

DCGAN (2015)

Deep Convolutional GAN

Architecture Overview

Generator

z (Noise)



Project & Reshape



Fractional-Strided Conv

Batch Norm + ReLU



Fractional-Strided Conv

Batch Norm + ReLU



Fractional-Strided Conv

Batch Norm + ReLU

Discriminator

Image



Strided Conv

LeakyReLU



Strided Conv

Batch Norm + LeakyReLU



Strided Conv

Batch Norm + LeakyReLU



Strided Conv

Architecture Guidelines

Generator

Fractional-strided conv + ReLU (tanh output)

Discriminator

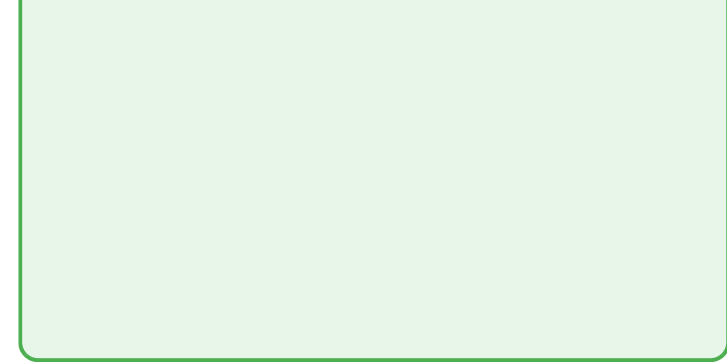
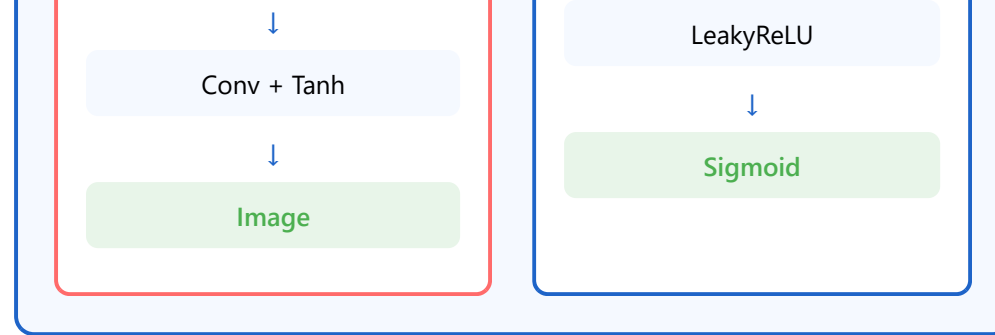
Strided conv + LeakyReLU

Normalization

Batch norm (except G output, D input)

✓ Benefits

- ★ Stable training
- ★ Higher resolutions
- ★ Better image quality
- ★ Foundation for future GANs



Key Features

- ✓ Replace fully connected layers with convolutions
- ✓ No pooling layers - use strided convolutions
- ✓ Batch normalization in both G and D

Original Paper

[Unsupervised Representation Learning with Deep Convolutional Generative Adversarial Networks](#)

Radford et al., 2015