

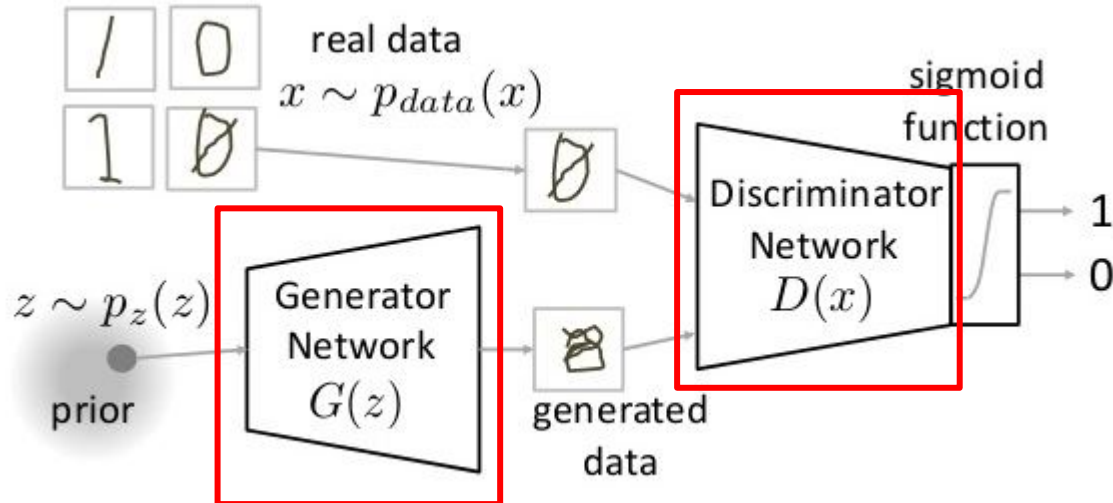
Better GAN Architectures: DC-GANs

What we will be covering in this module?

- Introduction to Image Generation
- What are Generative Models?
- Understanding Generative Adversarial Networks
- Project on Texture Generation using GANs
 - Simple Implementation
 - Better GAN Architectures
- What's Next?

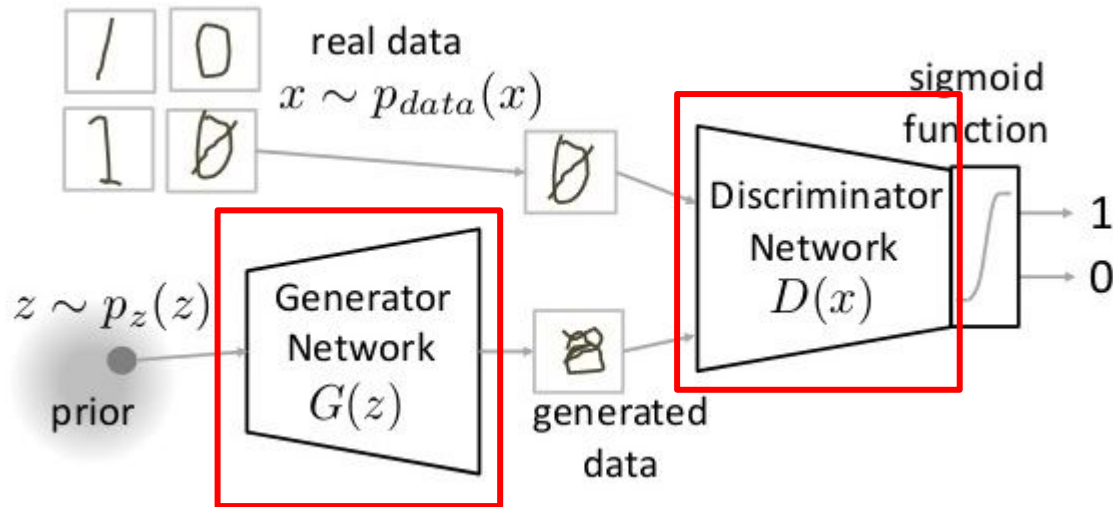
Recap: Architecture of GAN

- Broadly a GAN architecture has two main subparts
 - Generator Network (MLP network)
 - Discriminator Network (MLP network)



Better Architectures : DC-GAN

- Broadly a GAN architecture has two main subparts
 - Generator Network (CNN network)
 - Discriminator Network (CNN network)



Better Architectures : DC-GAN

UNSUPERVISED REPRESENTATION LEARNING WITH DEEP CONVOLUTIONAL GENERATIVE ADVERSARIAL NETWORKS

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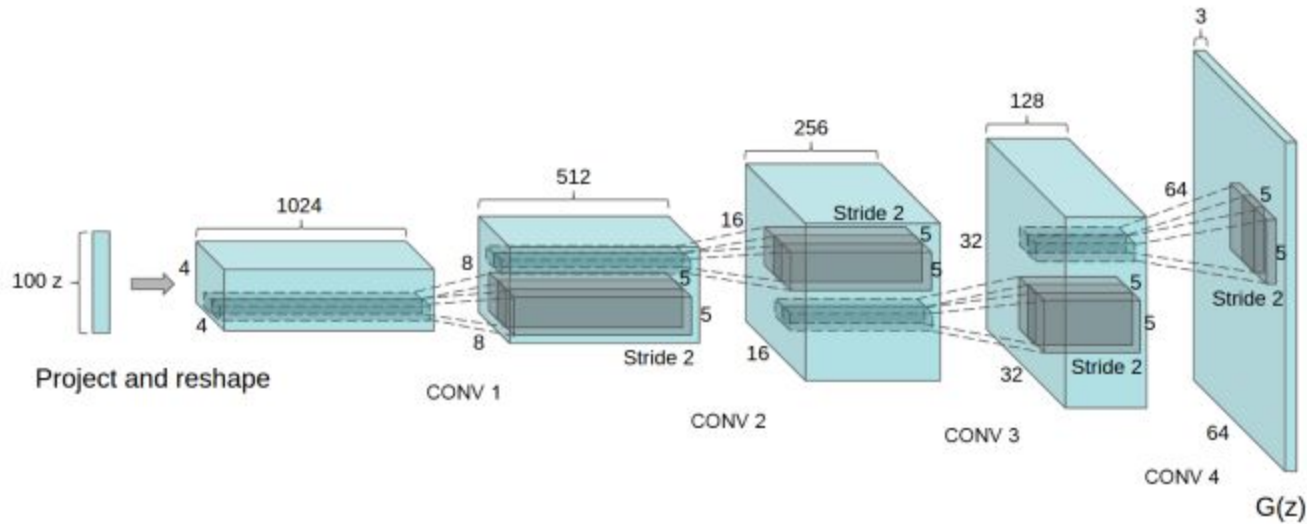
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ABSTRACT

In recent years, supervised learning with convolutional networks (CNNs) has seen huge adoption in computer vision applications. Comparatively, unsupervised learning with CNNs has received less attention. In this work we hope to help bridge the gap between the success of CNNs for supervised learning and unsupervised learning. We introduce a class of CNNs called deep convolutional generative adversarial networks (DCGANs), that have certain architectural constraints, and demonstrate that they are a strong candidate for unsupervised learning. Training on various image datasets, we show convincing evidence that our deep convolutional adversarial pair learns a hierarchy of representations from object parts to scenes in both the generator and discriminator. Additionally, we use the learned features for novel tasks - demonstrating their applicability as general image representations.

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Better Architectures : DC-GAN



Generator model in DC-GAN

Steps for solving Texture Generation using DC-GANs

1. Data Loading and Preprocessing

1.1 Load the Data

1.2 Define custom Dataset and Dataloader

1.3 Data Exploration

2. Image Generation using DC-GANs

2.1 Define model architecture

2.2 Train the model

2.3 Generate random images

