

Generative Adversarial Network: A Tour from Autoencoders to GAN

Requirements: Python + Pytorch

Autoencoders:

1. [Simple Explanation of AutoEncoders](#)
2. [Autoencoders Explained Easily](#)
3. Introduction to Autoencoders:
https://www.youtube.com/playlist?list=PLZsOBAYNTZwb-uK_a6ywrU3t0hy80G5QP [Watch lectures: 85b, 85a, 86, 87, 88, 89, 90 in order]

Variational Autoencoders:

1. Chapter 3: Variational Autoencoder [Page 61-86] (ignore the code) Generative Deep Learning Book by David Foster.
2. Chapter 2: Variational Autoencoders [Page 25-44] (ignore the code) Hands-On Image Generation with TensorFlow Book by Soon Yau Cheong
3. [Variational Autoencoders \(VAEs\) By Ali Ghodsi](#)
4. [Variational Autoencoder - Model, ELBO, loss function and maths explained easily!](#)
5. [The Reparameterization Trick](#) (Read the comment also by mohamedyasyn2087 for intuition)
6. [Understanding Variational Autoencoder | VAE Explained](#)
7. [Implementing Variational Auto Encoder from Scratch in Pytorch](#)
8. Derivation of loss function for VAE
[\[https://medium.com/retina-ai-health-inc/variational-inference-derivation-of-the-variational-autoencoder-vae-loss-function-a-true-story-3543a3dc67ee\]](https://medium.com/retina-ai-health-inc/variational-inference-derivation-of-the-variational-autoencoder-vae-loss-function-a-true-story-3543a3dc67ee)

Generative Adversarial Networks:

1. [Understand the Math and Theory of GANs in ~ 10 minutes](#)
2. [CS 182: Lecture 19: Part 1: GANs](#)
3. [CS 182: Lecture 19: Part 2: GANs](#)
4. GAN by Mitesh Khapra:
https://www.youtube.com/playlist?list=PLygSpQzTE6M-1jAqrFCsgCcuTYm_2urp [Watch lectures 22.1, 22.2, 22.3, 22.4, 22.5]
5. Generative Adversarial Networks:
<https://www.youtube.com/playlist?list=PLdxQ7SoCLQAMGgQAIAcyRevM8VvygTpCu> [Watch lectures 27(1), 28(2), 29(3), 30(4), 31(5)]
6. [The Math Behind Generative Adversarial Networks Clearly Explained!](#)
7. [Generative Adversarial Networks | Tutorial with Math Explanation and PyTorch Implementation](#)
8. [CS 182: Lecture 19: Part 3: GANs](#)
9. Different GAN Implementations
[\[https://www.youtube.com/playlist?list=PLhhyoLH6ljfwlp8bZnzX8QR30TRcHO8Va\]](https://www.youtube.com/playlist?list=PLhhyoLH6ljfwlp8bZnzX8QR30TRcHO8Va)