

Fantastic GANs and where to find them

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What are “GANs”?

Yann LeCun, director of Facebook AI:

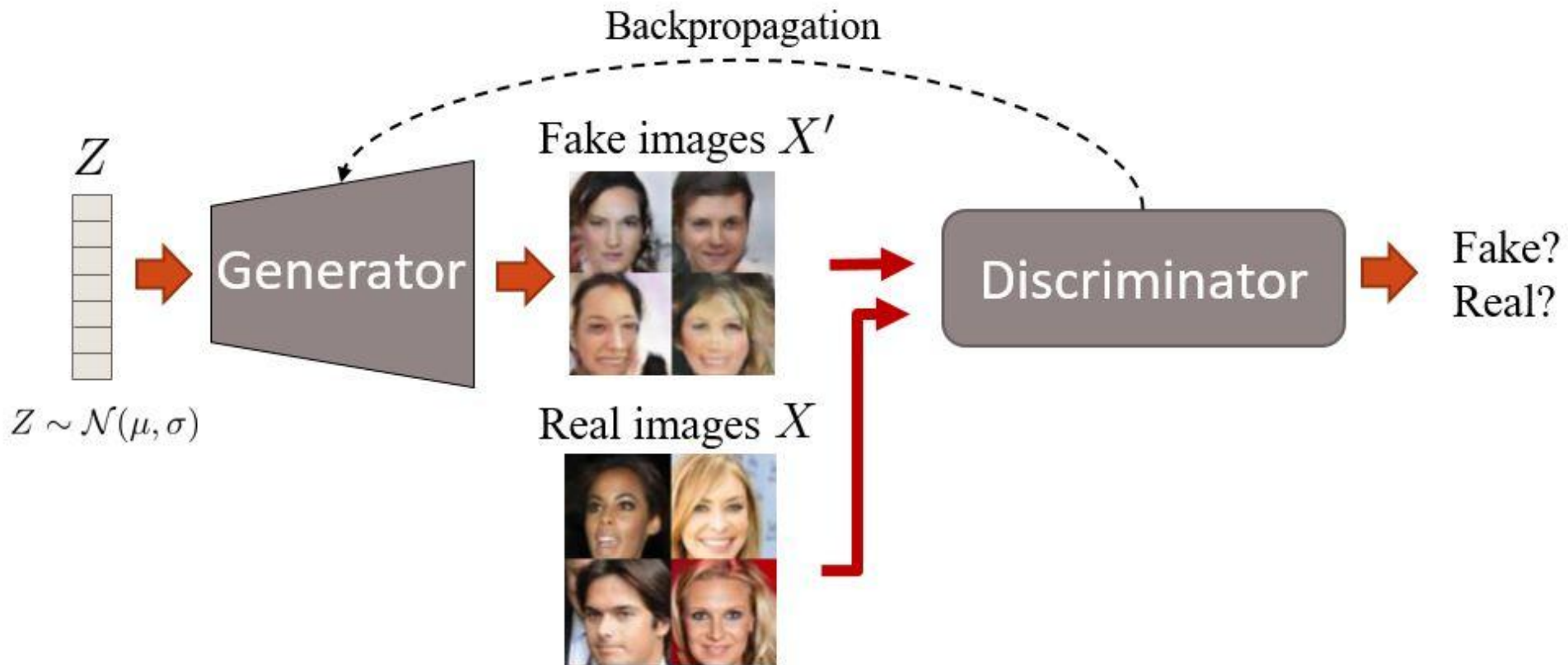
“Generative Adversarial Networks is the most interesting idea in the last ten years in machine learning.”

ALL ABOARD



THE GAN TRAIN

What are GANs?



Evolution of GANs

- Deep Convolutional GANs (DCGANs)
- Improved DCGANs
- Conditional GANs (cGANs)
- InfoGANs
- Wasserstein GANs
- Disco GANs

DCGANs

Batch normalization²

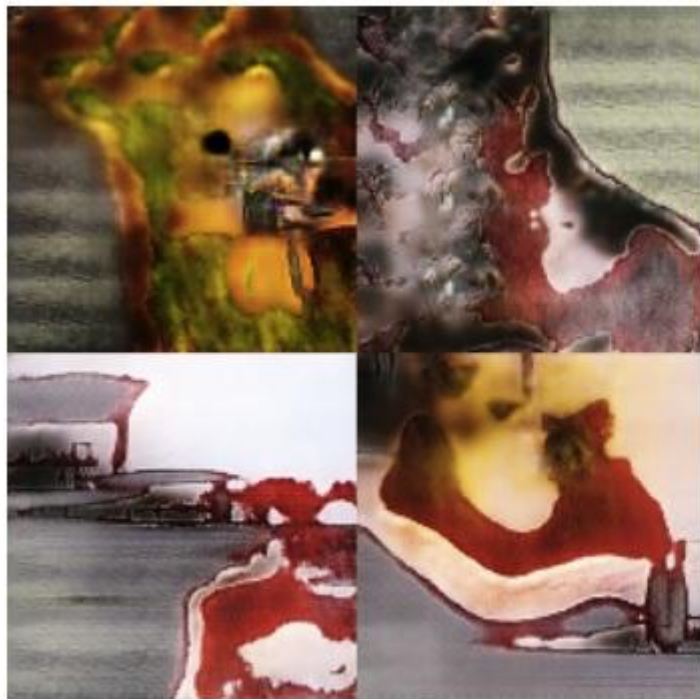
Full hidden - bad

Pooling - bad

ReLU = friend



Improved DCGANs

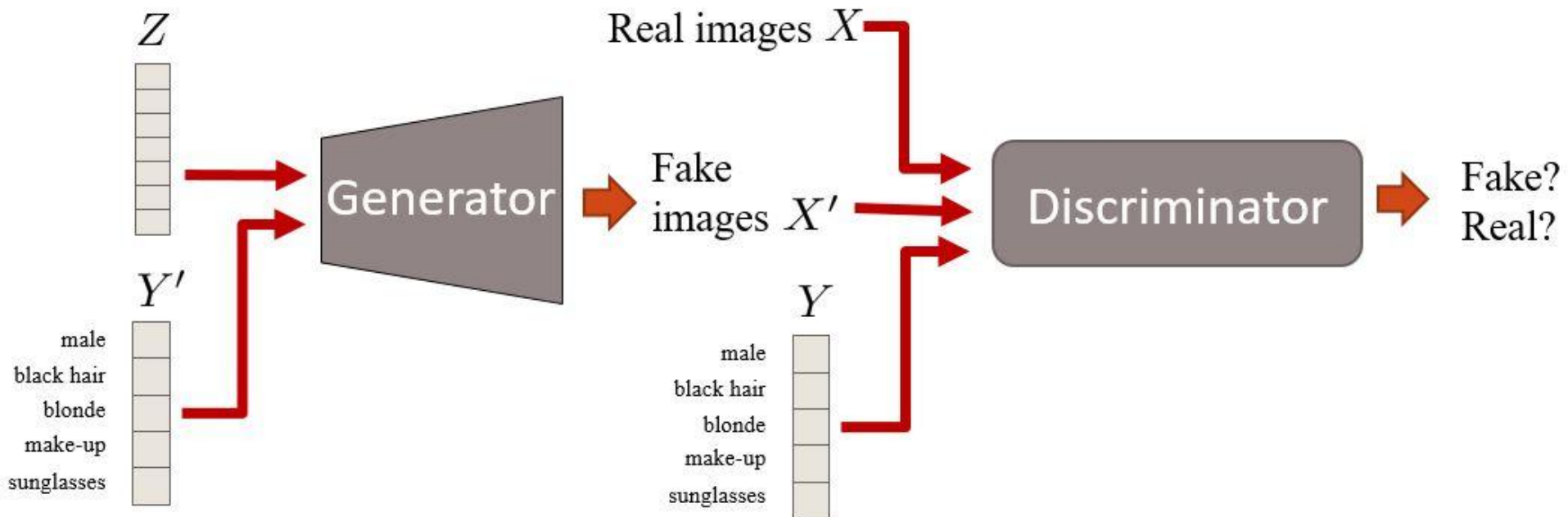


DCGAN



Improved DCGAN

cGANs



cGANs - General Adversarial What-Where Network



This bird is completely black.



This bird is bright blue.



a man in an orange jacket, black pants and a black cap wearing sunglasses skiing

cGANs - StackGAN

Text
description

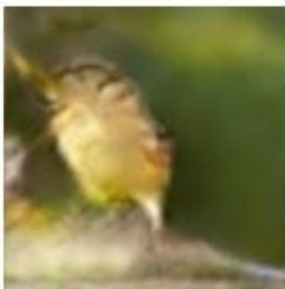
This bird is
blue with white
and has a very
short beak

This bird has
wings that are
brown and has
a yellow belly

A white bird
with a black
crown and
yellow beak

This bird is
white, black,
and brown in
color, with a
brown beak

Stage-I
images



Stage-II
images



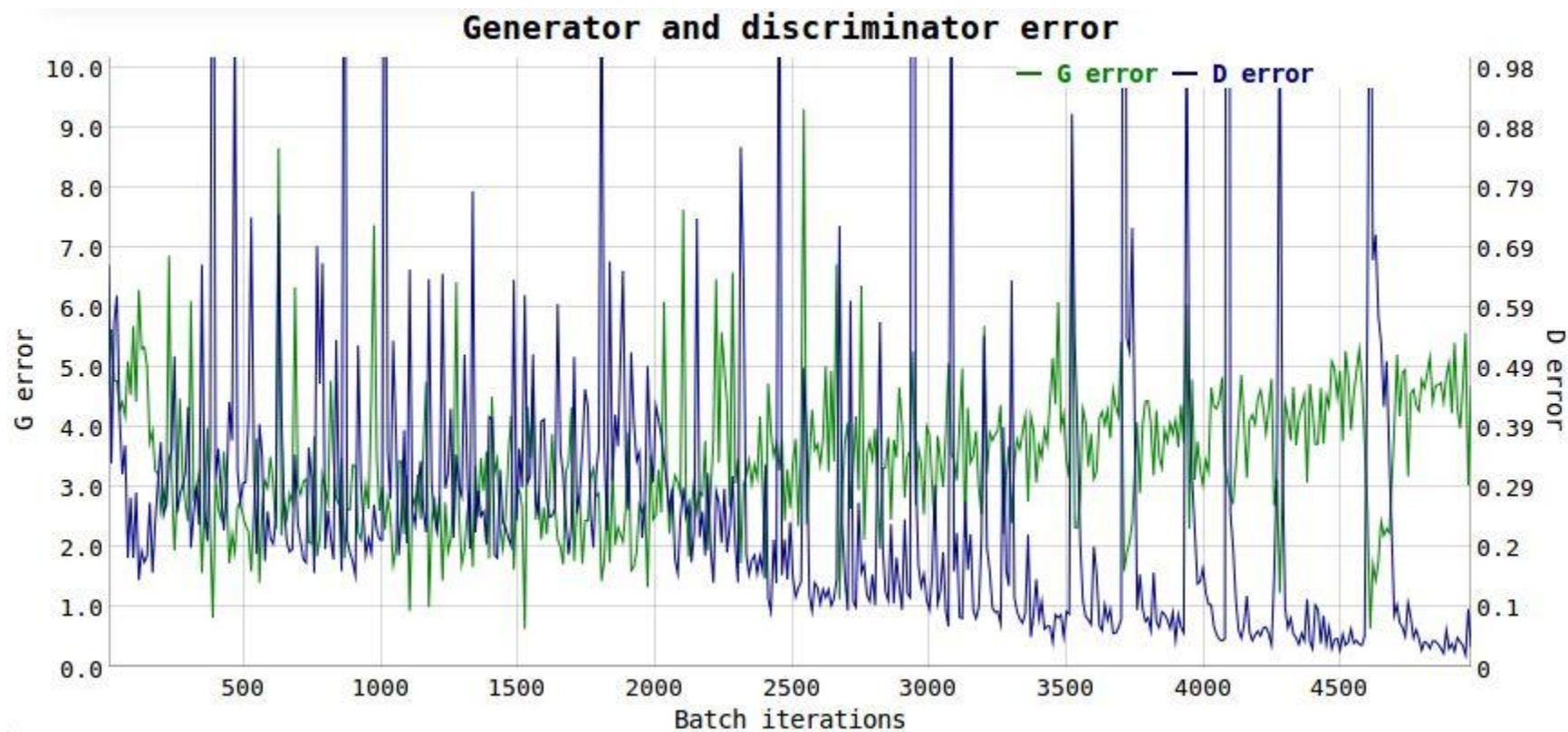
InfoGANs



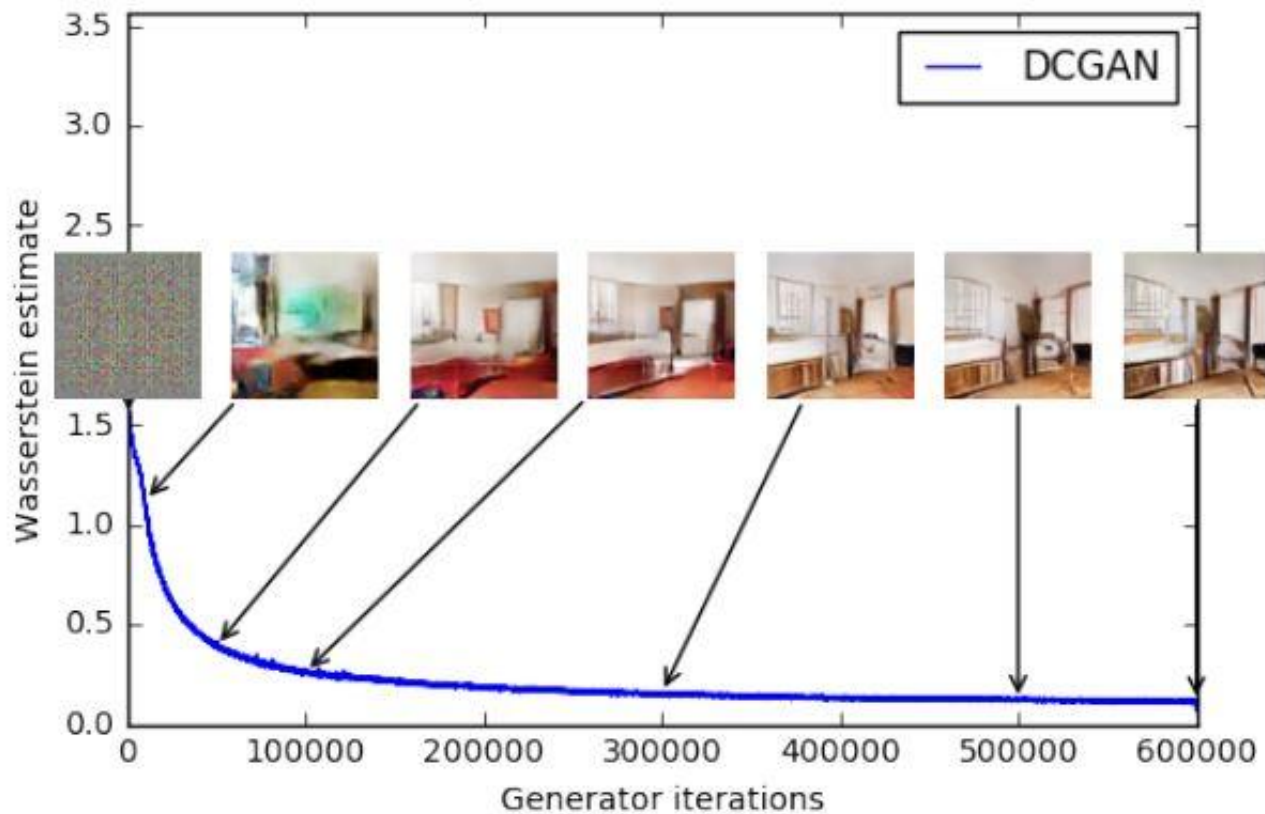
InfoGANs



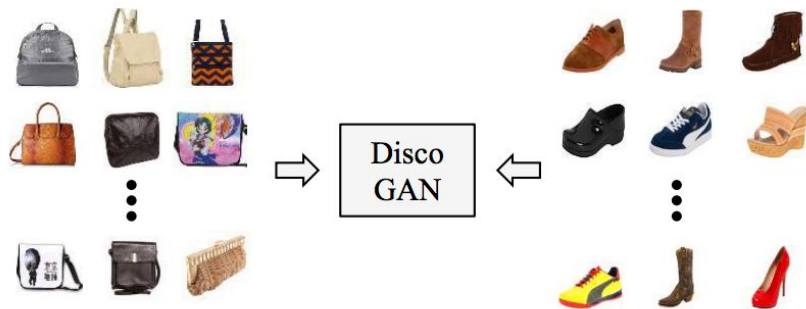
WassGAN



WassGAN



DiscoGANs



(a) Learning cross-domain relations **without any extra label**



(b) Handbag images (input) & **Generated** shoe images (output)



(c) Shoe images (input) & **Generated** handbag images (output)

DiscoGANs



(b) Car to Face

- <http://guimperarnau.com/blog/2017/03/Fantastic-GANs-and-where-to-find-the-m>
- <https://arxiv.org/abs/1701.00160> - Goodfellow tutorial z nips2016
- <https://channel9.msdn.com/Events/Neural-Information-Processing-Systems-Conference/Neural-Information-Processing-Systems-Conference-NIPS-2016/Generative-Adversarial-Networks> - video z tutorialu nips2016