Generative Adversarial Networks

Deep Learning — Unit 9

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Outline

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1. Deep Learning Projects
2. Applications
3. Essential Theory
4. “Quick, Draw!” Implementation

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Progress Check

Your Deep Learning Project V

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Where are you at with respect to the following?

1. Splitting your data
   - training set (80% — for optimizing parameters)
   - validation set (10% — for hyperparameters)
   - test set (10% — don't touch yet!)
2. Building and assessing architecture
   - get above chance (simplifying problem, if necessary)
   - do existing performance benchmarks exist?
   - if not, use a simple architecture as benchmark

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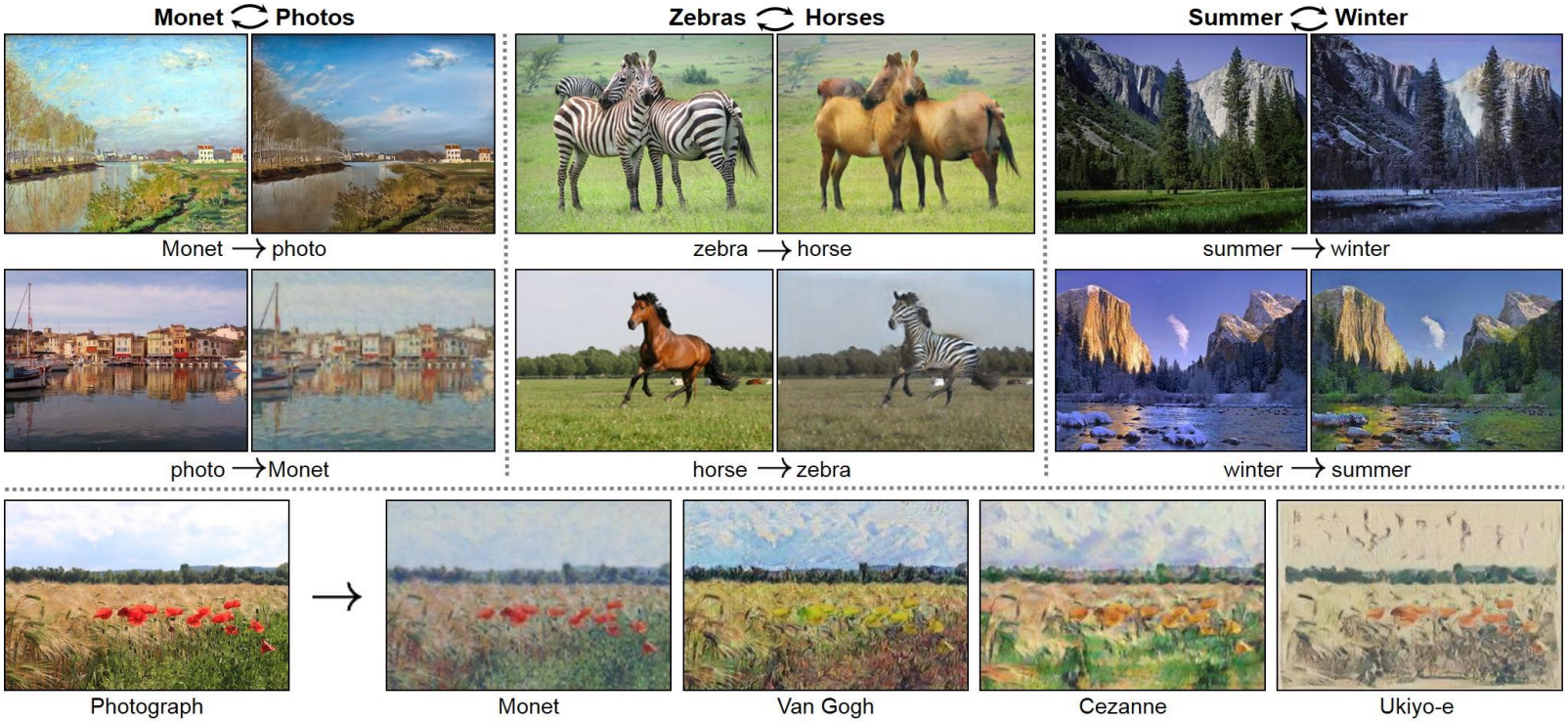
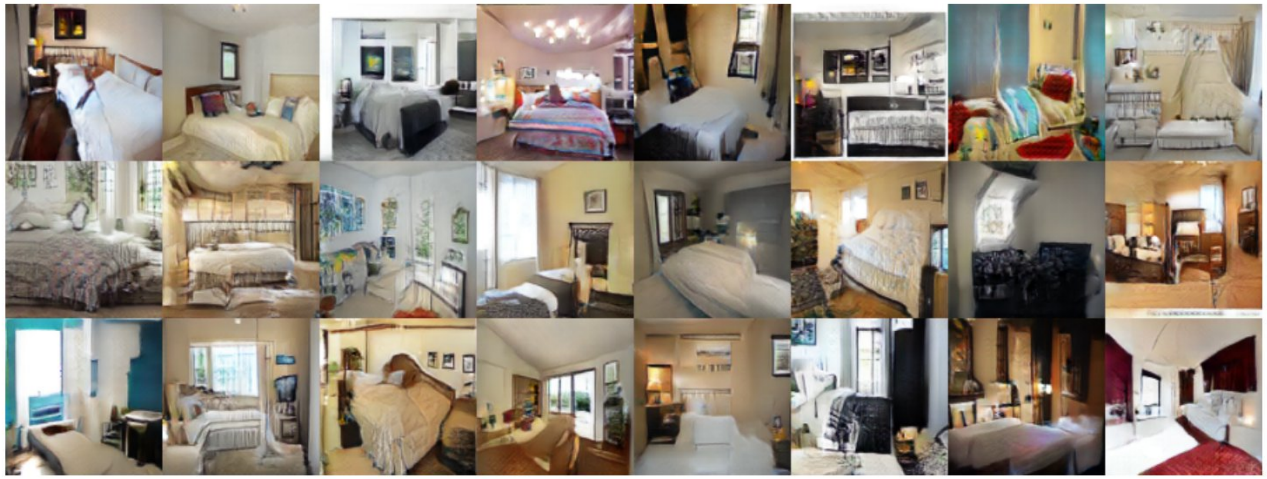
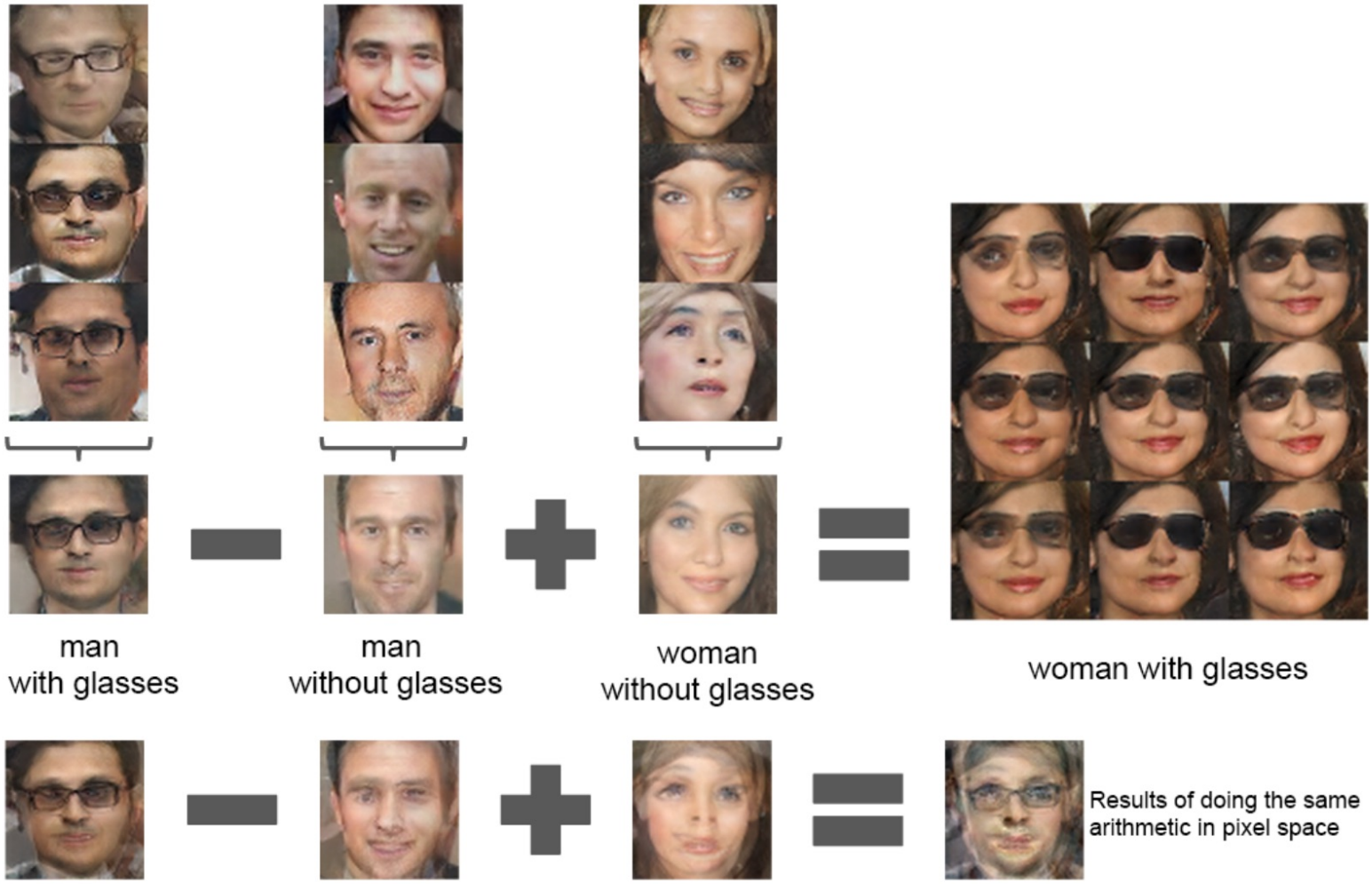




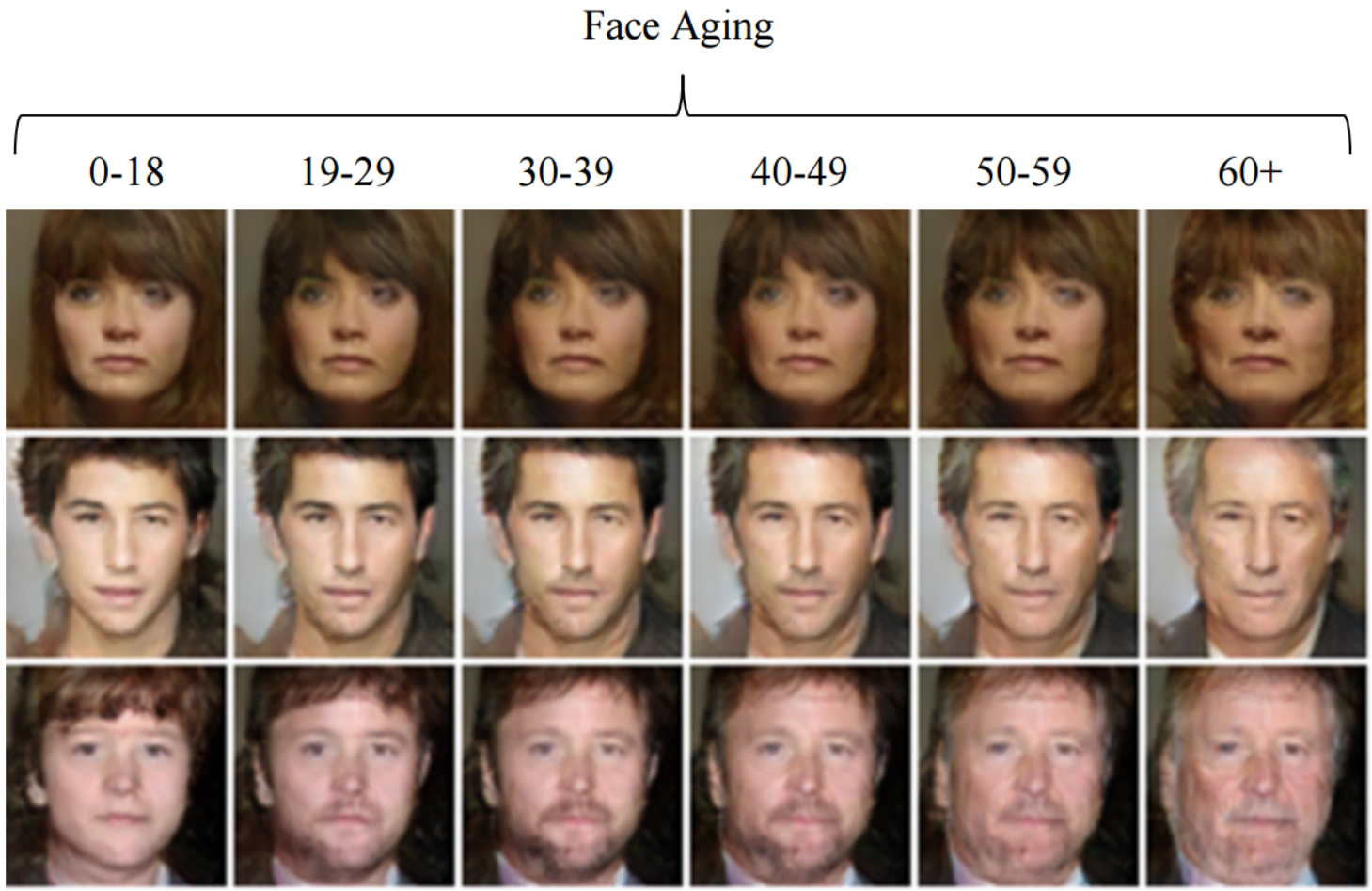
(a) Generated by LSGANs.

(b) Generated by DCGANs (Reported in [13]).

Figure 5: Generated images on LSUN-bedroom.


man
with glasses
man
without glasses
woman
without glasses
woman with glasses
Results of doing the same
arithmetic in pixel space

[“celebrity” latent-space interpolation]


Face Aging
0-18
19-29
30-39
40-49
50-59
60+

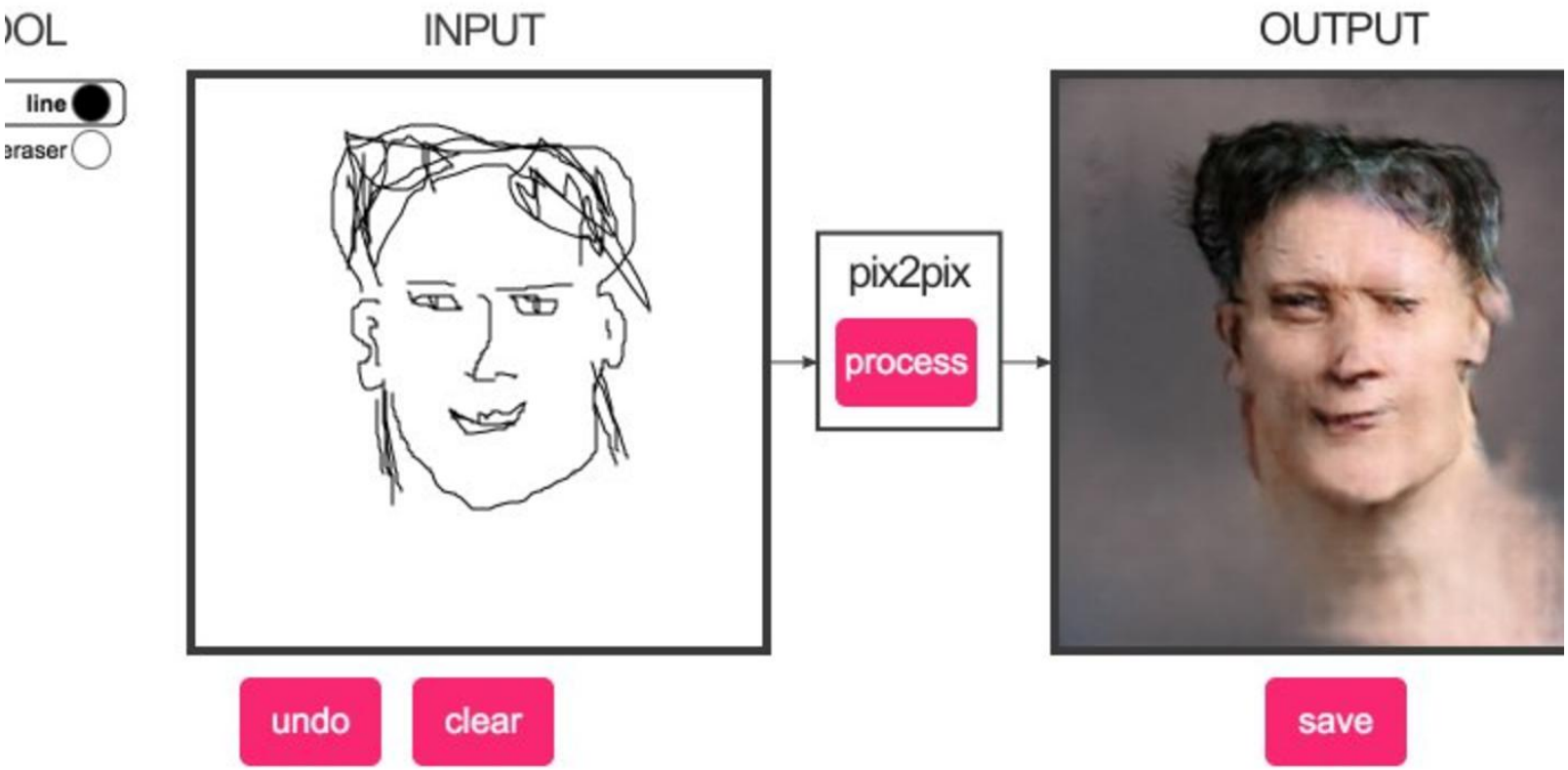

OL
line
eraser
INPUT
OUTPUT
pix2pix
process
undo
clear
save

Figure 3. Example results by our proposed StackGAN, GAWWN [20], and GAN-INT-CLS [22] conditioned on text descriptions from CUB test set. GAWWN and GAN-INT-CLS generate 16 images for each text description, respectively. We select the best one for each of them to compare with our StackGAN.

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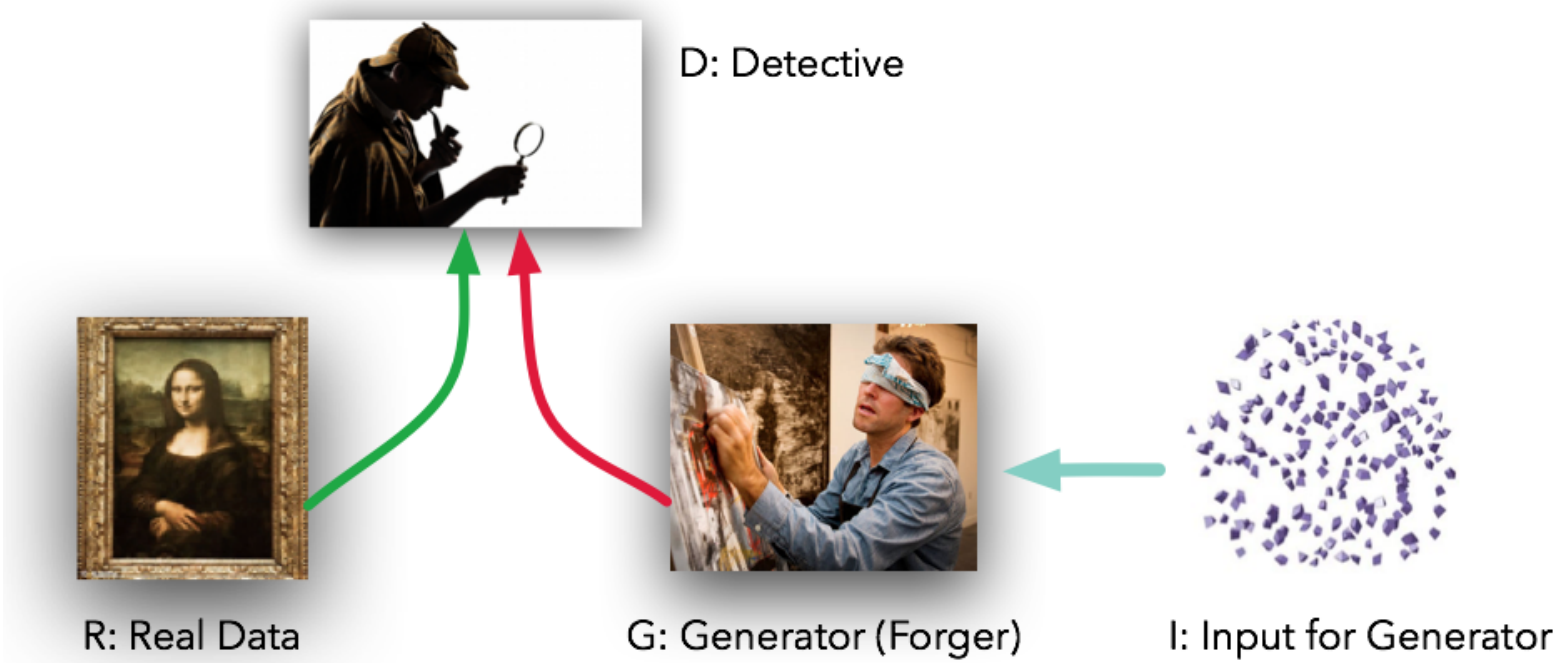
Goodfellow et al. (2014)



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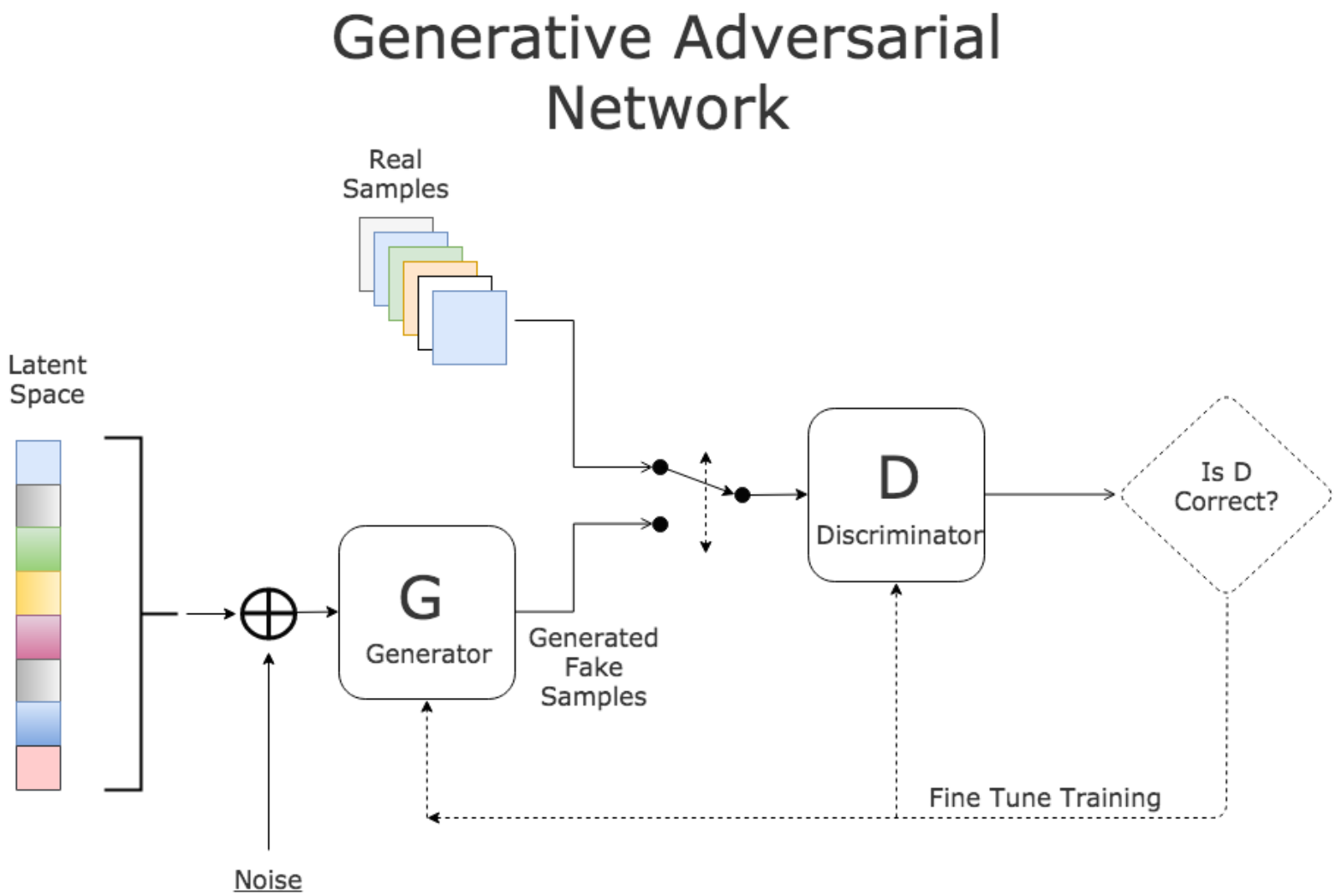


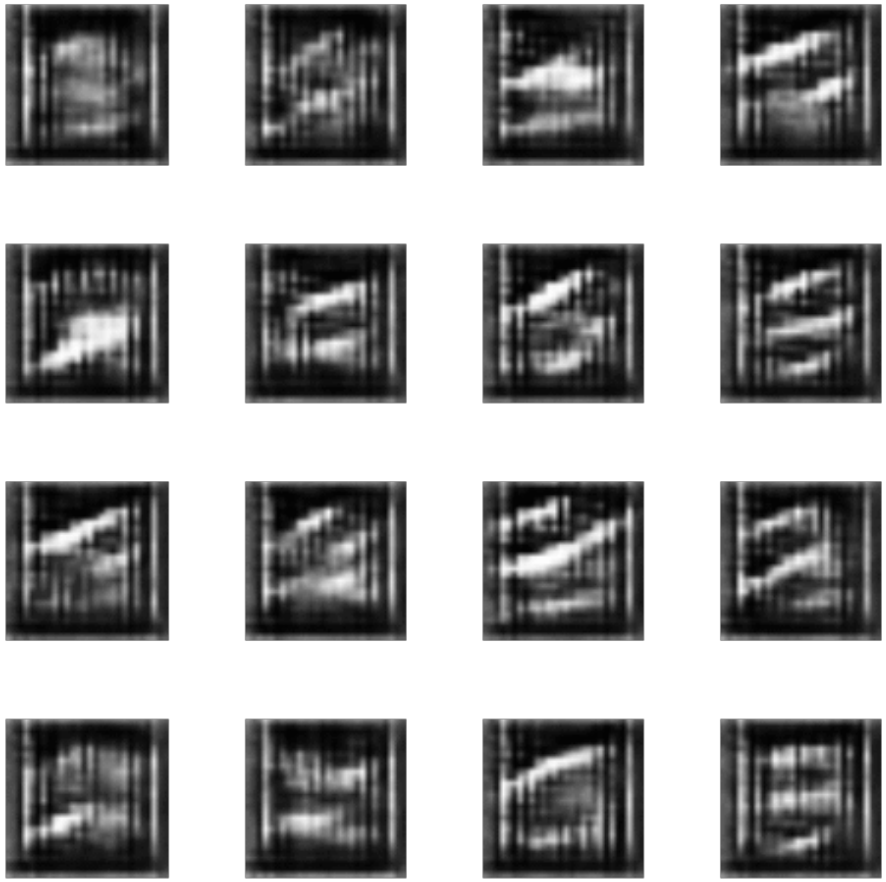
1-D Gaussian

Approximating a Toy Distribution

[video]

Outline

[Quick, Draw!]



[*generative adversarial network* notebook]