DeepToon: Cartoonization of Reality using Deep Learning

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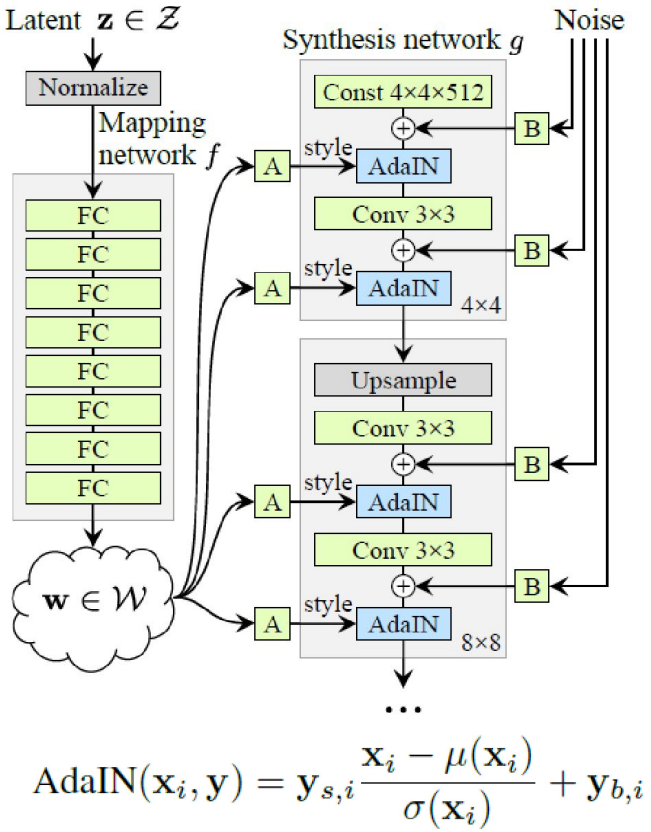
Problem Settings:

Challenges:

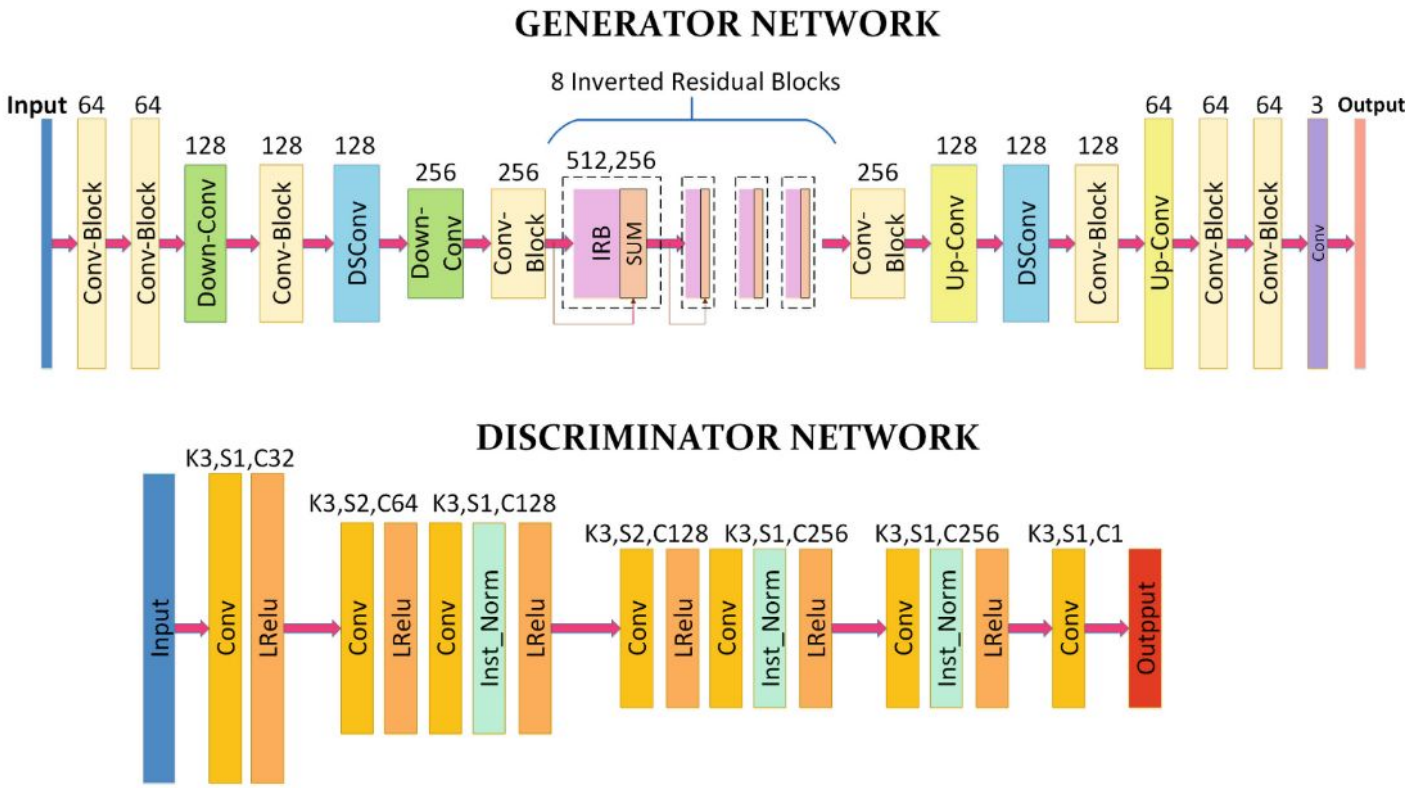
- Image to Image Translational Problem
- Transfer Real world photo to cartoonized image.
- No paired data available, all are unpaired.

Common Features of Cartoon Images:

- Surfaces are smooth.
- Lines and Boundaries are major indicator of details in cartoon.



(a) StyleGAN



(b) AnimeGAN

Karas *et al.* 2019
Chen *et al.* 2020

Dataset Description:

Selfie2anime

Training: 6800
Test: 200

Kaggle

Three different animation movie

Hayao: 1792
Shinkai: 1650
Paprika: 1553

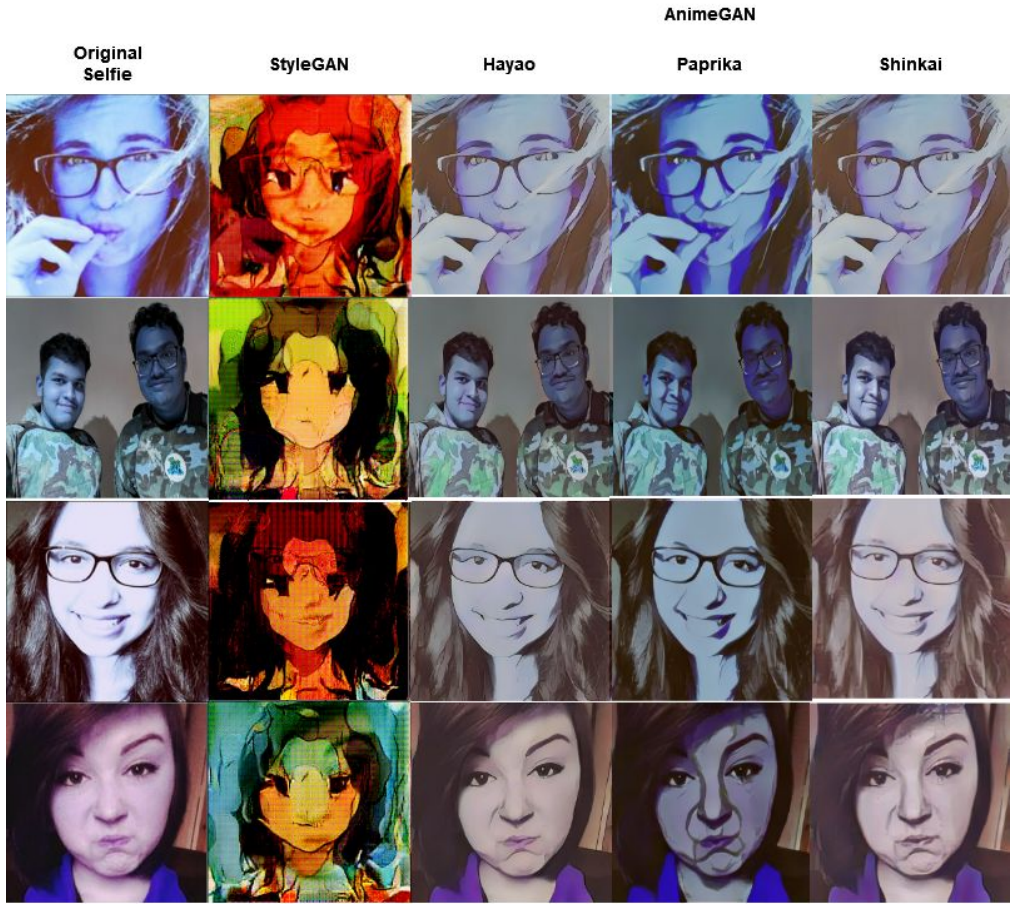
Chen et al. 2020

Dragon Ball Z cartoon movie

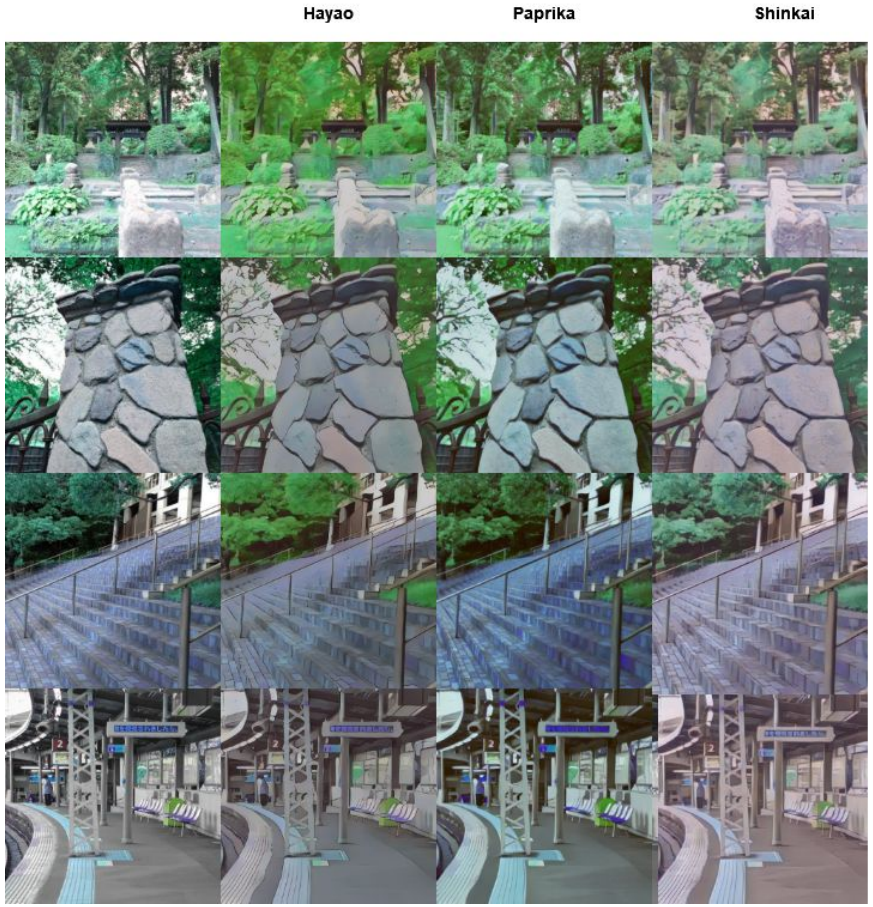
5288 Images

Kaggle

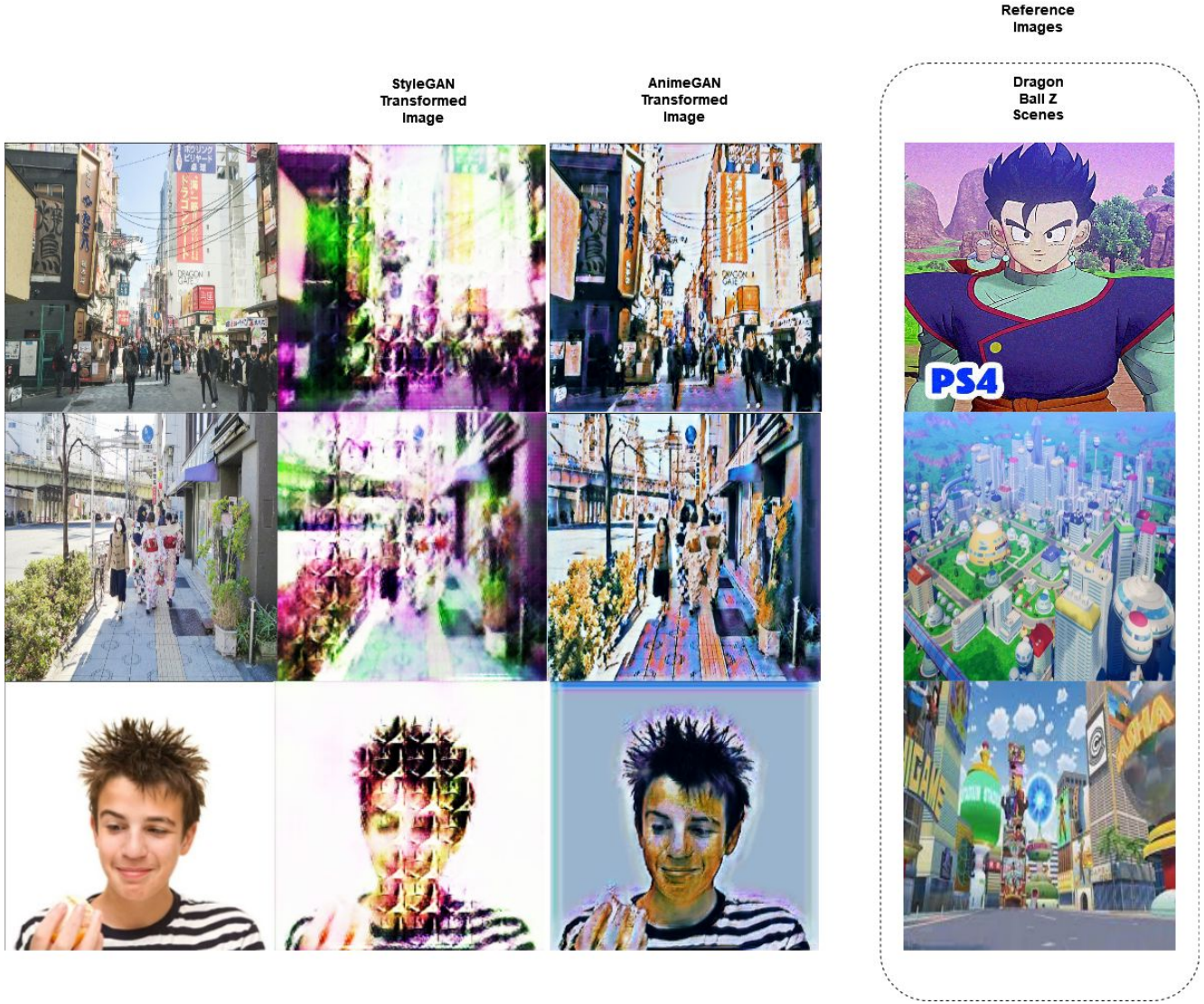
Comparison between styleGAN and animeGAN:



Selfie/ Human Face



Landscape


StyleGAN Transformed Image
AnimeGAN Transformed Image
Reference Images
Dragon Ball Z Scenes
PS4

Challenges:

- Computational Resource
- GAN is hard to train
- Difficulties in quantitative performance measure.

Future Work:

- Faster animation style transfer to achieve real time applications on mobile device
- Extend the idea into video processing pipeline.

Thanks