Final presentation of Group I project

Star-GAN v2: Diverse Image Synthesis for Multiple Domains

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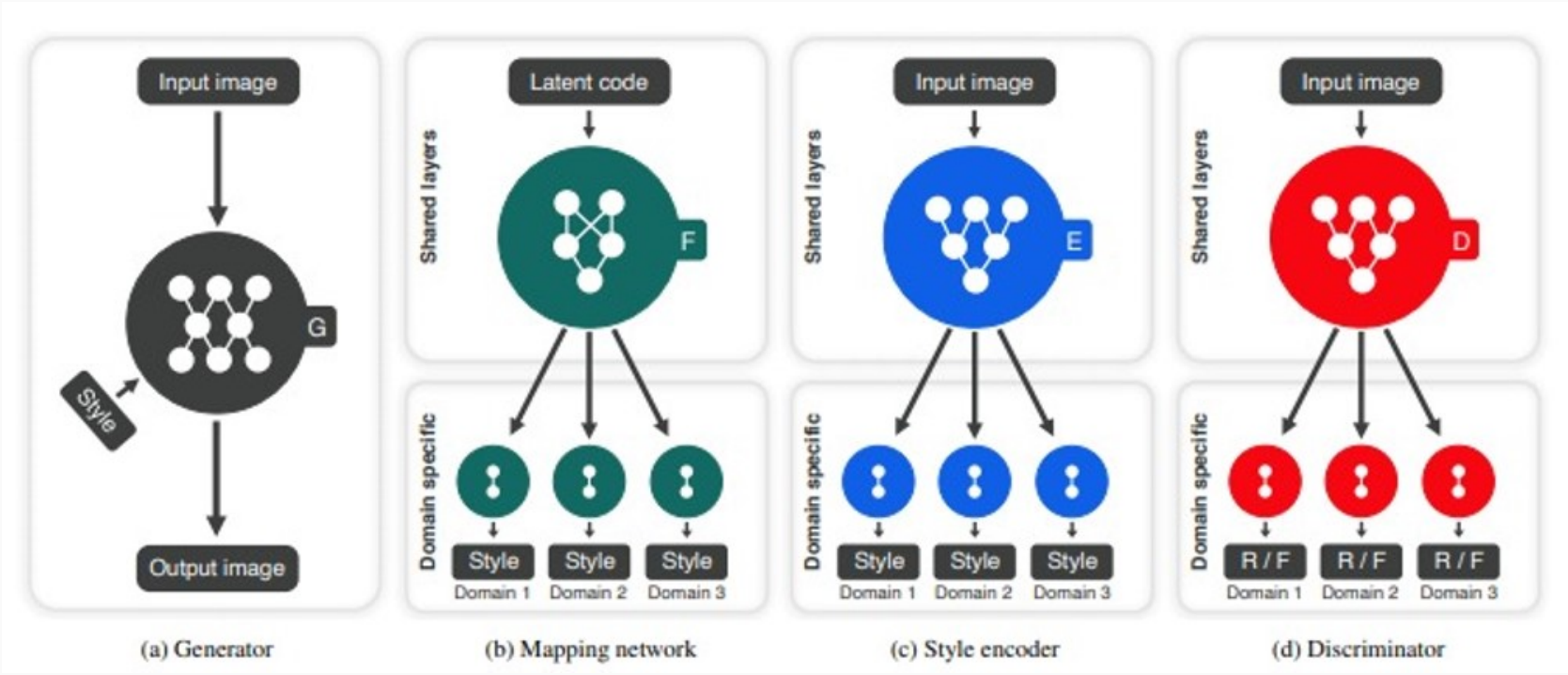
Abstract

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).

Abstract

1.Report LINK :

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

2.Original Dataset:

https://drive.google.com/drive/folders/0B4qLcYyJmiz0TXY1NG02bzZVRGs

3.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

Link for Male2Female and Female2Male Scrapped Images:

`https://ibb.co/s6Svjjn`

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 Construction

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?`

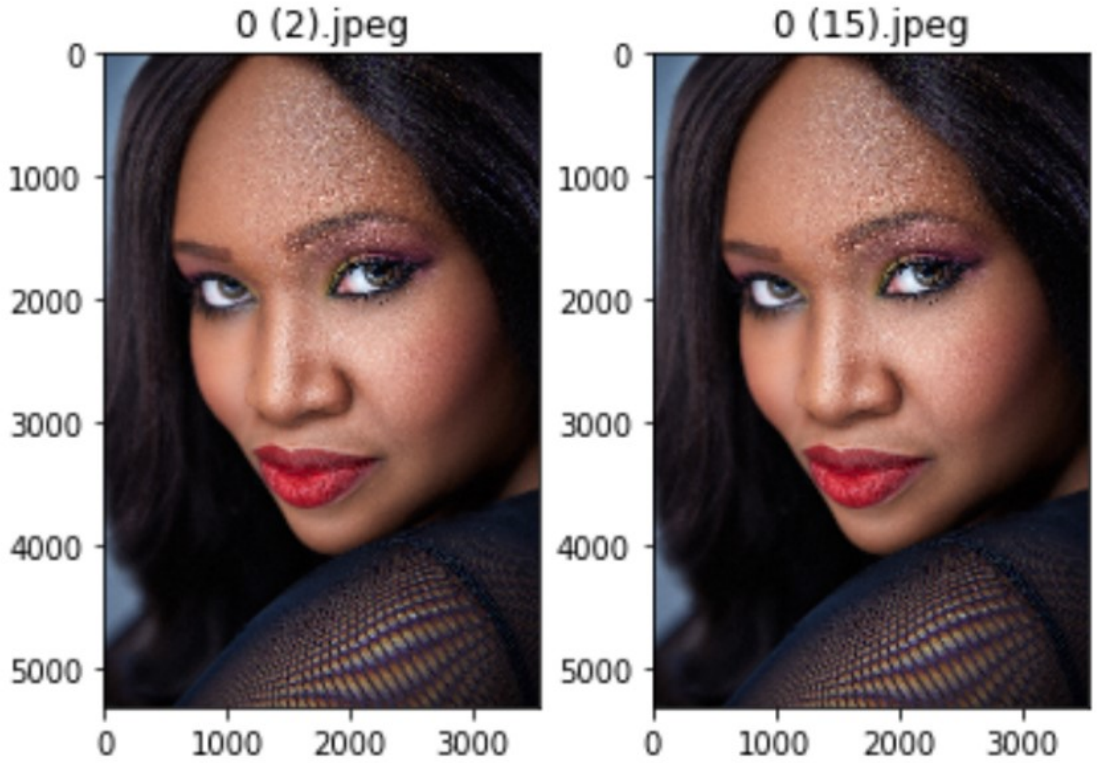
We will resize the new dataset according to the original dataset images. Following tasks have been done to generate new dataset like the original structures:

`https://github.com/zimeng997/COMP8240_group_i_project/blob/main/data_process.ipynb`

Data processing

Removing duplicate images:

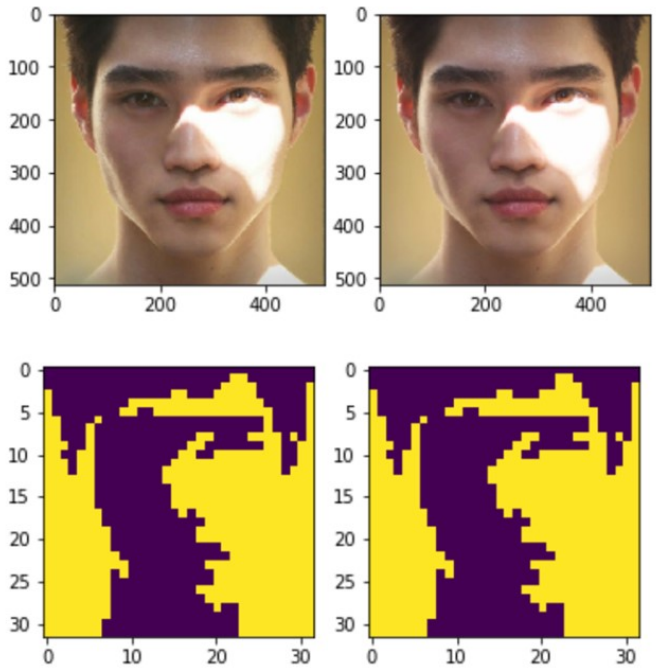
```
md5 of image 1: cda834529d1505ebce1ba6dfed2931cc
md5 of image 2: cda834529d1505ebce1ba6dfed2931cc
```



Data processing

Removing similar image:

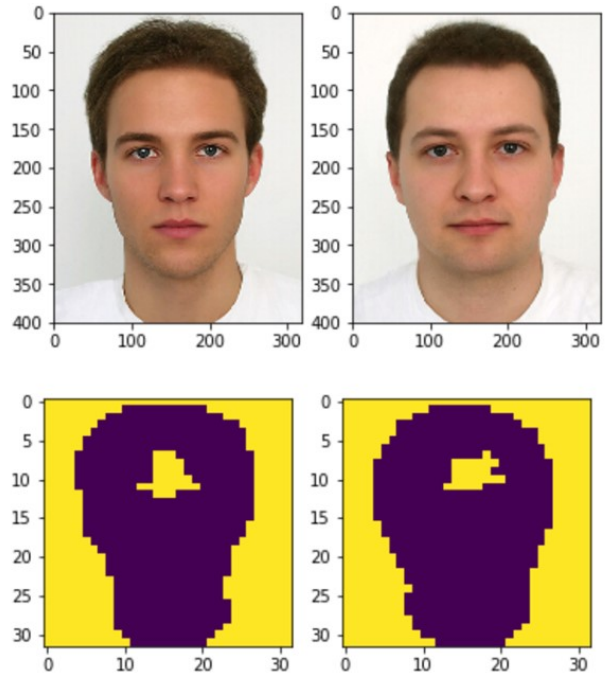
md5 of image 1: b2e89c1e0dfcabb7928b559c67491a32
md5 of image 2: 71d25ed7d45868b9e4f4a3f49a0aef90



The distance: 0.0009765625

Similar images!

md5 of image 1: 6035daa277f6f5f7563de4840bec1c07
md5 of image 2: c9e773d486c4da2b373d5b79722cd088

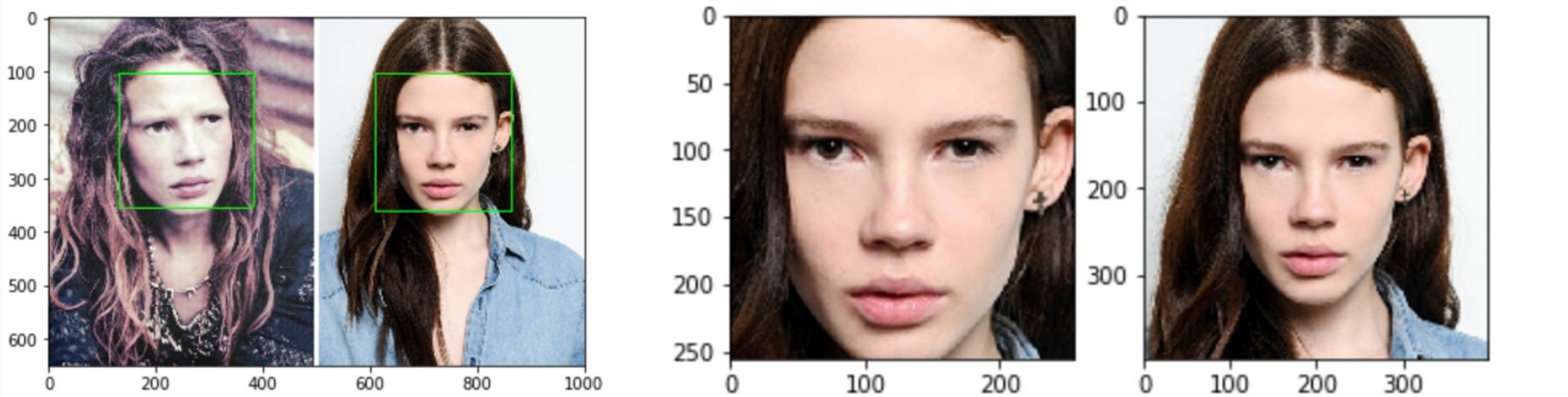


The distance: 0.046875

Not Similar Images!

Data processing

Remove incomplete face and resize them:



New Datasets Output

New Datasets Input

We have uploaded a new data set 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 Output

Link for the new generated images:

`https://ibb.co/XF9DN8d`

The evaluation scores are observed for the new dataset.

FID Latent: 13.785027906581332

FID Reference: 23.850672602382335

LPIPS Latent: 0.4517528439611196 4

LPIPS Reference: 0.3884918097108603

The new video of New dataset

Link for the new generated video:

https://youtu.be/4WfOw_YI-nw

Thank you!