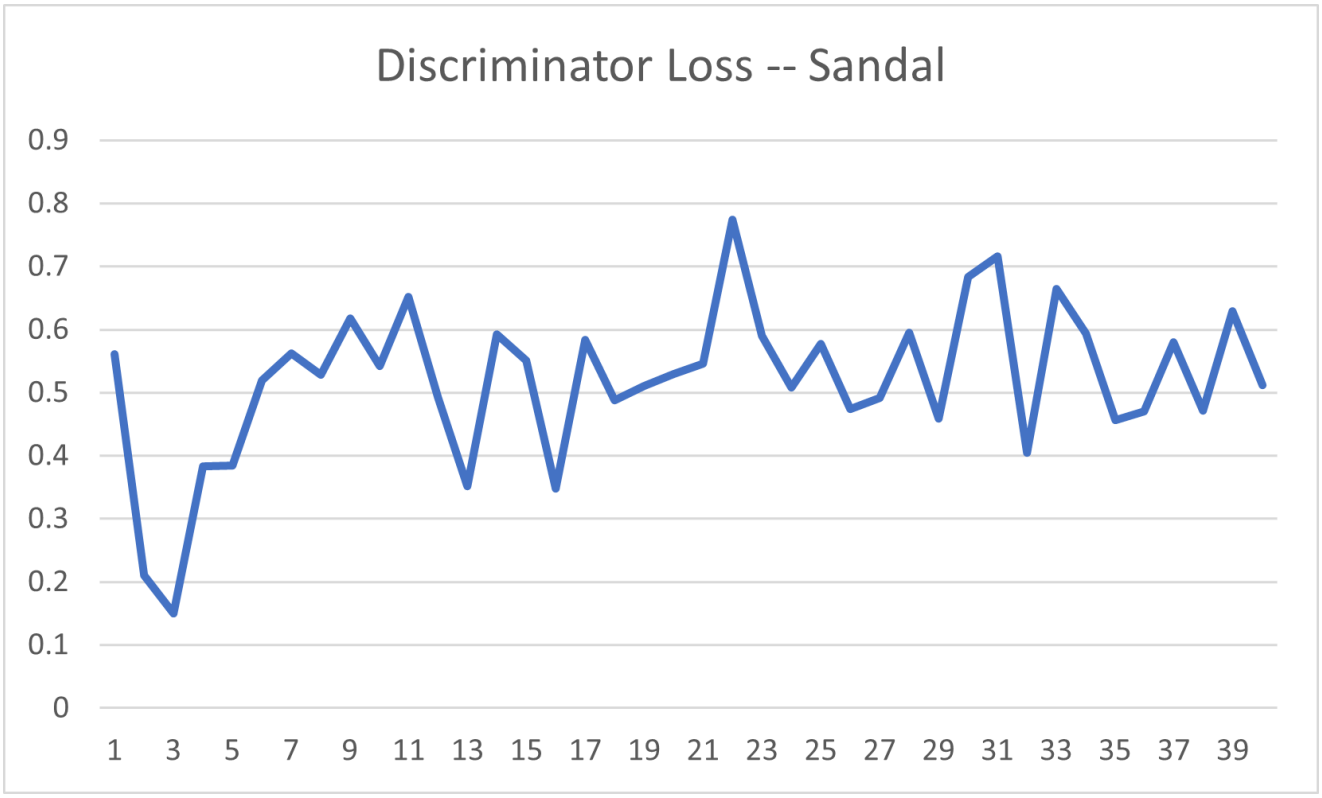
- Describe the discriminator and generator.
    - Both Discriminator is ANN and Generator is CNN.
    - Discriminator trys to separate fake images vs real images
    - Generator generates fake images from random noise
    - Generator is split up into 4 layer within the CNN using leaky relu as activation function, and discriminator is also split up into 4 layers but it uses ANN not CNNs. Discriminator flattens then uses leaky relu activation function
- Why do we sometimes need to train the discriminator and generator different amounts?
    - If they are different, one can make smaller steps and the other one can make bigger steps.

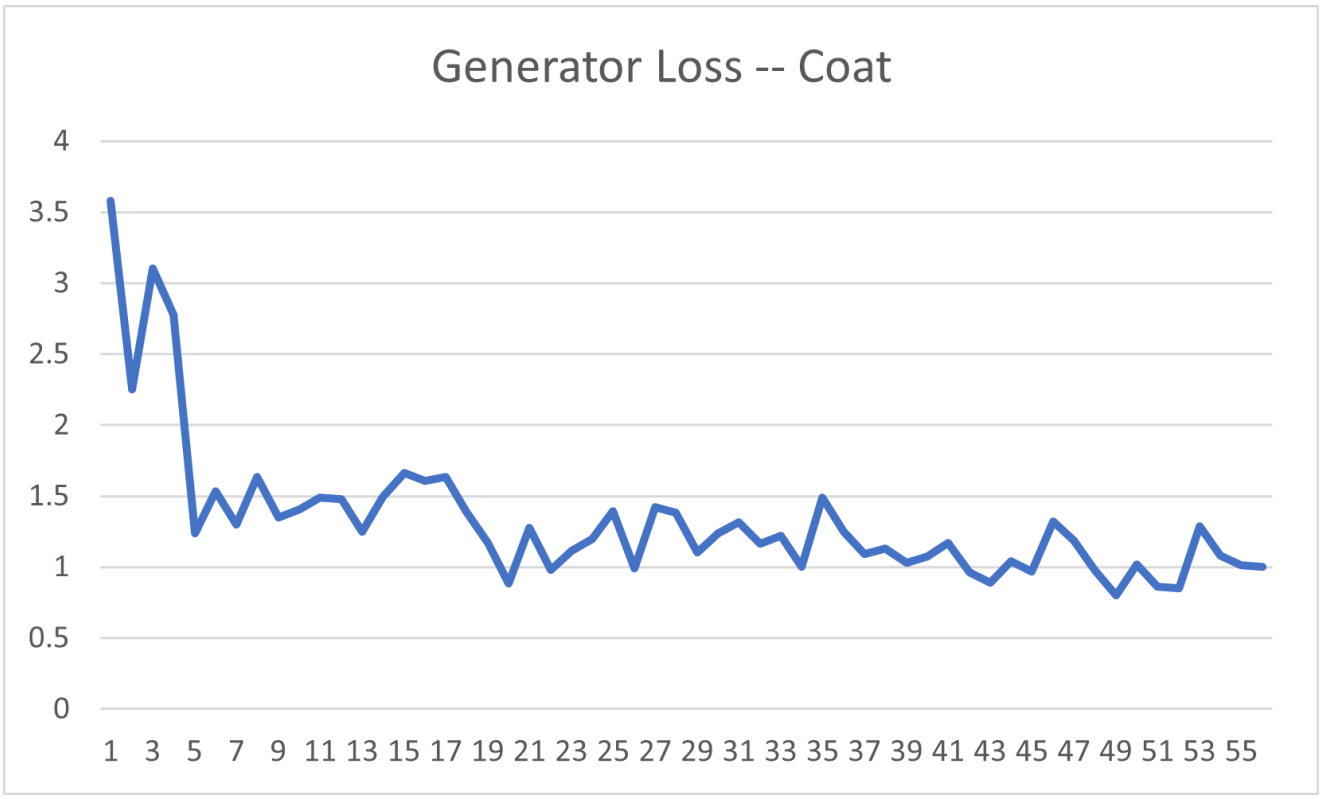
Hyperparamaters

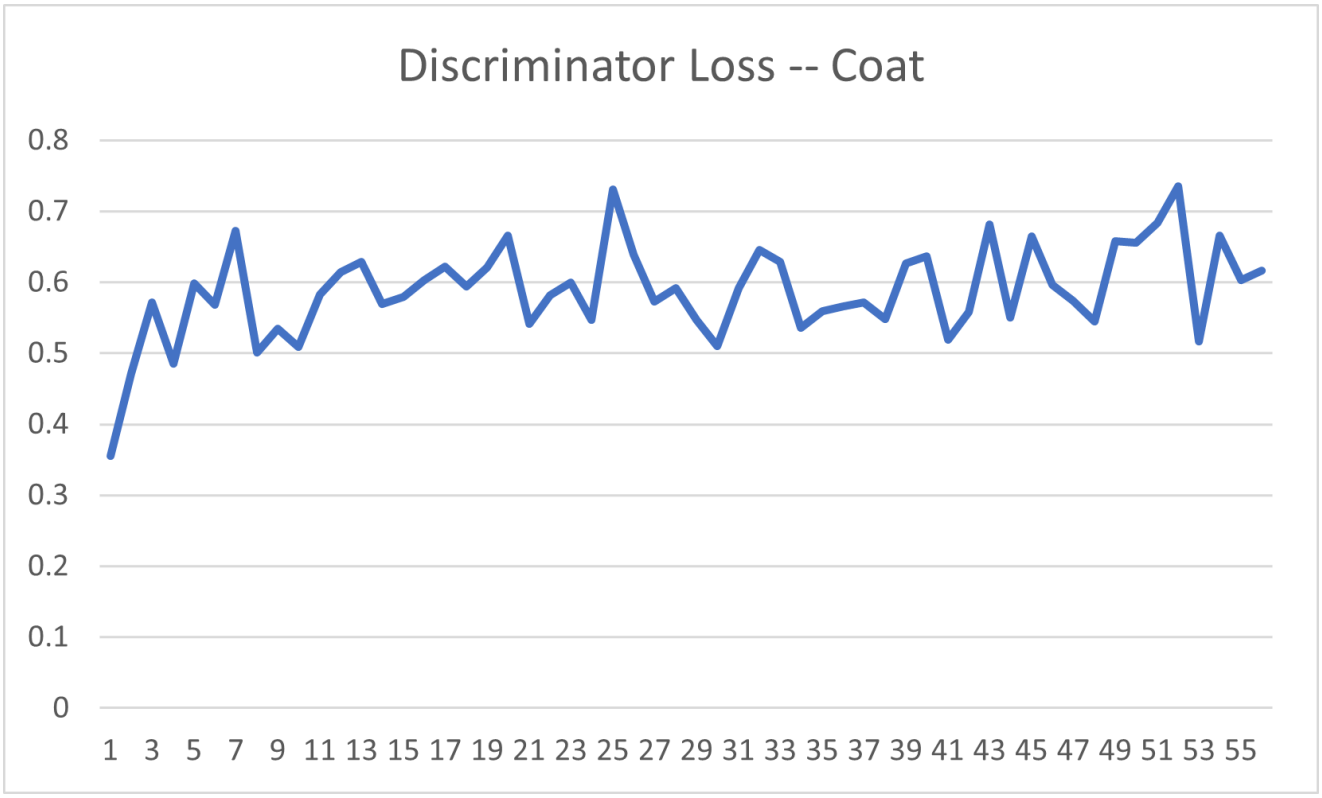
- Activation Function: Leaky Relu, Alpha = 0.2
- Batch Normalization, Momentum = 0.8
- Epochs: 40000
- Learning Rate: 0.0002

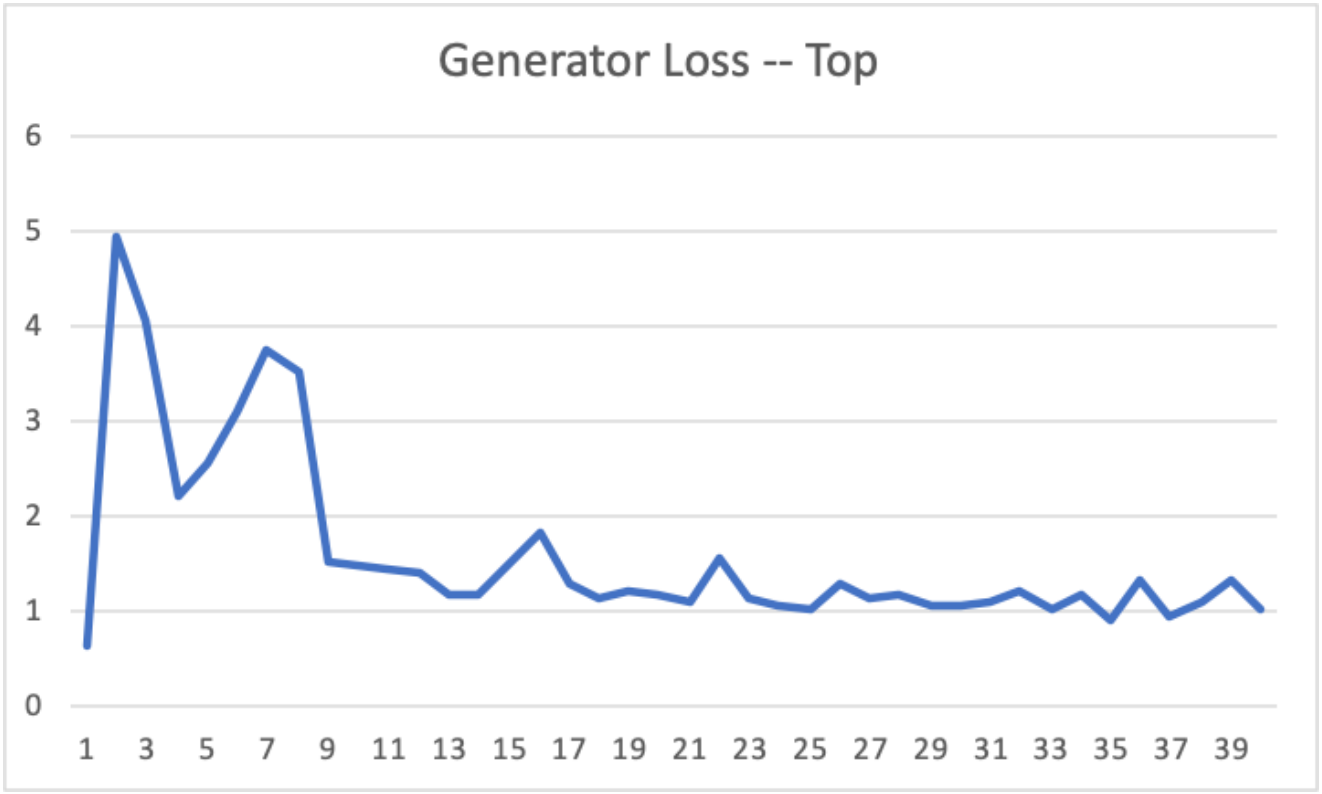
Plot

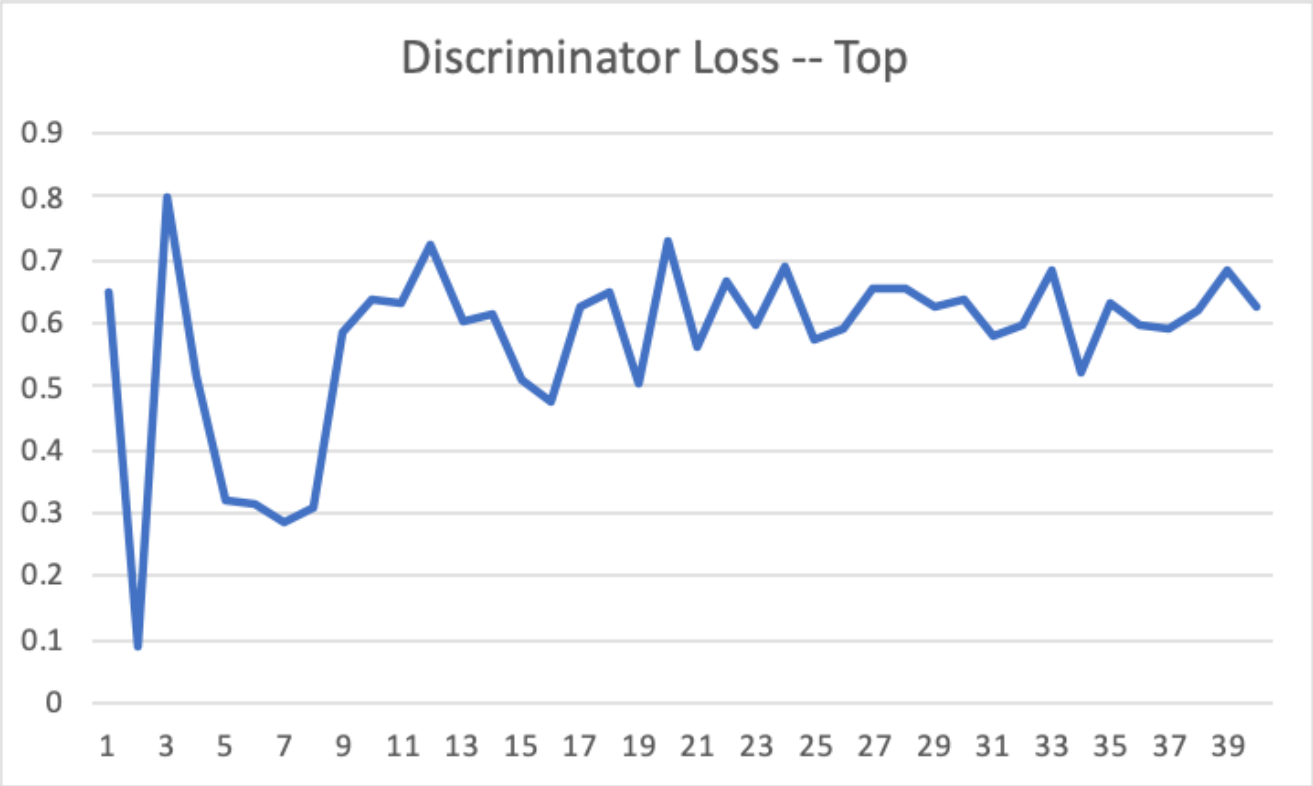



Discriminator Loss -- Sandal
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39


Generator Loss -- Coat
4
3.5
3
2.5
2
1.5
1
0.5
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55


Discriminator Loss -- Coat
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55


Generator Loss -- Top
6
5
4
3
2
1
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39



Pictures

Pictures are included in git repo, too much for here