**Unsupervised Representation Learning with Deep Convolutional Generative Adversarial Networks**

**Radford A, 2015**

**Abstract**

They introduced DCGANs to bridge the gap between success of CNN for supervised and unsupervised learning. Training on various datasets shows convincing evidence that our deep convolutional adversarial pair learn hierarchy of representation in both generator and discriminator, they also used learned features for task.

**Introductions**

They proposed set of constraints un architectural topology of CGAN, makes them more stable to train in most settings, named it Deep Convolutional GAN(DCGAN), use of trained discriminator for image classification task. Visualize the filter learnt by GANs

They show that generators have interesting vector arithmetic properties allowing for easy manipulation of many semantic qualities of generated samples.

**Survey**

They proposed more stable set of architecture for training GAN.

There were still some model instability remaining, further work needed to tackle the instability.

They also thought that extending framework to other domain should be interesting