Lab 07: Cycle GANs and Pix2Pix

- st123431 Sagun Rupakheti

Background

This week we learned all about Cycle GANs and Pix2Pix. A CycleGAN is composed of 2 GANs, making it a total of 2 generators and 2 discriminators.Given 2 sets of different images, horses and zebras for example like in the lab we did, one generator transforms horses into zebras and the other transforms zebras into horses. This forms a cycle like structure.In the case of CycleGAN, a generator gets an additional feedback from the another generator. This feedback ensures that an image generated by a generator is cycle consistent, meaning that applying consecutively both generators on an image should yield a similar image. Both of them need to be on the same page!

Pix2Pix however is similar to the GAN architecture, however it is refined to produce more sharper and stable outputs using L1 loss and Patch GAN.

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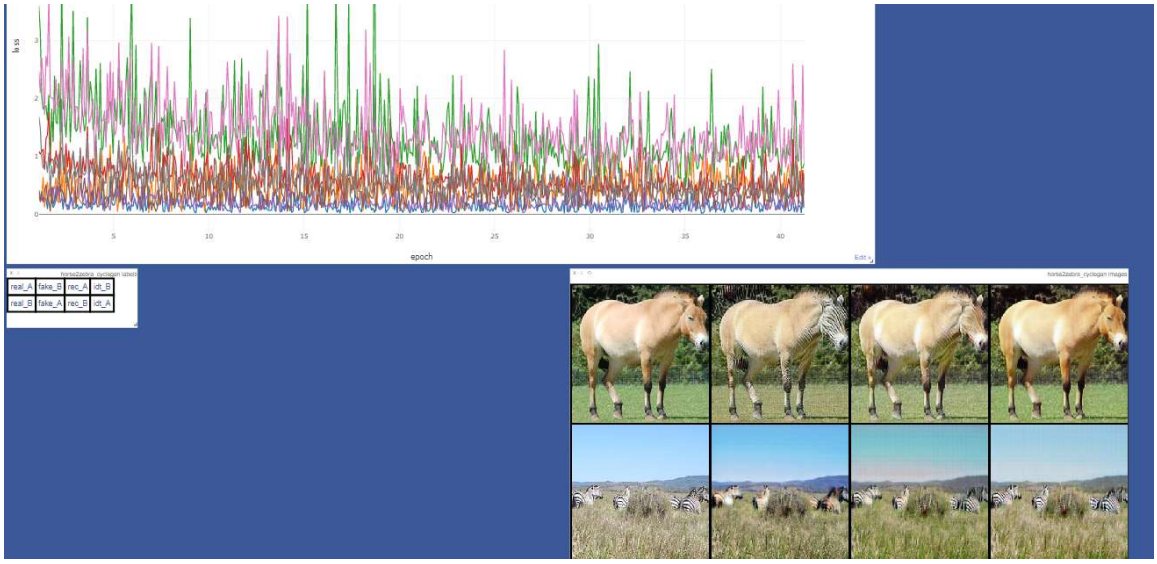
1. Train a Cycle GAN on the horses2zebras dataset provided. Document your results in your report.

Both GANs start performing quite well from the 40 epoch mark. However, seems like converting from horse to zebra is easier than converting zebra to horse. Even at 120+ epoch mark, the Generator could not accuractely convert zebra to horses. This could be due to the busy pattern on the zebra's body.

Epoch 41

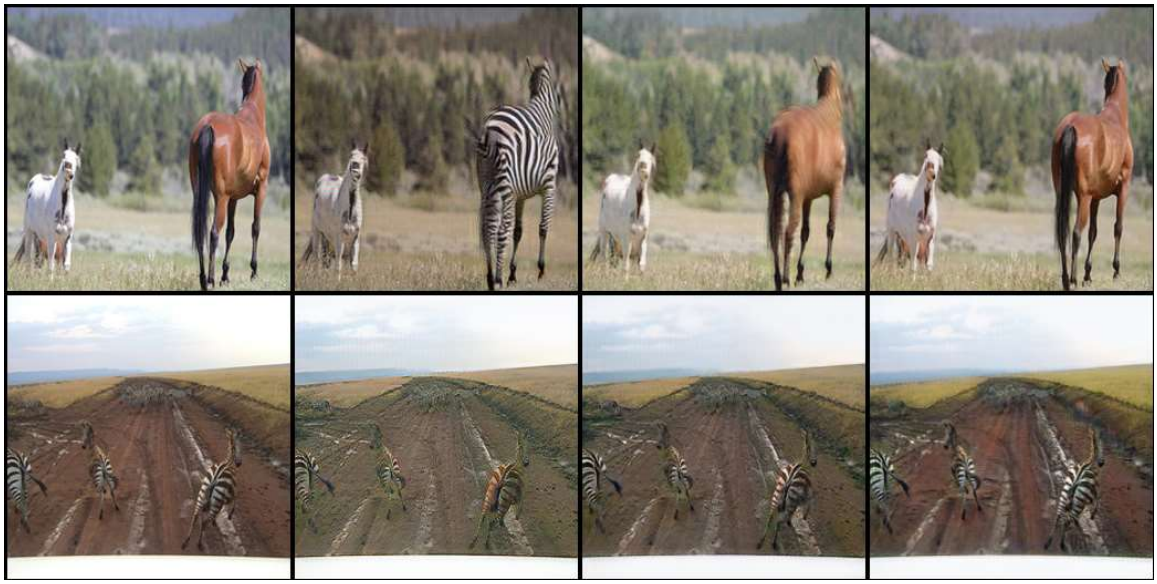


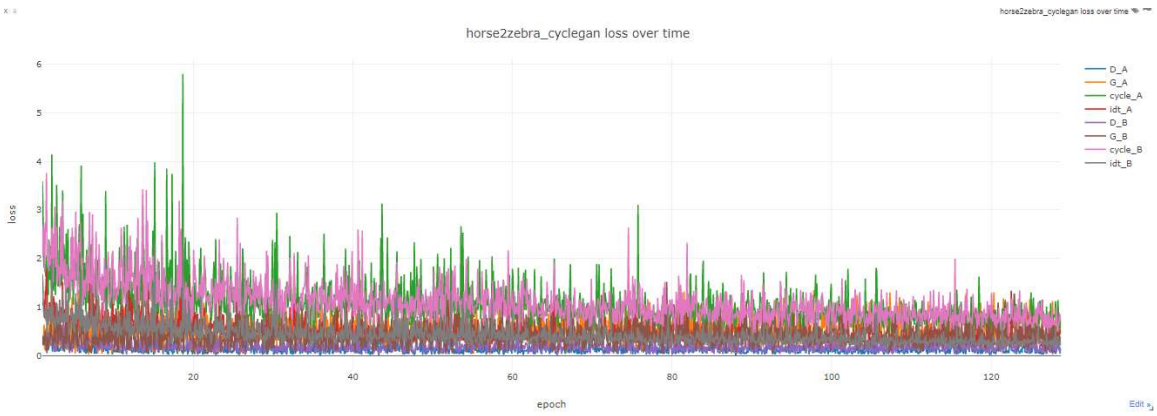
Epoch 56

Epoch 62

Epoch 114

Epoch 128





2. Create a new data set aitict2celeba consisting of AIT ICT faces and CelebA faces. Use the URLs for the datasets provided in class. Document your results in your report.

The results are not as promising due to the fact that we had a very limited dataset for the AIT ICT faces compared to the celebA dataset. Maybe adding more samples or even the samples of overall ait sis of few years could help yeild better results.

Real

Real

Fake

Fake