

22-10-2021 12. Implement a Deep Convolutional GAN
(DCGAN) to generate color Images.

Aim :

To implement a Deep Convolutional generative Adversarial Network (DCGAN) for generating synthetic color images similar to the dataset.

Objective

- * To understand GANs and the adversarial training process.
- * To construct and train a Generator and discriminator model.
- * To generate and visualize artificial color image
- * To analyze the stability and convergence behaviour of GAN training.

observation

- * Generator began producing blurred pattern initially.
- * After several epochs, clearer shapes and texture began forming.
- * Discriminator accuracy fluctuated due to adversarial training.
- * The balance between generator and discriminator was crucial for stable training.

Result

Q&A A DCGAN mode was successfully implemented and trained.

pseudocode

1. Start

2. Load and preprocess dataset (

normalize images to $[-1, 1]$).

3 Define Generator network

- Input : random noise (latent vector)

- Transposed convolution

layers + Batch Norm + ReLU

- Output : Color image using Tanh activation

4. Define Discriminator network.

5. Compile Discriminator

6. Create GAN model by

Connecting Generator \rightarrow Discriminator

7. End .

Output

Epoch	class	Glass
1	1.372	0.873
2	1.102	1.2
3	0.987	1.4
4	0.84	1.6
5	0.73	1.9
6	0.70	2.1
7	0.66	2.3
8	0.64	2.4
9	0.61	2.5
10	0.59	2.7

DCGAN Architecture

