

12.) Implement A Deep convolutional GAN to Generate complex color Images

Aim :-

To implement a Deep convolutional GAN to generate complex color images

objective

- * Build a generator to create RGB images from random noise
- * Build a discriminator to distinguish real and fake images
- * Train both network adversarially using image data
- * Generate and evaluate realistic color images

PSEUDO CODE:-

Initialize hyperparameters
($lr = 0.0002$, $nz = 100$, batch = 128,
epochs = 200).

Load and normalize dataset to [-1, 1].

Define generation:
Input: $\in \mathbb{R}^{100}$
Layers: Transposed conv \rightarrow batch Norm \rightarrow
 $\text{ReLU} \rightarrow \dots \rightarrow \text{Tanh}$

Output: $3 \times 64 \times 64$ image

Define discrimination

Input: $3 \times 64 \times 64$ image

Layers: Conv \rightarrow Batch Norm \rightarrow Leaky
 $\text{ReLU} \rightarrow \dots \rightarrow \text{Sigmoid}$

Output: Real / fake probability

For each epoch

1. Train discrimination on real and fake images
2. Train generator to fool discrimination
3. Update weights with Adam optimizer
4. Save sample images periodically

Observation:

* Initially produces noisy images quality improves over epochs

* Final outputs show realistic color images resembling training data.

MENT

Huberan

FLA
201005

mark: "AI"

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Result:-

Therefore the implementation
of a deep convolutional GAN to
generate complex color images
is successfully completed .