

GAN Specialization Course	
Module 1 - Introduction and an Overview to GANs	
1.1	Introduction and History of GANs
1.2	Generative Models
1.3	Why do We Use GANs?
1.4	Types of GANs Translations
1.5	Application Areas Part 1
1.6	Application Areas Part 2
1.7	Components of GANs
1.8	How do GANs Work and Loss Function
Module 2 - Vanilla GAN Training Cycle and Basic Building Blocks	
2.1	Vanilla GAN Training
2.2	Training the Generator and the Discriminator
2.3	The Objective Function
2.4	The Training Cycle and Basic Building Blocks
Module 3 - Implementation of Vanilla GAN	
3.1	Generic Architecture of a GAN

3.2 Importing the Library
3.3 Configurable Variables
3.4 Building the Generator
3.5 Building the Discriminator
3.6 Combining Everything Into One (Housekeeping Functions)
3.7 Preparing the Dataset
3.8 Initialization Functions
3.9 Forward and Backward Pass
3.10 Performing a Training Step
3.11 Performing an Epoch
3.12 Starting the Training Process
Module 4 - Challenges and Basic Building Blocks of GANS
4.1 Challenges and Basic Building Blocks of Generative Adversarial Network
4.2 Challenges of GANS
4.3 Challenges of GANS - Output Control
4.4 Improved GANS - Convolutional Layers
4.5 Convolutional Layer - Parameter Sharing

4.6 Convolutional Layer - ConvNets Visualization
4.7 Convolutional Layer - Generator Network Diagram
4.8 Convolutional Layer - Discriminator Network Diagram
4.9 Improved GANs - Pooling Layer
4.10 Improved GANs - Loss Functions (WGAN)
4.11 Improved GANs - Loss Functions (CGAN)
Module 5 - Applications of GAN with Implementation
5.1.1 Image to Image Translation Using CycleGAN - Cycle GAN
5.1.2 Image to Image Translation Using CycleGAN - Input Pipeline
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5.1.5 Image to Image Translation Using CycleGAN - Checkpoints
5.1.6 Image to Image Translation Using CycleGAN - Four Basic Steps
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5.2.2 Text to Image Translation using ClipBigGAN - Big Sleep
5.3.1 Interactive Image Generation using Interactive GAN - Introduction
5.3.2 Interactive Image Generation using Interactive GAN - Anycost GAN(uniform)

5.3.3 Interactive Image Generation using Interactive GAN - Anycost GAN(flexible)
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5.4.2 Photos to Animations(Emojis) using ArcaneGAN - Torchvision
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5.4.4 Photos to Animations(Emojis) using ArcaneGAN - Loading the Model
5.4.5 Photos to Animations(Emojis) using ArcaneGAN - Upload and Run
5.5.1 Enhancing The Resolution of an Image using ESRGAN - Preparing Environment
5.5.2 Enhancing The Resolution of an Image using ESRGAN - Defining Helper Functions
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5.6.1 Image Generation using StyleGAN3 - Introduction
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6.1.1 Introduction to AI Based Image Generation
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6.2.1 AI Based Image Generators - What is Midjourney?

6.2.2 AI Based Image Generators - Midjourney Demo

6.3.1 AI Based Image Generators - What is DALL-E 2?

6.3.2 AI Based Image Generators - How to Use DALL-E 2?

6.4.1 AI Based Image Generators - What is Imagen?

6.4.2 AI Based Image Generators - Imagen's Text Encoder

6.5.1 AI Based Image Generators - What is Stable Diffusion?

6.5.2 AI Based Image Generators - How to Use Stable Diffusion AI?

6.5.3 AI Based Image Generators - Stable Diffusion Demo Part 1

6.5.4 AI Based Image Generators - Stable Diffusion Demo Part 2

6.5.5 AI Based Image Generators - Stable Diffusion Demo Part 3