Deep Generative Models

Lecture 14

Roman Isachenko

Moscow Institute of Physics and Technology

2024, Autumn
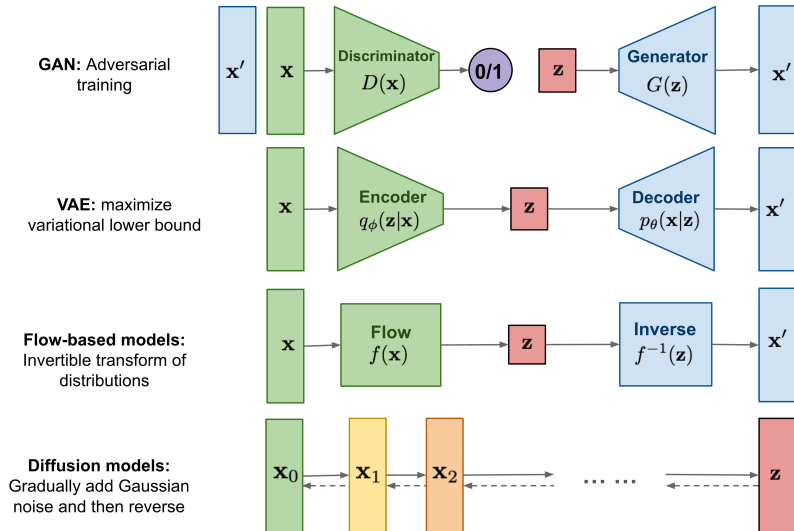
Outline

Outline

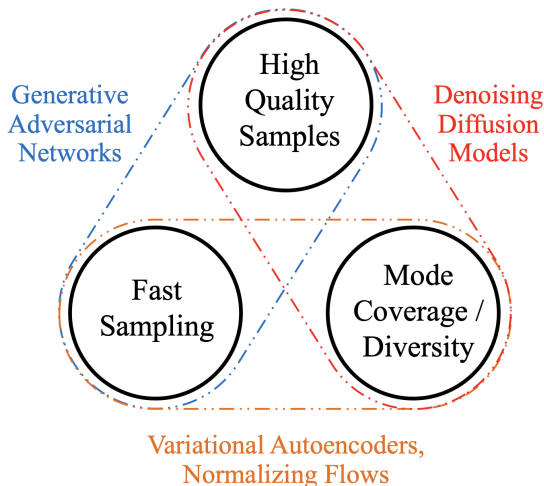# The worst course overview :)

GAN: Adversarial training

VAE: maximize variational lower bound

Flow-based models: Invertible transform of distributions

Diffusion models: Gradually add Gaussian noise and then reverse

Weng L. What are Diffusion Models?, blog post, 2021

The worst course overview :)

Xiao Z., Kreis K., Vahdat A. Tackling the generative learning trilemma with denoising diffusion GANs, 2021

The worst course overview :)

Model	Efficient	Sample quality	Coverage	Well-behaved latent space	Disentangled latent space	Efficient likelihood
GANs	✓	✓	✗	✓	?	n/a
VAEs	✓	✗	?	✓	?	✗
Flows	✓	✗	?	✓	?	✓
Diffusion	✗	✓	?	✗	✗	✗

Summary

▶