Progress of Group I project

Star-GAN v2: Diverse Image Synthesis for Multiple Domains

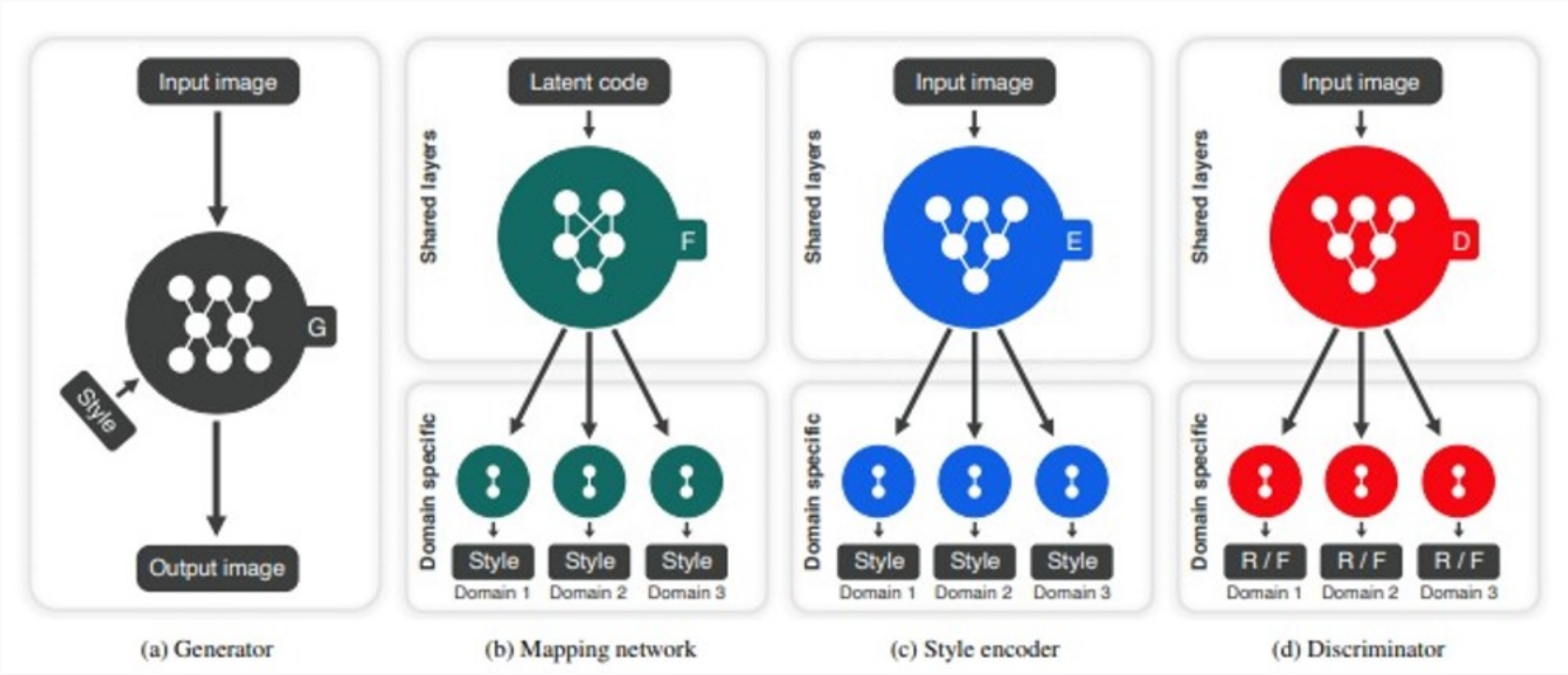
Mohammad Bilal arif, Madhur Sabherwal, Zimeng wang,Yaqin Xiao

October 13, 2020

Table of contents

Abstract

Abstract



(a) Generator (b) Mapping network (c) Style encoder (d) Discriminator

A good image-to-image translation model should learn a mapping between different visual domains while satisfying the following properties: (1) diversity of generated images (2) scalability over multiple domains

Using StarGAN v2, a single framework that tackles both the above issues and shows significantly improved results over the baselines.

Abstract

The performance will be evaluated by

(1) Fid

Frechet inception distance (FID) indicates the distance between two distributions of real and generated images (lower is better),

(2) LPIPS

Learned perceptual image patch similarity (LPIPS) measures the diversity of generated images (higher is better).

Justification

1.CITATION : 37 +

2.PUBLICATION Time: JANUARY /2020

3.PUBLICATION Venue: The Conference on Computer Vision and Pattern Recognition (CVPR) is an annual conference on computer vision and pattern recognition, which is regarded as one of the most important conferences in its field

4.LINK :

`https://openaccess.thecvf.com/content_CVPR_2020/html/Choi_StarGAN_v2_Diverse_Image_Synthesis_for_Multiple_Domains_CVPR_2020_paper.html`

5.Original Dataset:`https://drive.google.com/drive/folders/0B4qLcYyJmiz0TXY1NG02bzZVRGs`

6.GITHUB: `https://github.com/clovaai/stargan-v2/blob/master/README.md`

Replication of original work

Replication of original work

Link of the output from the replication of work:

`https://ibb.co/rtdNL6G`

What will be necessary for implementation.

AWS not worked here

Colab worked but we had to increase the Memory size to 25 GB

GPU : - NVIDIA-SMI 455.23.05,

Driver Version: 418.67,

CUDA Version: 10.1 ,— GPU Name : Persistence-M Bus-Id, Disp.A ,Volatile Uncorr.

Libraries: Numpy, pytorch, Tensorflow, pillow

Replication of original work

Result comparison		
Parameters	Work of paper	Our Score
LPIPS latent:	0.4512843224219978	0.4515
FID reference:	23.87898297979673	23.84
FID latent	13.760582024514443	13.73
LPIPS reference :	0.3875771895982325	0.3880

New Dataset

New Datasets

Our new data set is male and female faces data set and come from kaggle:

`https://www.kaggle.com/ashwingupta3012/male-and-female-faces-dataset?`

We will resize the new dataset according to the original dataset images. Following tasks have been done to generate new dataset like the original structures

- Removing duplicate images
- Removing Similar image.
- Incomplete face and Resize(1024 x 1024).

New Datasets Input

New Datasets Input

We have uploaded a new data set consisting of 30 new reference images for running the pretrained model to test if the generated outcome images are correctly generated or not.

We kept the source images (the top row) same as with the original images in order to generate some similarity, only the reference images have been changed.The result:

New Datasets Input

Link for the new generated images:

`https://ibb.co/XF9DN8d`

The evaluation scores are observed to be in range to the evaluation scores originally produced.

FID Latent: 13.760522298766732

FID Reference: 23.879018358405766

LPIPS Latent: 0.4512843759730458

LPIPS Reference: 0.3875771635212004

What will be done in future

We will be scaling our new dataset to test it on pre-trained model by adding 1700 new images in the validation set.

Once the testing phase is done, we will be evaluating the FID and LPIPS scores again and compare it with the pre-scores.

Thank you!