Assignment #8

CelebA fake face generation

Improved GAN

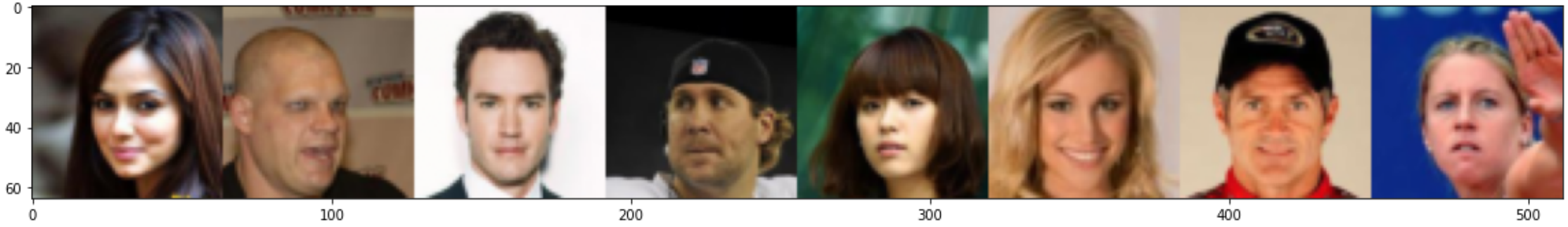
Due on Jan 19, 23:59

Overview

- GAN have two characters contains generator and discriminator.
  - Generator generate images from latent code, Discriminator classify images into categories.
  - The primary goal of Generator is fool the discriminator, make loss of discriminator maximum.
  - In contrast, the main goal of discriminator is correctly classify whether a image(or data) is real(from original dataset) or fake(made by generator).

Dataset

- **Dataset: CelebA Face Dataset**
- CelebFaces Attributes Dataset (CelebA) is a large-scale face attributes dataset with more than 200K celebrity images, each with 40 attribute annotations.
- The images in this dataset cover large pose variations and background clutter. CelebA has large diversities, large quantities, and rich annotations, including
  - 10,177 number of identities,
  - 202,599 number of face images, and
  - 5 landmark locations, 40 binary attributes annotations per image.
  - Original Size: 218x178



Your task

- Skeleton Code: https://colab.research.google.com/drive/1mOjpQEfI2ivYtHndNytknfKnclFJ-olE#scrollTo=aGCZQxZSfONu
- Implement a basic DCGAN
- Improve performance of DCGAN
  - Use SELU as activation function
  - Adopt training process of Relativistic GAN
- More advanced Modifications

- **Read notebook to get more details**

Things you cannot do

- You cannot submit results predicted by others.
- You cannot copy trained models from others.
- You cannot copy code from others, internet, GitHub …
- You cannot collect more images to train your model in order to boost performance.

Any violation will result in 0 score!

Grading

- Basic topics: 40 points
  - DCGAN implementation
- Advanced topics: 40 points
  - SELU and Relativistic GAN
  - Or any advanced topics you choose
- Report: 20 points
  - Your findings and their reason.
  - Don’t just show the comparison of experiments (less meaningful for GAN)

Read notebook to get more details