

Description

Can a machine generate music or paintings or fake celebrity faces? Difficult to believe but yes, Generative Adversarial Networks (GANs) are models which learn and mimic the data distribution. This [link](#) includes some of the cool applications [1]. In recent years, researchers have proposed a number of variants of GANs with improved performance guarantees. (More details about GANs can be found in [2]). It is difficult to circle out one model which performs well on all datasets, hence for convenience we seek to have a common platform to compare all the models across different datasets.

Goal

The aim of the project is to **build a web-based tool which compares the performance of different GAN models qualitatively and quantitatively on different datasets.**

A. The user should be able to choose from

- 1) List of GAN models
- 2) List of datasets
- 3) List of performance metrics for comparison (more than one can be selected)

B. Based on the choice, the corresponding trained model is selected. The user then can request for the following details about the selected model

- 1) Training performance
- 2) Generated Samples

C. Users should also be able to compare two different GAN models on a single dataset. The performance and generated samples should be displayed side by side for comparison

GAN models	Datasets	Performance Measures
DCGAN	MNIST	FID
WGAN	CELEB-A	Inception Score
WGAN-GP	LSUN	
BEGAN	IMAGENET	
EBGAN	Gaussian data	
Unrolled GAN		
MMD-GAN		
LS-GAN		
LSGAN		
Fisher GAN		
DRAGAN		

Tasks

The major tasks

- 1) Build the WebPage

GANVALA (GAN eVALuation and Analysis)

- 2) Train the GAN models on different datasets directly from the source code provide
- 3) Implement the different performance measures
- 4) Integrate the trained models with the webpage for testing

Requirements

- 1) HTML/CSS/or any relevant tools
- 2) Understanding the training of GANs
- 3) Pytorch/Tensorflow

References

- [1] https://medium.com/@jonathan_hui/gan-some-cool-applications-of-gans-4c9ecca35900
- [2] Manisha, P., and Sujit Gujar. "Generative Adversarial Networks (GANs): What it can generate and What it cannot?." *arXiv preprint arXiv:1804.00140* (2018).