Criminal Face Generator
嫌疑犯生成圖像產生器

Team：33 Team Member：楊舒晴、張浚騰 Advisor：林嘉文

Motivation

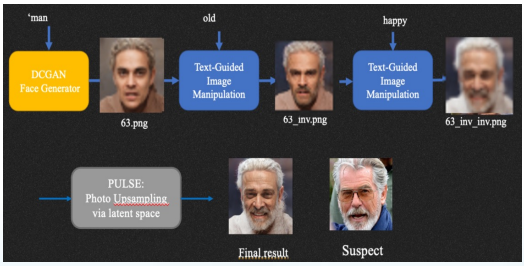
How to reconstruct the face of the suspect is a difficult but meaningful task. Just imaged you are the only witness to a crime scene where there have no camera. There is a limit time to reveal the portrait of the suspect. If we could devise such generator which can be very useful to track down the criminal.

Dataset

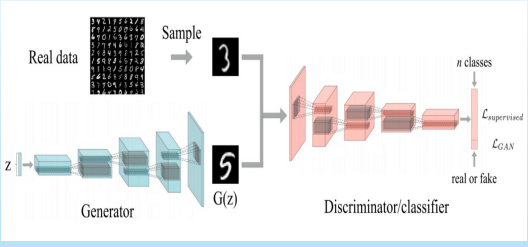
Flickr-Faces-HQ Dataset (FFHQ)

The dataset consists of 52,000 high-quality PNG images at 512x512 resolution and contains considerable variation in terms of age, ethnicity and image background. It also has good coverage of accessories such as eyeglasses, sunglasses, hats, etc.

Methodology



First DCGAN

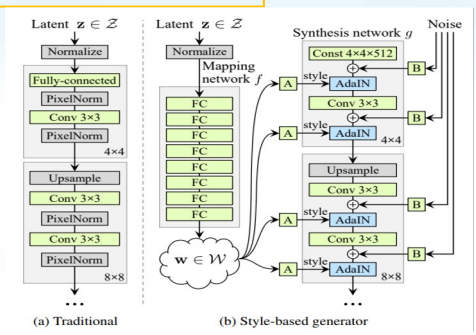


We want to use DCGAN to generate some model for StyleGAN step and further usage. DCGAN focus on improving GAN in network architecture, replacing the generator and discriminator with CNN [1]. Figure 1 is the construction detail and capabilities of DCGAN.

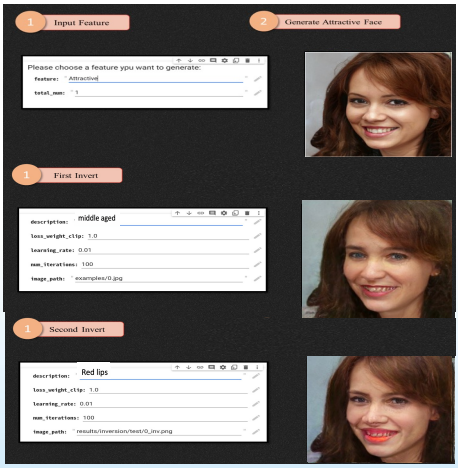
Second Pulse

PULSE is a self-supervised photo upsampling algorithm. Instead of starting with the LR image and slowly adding detail, PULSE traverses the high-resolution natural image manifold, searching for images that downscale to the original LR image.

Final step StyleGAN



Demo Result



The suspect

Conclusions

We devised a novel GAN which can generate the desired result. The diverse dataset and PULSE method can help us to get more stable and better performance!