Deep Learning Spring 2022
Assignment 4 Report

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MSDS21001

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1 Plot the losses(generator and discriminator) separately over training iterations.

task 1

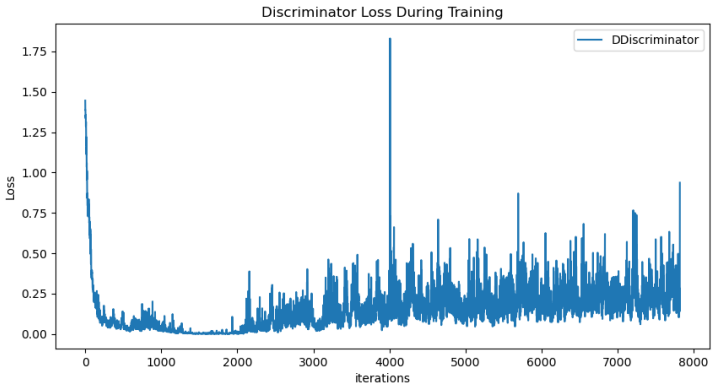

Figure 1: Task 1 discriminator loss

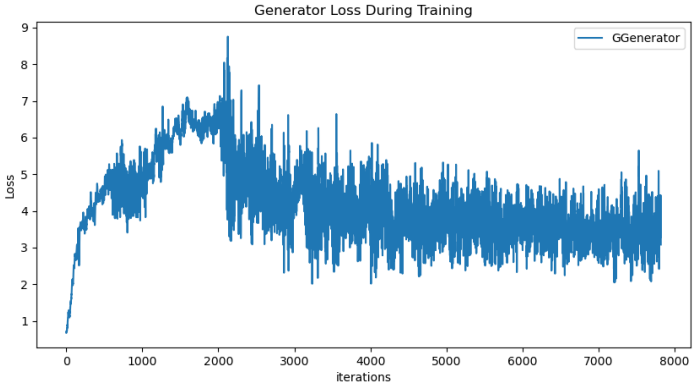

Figure 2: Task 1 generator loss

task 2

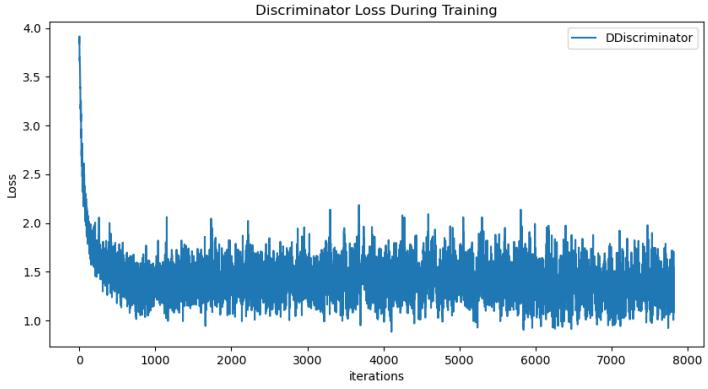

Figure 3: Task 2 discriminator loss

Figure 4: Task 2 generator loss

2 Visualize and save generated images every epoch (No screenshot)

Task 1

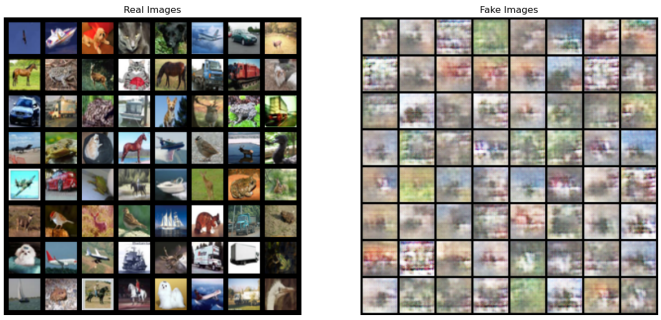

Figure 5: Task 1 Images

Task 2

Figure 6: Task 2 Images

3 Try over different batch sizes, epochs, and optimizers and report results with loses plot.

Task 1: learning rate = 0.0001

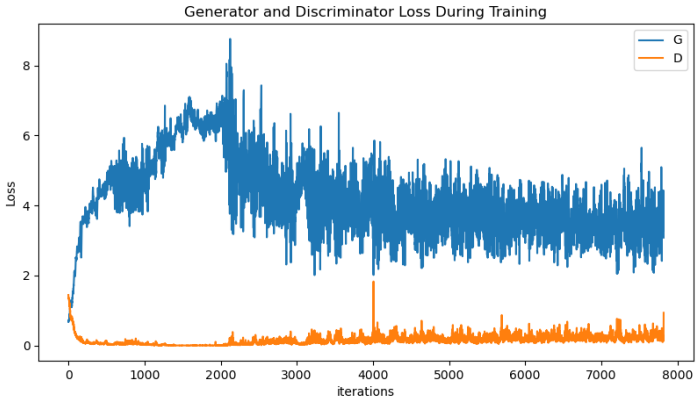

Figure 7: Task 1 loss, learning rate = 0.0001

Task 1: learning rate = 0.001

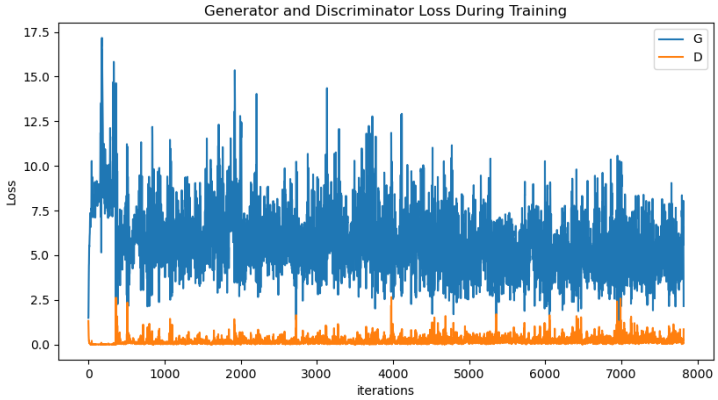

Figure 8: Task 1 loss, learning rate = 0.001

Task 2: learning rate = 0.0001

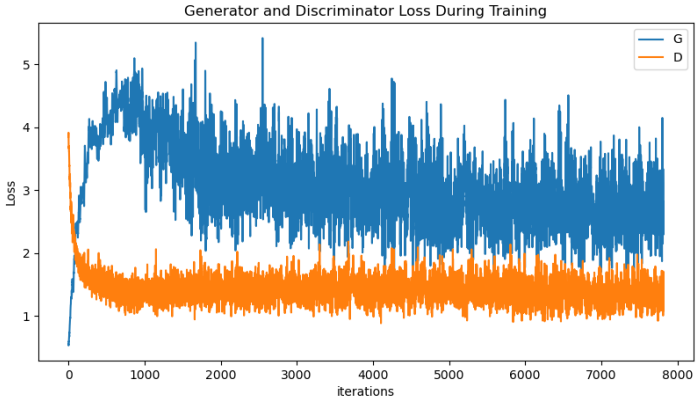

Figure 9: Task 2 loss, learning rate = 0.0001

Task 2: learning rate = 0.001

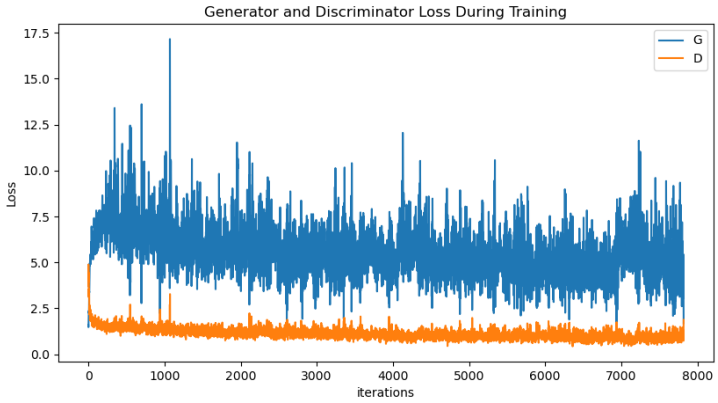

Figure 10: Task 2 loss, learning rate = 0.001

4 Plot and save images of weights of discriminator and generator (No screenshots)

TASK 1

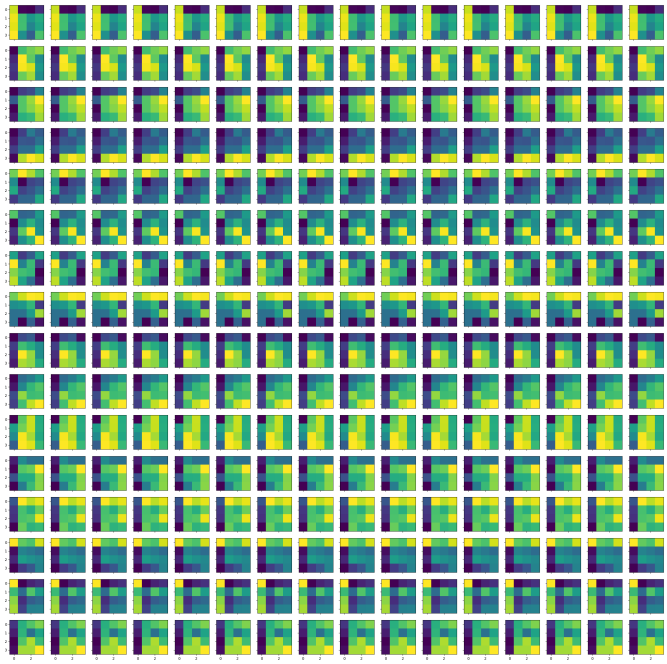

Figure 11: Task 1 discriminator weights

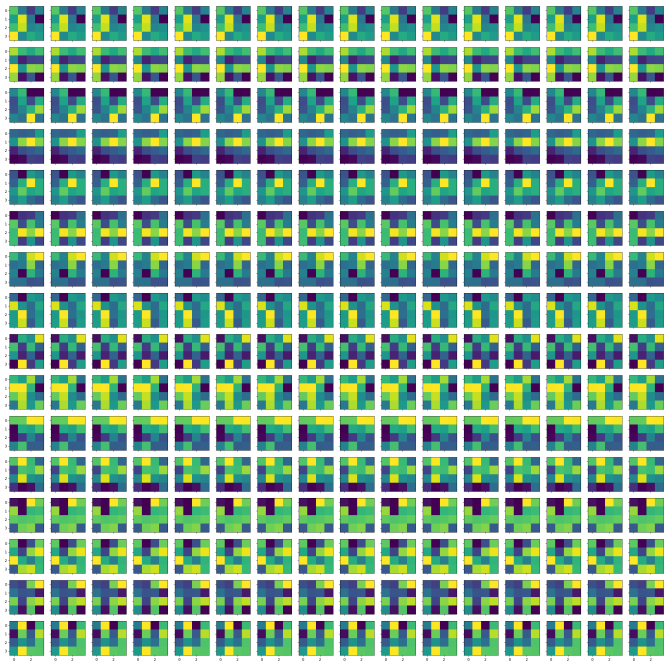

Figure 12: Task 1 generator weights

TASK 2

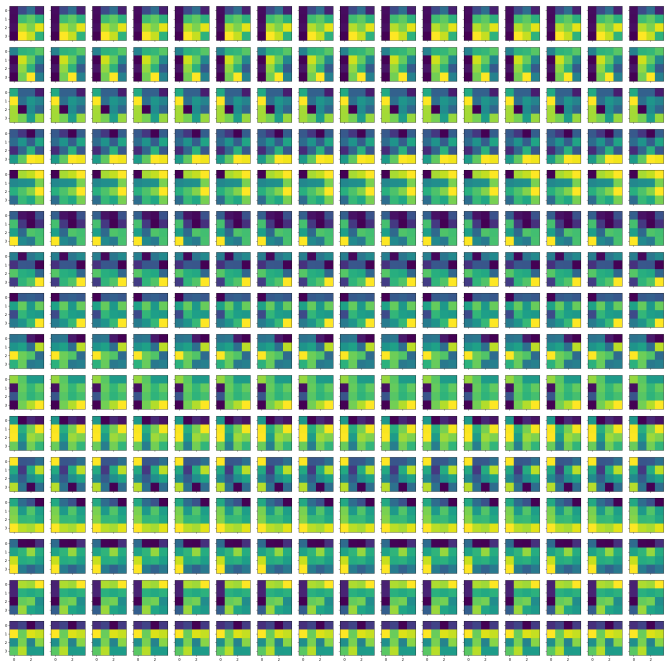

Figure 13: Task 2 discriminator weights

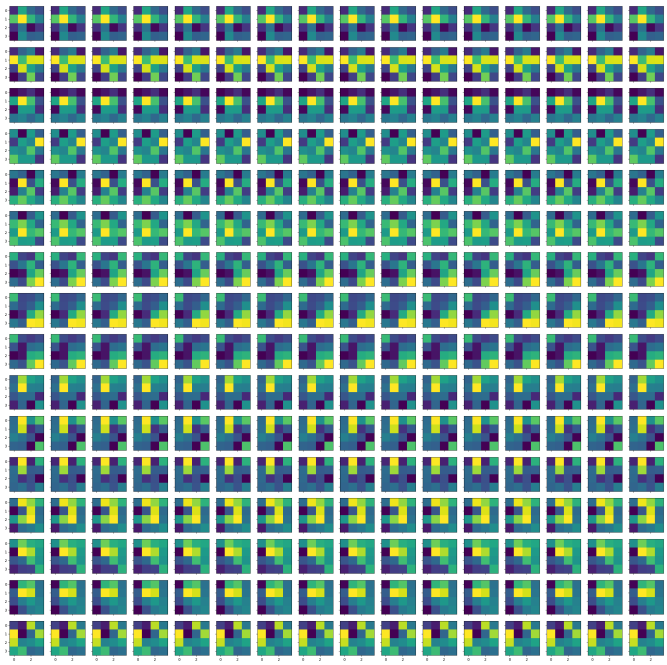

Figure 14: Task 2 generator weights

5 Loss and Accuracy Curves for classification head-on validation and training dataset.

Figure 15: Task 2 classification loss

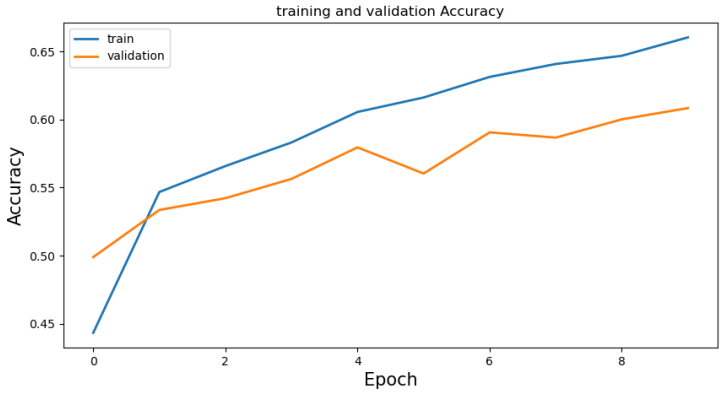

Figure 16: Task 2 classification accuracy

6 Plot examples of images generated after using the new discriminator.

Figure 17: Generated images after adding classification head

7 Discuss the behavior of the discriminator after adding the classification head?

After adding the classification head, the loss of discriminator increased as compared to loss without classification head.

8 Does the new head affect the generator?

The working of generator will be same in the sense that only discriminator loss will be used to update weights of generators because we don't have labels for fake image and hence classification loss cant be used to update generator loss. On the other hand, the images generated are more crisp when we used classification head.