CEDL Homework 3

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- **Implementation**

  We modify the original DCGAN parameters to generate 256x256 images. Also, we tried to modify the network structure to improve the result.

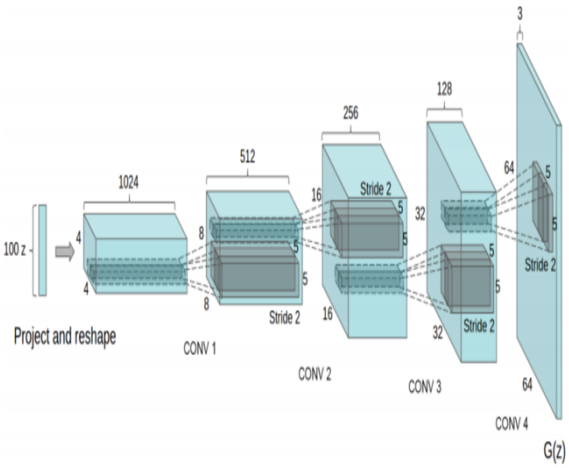


Fig 1 generator structure from DCGAN paper

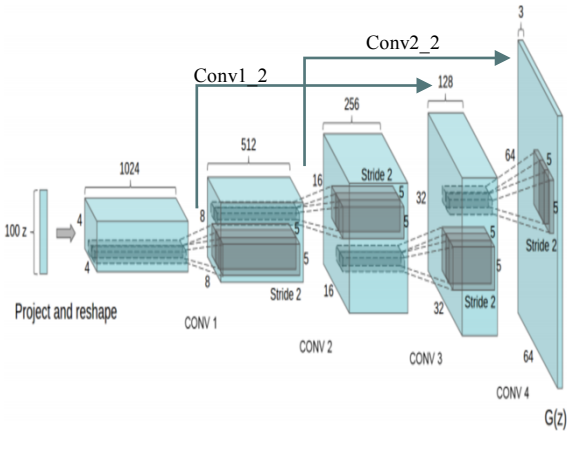
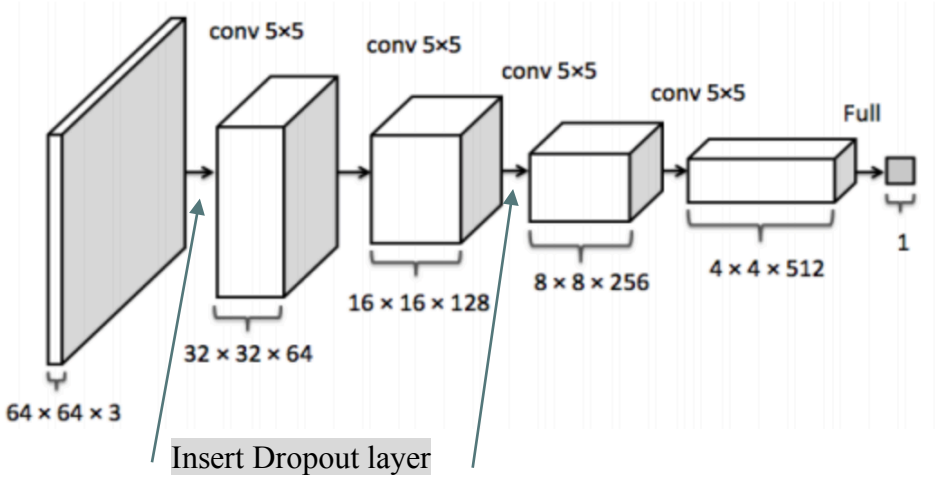


Fig 2 generator with extra connection cross layers

[Note] The width/height at each layer is modified to generate 256x256 image, Fig1 and Fig2 just represent how the network connected.

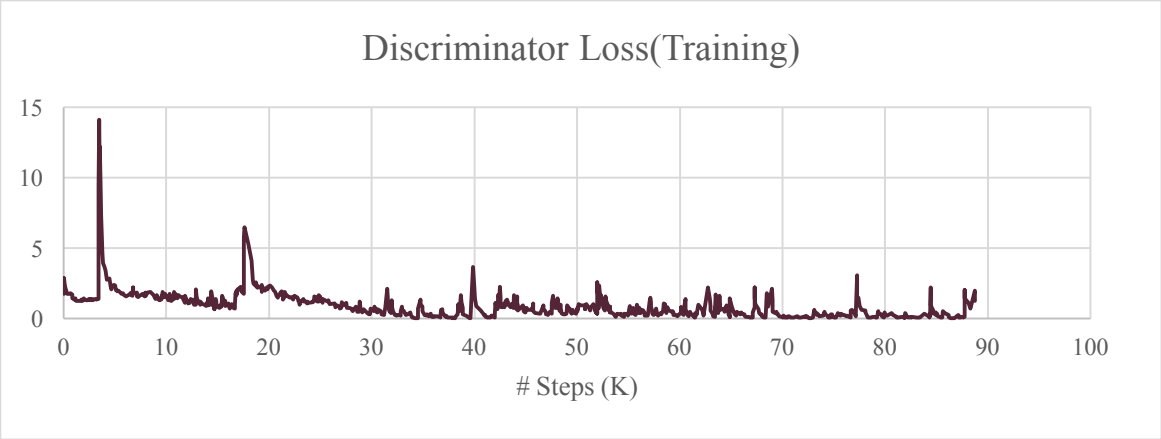
We add two dropout layers to Discriminator.

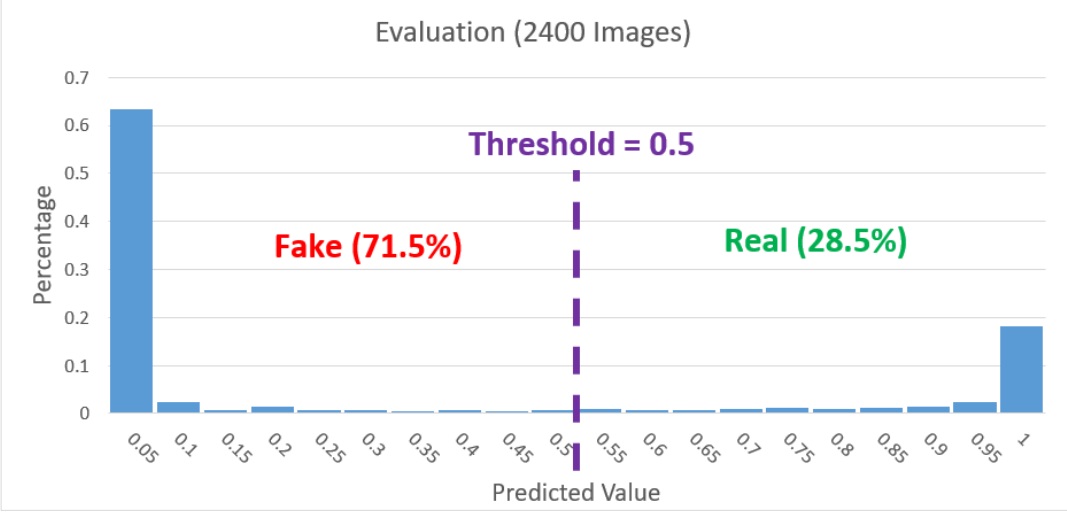


- Result

The two generator models make no obvious difference. The loss and generated pictures looks similar. Below figures are first model's loss and prediction result on evaluation dataset.

We trained our model with 89,325 steps (~115 epochs). It takes about 5 days.





- Generated Pictures

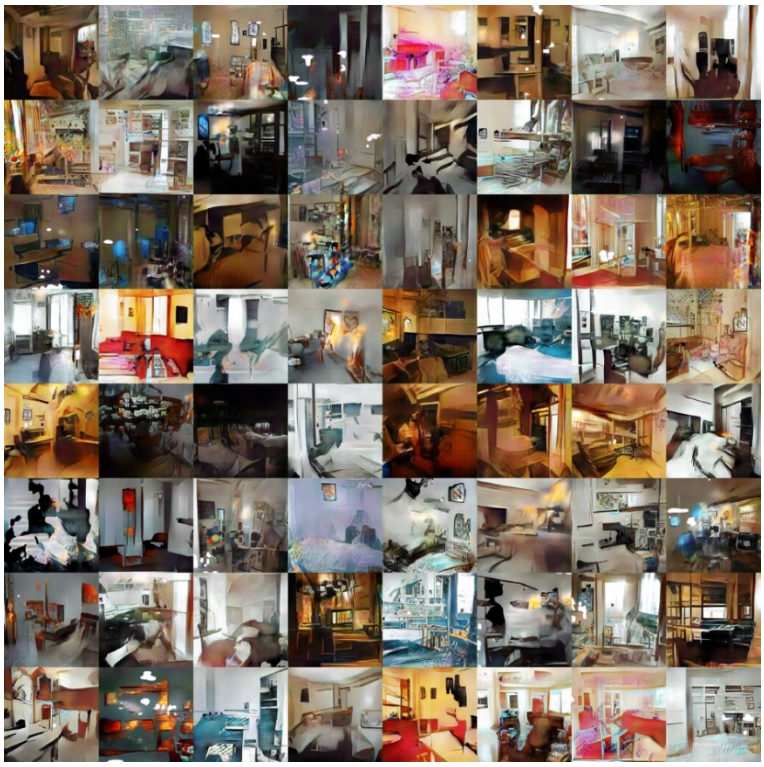


Fig 3 “all indoor” 45 epochs

Fig 4 “all indoor” 100 epochs

Fig 5 "Storage Room" 76 epochs

We found that 100-epochs results are a bit more realistic than 45-epcoh results. Training is helpful even if the loss seems the same (because both discriminator and generator are evolving). If we train on only a specific class, e.g. storage room, we found that it does not generate better results than training on all classes.