

MLDS HW3-1

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Model

- Generator

- input = (100,)
- Dense(128*16*16, 'relu')
- Reshape((16, 16, 128))
- Upsampling
- Conv2D(128, kernel = 4)
- Relu
- Upsampling
- Conv2D(64, kernel = 4)
- Relu
- Conv2D(3, kernel = 4)
- tanh

- Training

- Adam(lr = 0.0002, beta = 0.5)

- Discriminator

- input = (64, 64, 3)
- Conv2D(32, kernel = 4)
- Relu
- Conv2D(64, kernel = 4)
- ZeroPadding
- Relu
- Conv2D(128, kernel = 4)
- Relu
- Conv2D(256, kernel = 4)
- Relu
- Flatten
- Dense(1, sigmoid)

DC GAN

20 epochs

Passes Baseline



DC GAN
100 epochs



DC GAN
200 epochs



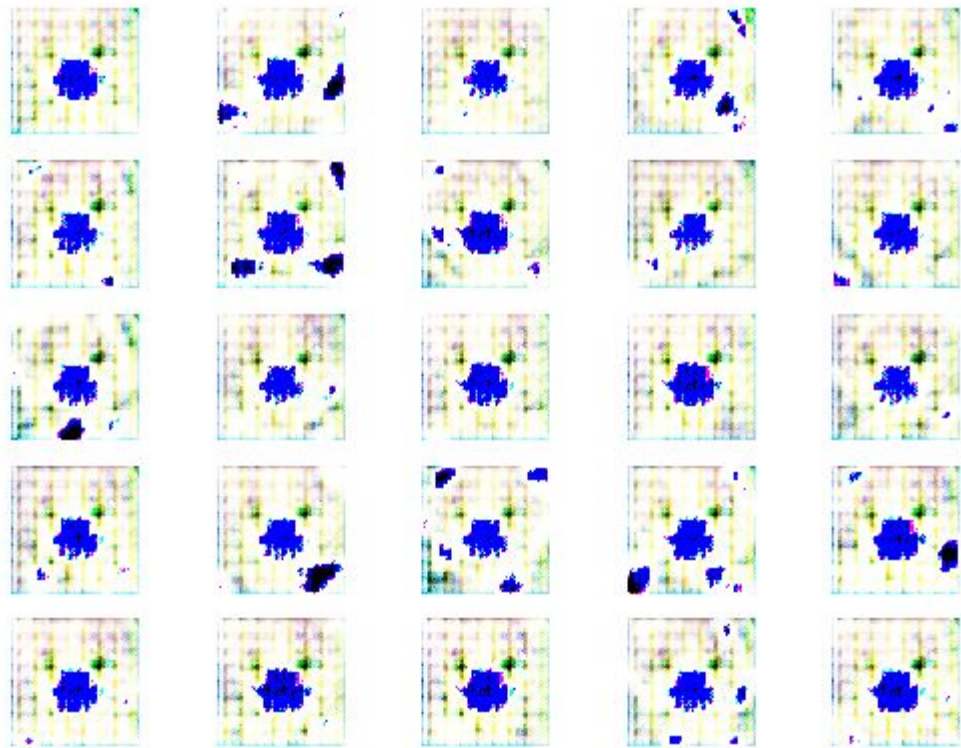
DC GAN

300 epochs

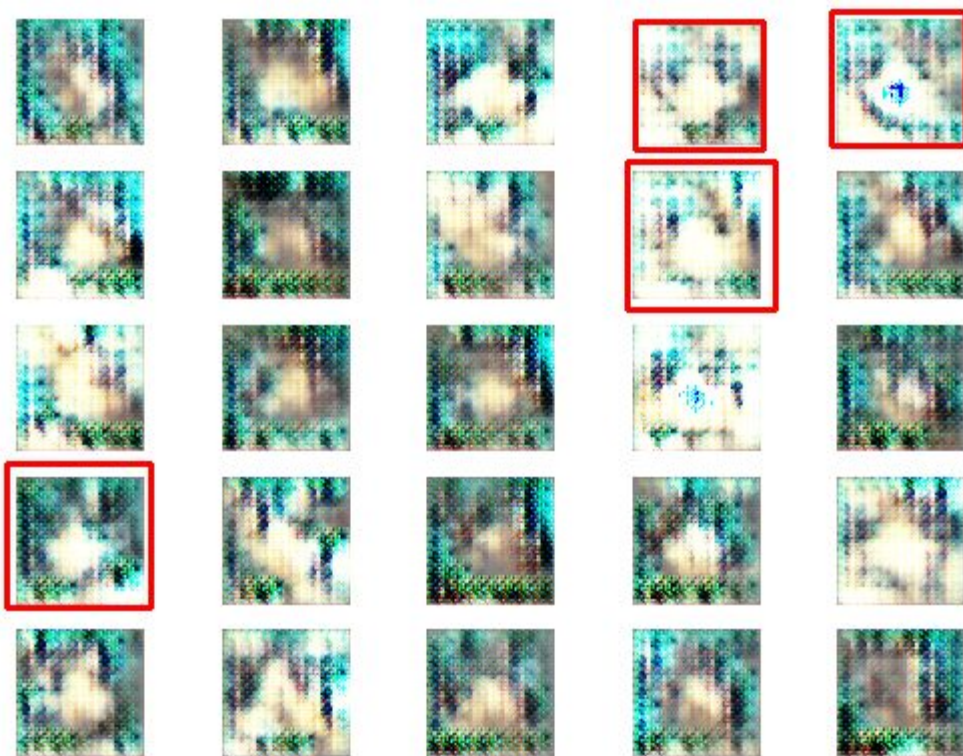
Mode Collapse ?



DC GAN
400 epochs



WGAN
20 epochs



WGAN

200 epochs

Needs more epochs
to train



WGAN
300 epochs



WGAN

400 epochs

Does not mode collapse

(unlike DCGAN)



Tips: Soft-label 60 epochs

Adding noises to labels



Tips:
Soft-label
140 epochs



Tips:
leaky-ReLU
100 epochs

Image appears to be “softer”



Tips:
leaky-ReLU
200 epochs



Tips: Batchnorm 20 epochs

Can generate reasonable
results within short time



Tips:
Batchnorm
100 epochs

Result is similar to DCGAN



Tips:
Batchnorm
120 epochs

Mode Collapse faster ?



Conclusion

- Mode Collapse might be prevented by switching settings(DCGAN->WGAN)
- WGAN generates wilder images(?)
- Applying leaky-ReLU results in “softer” images
- Applying batch-norm can result in faster training