



Generator Net

Uzair Khan C1-19

Basil Riaz C1-14

Waqar Amjad C1-13

Ali Hussan C2-06



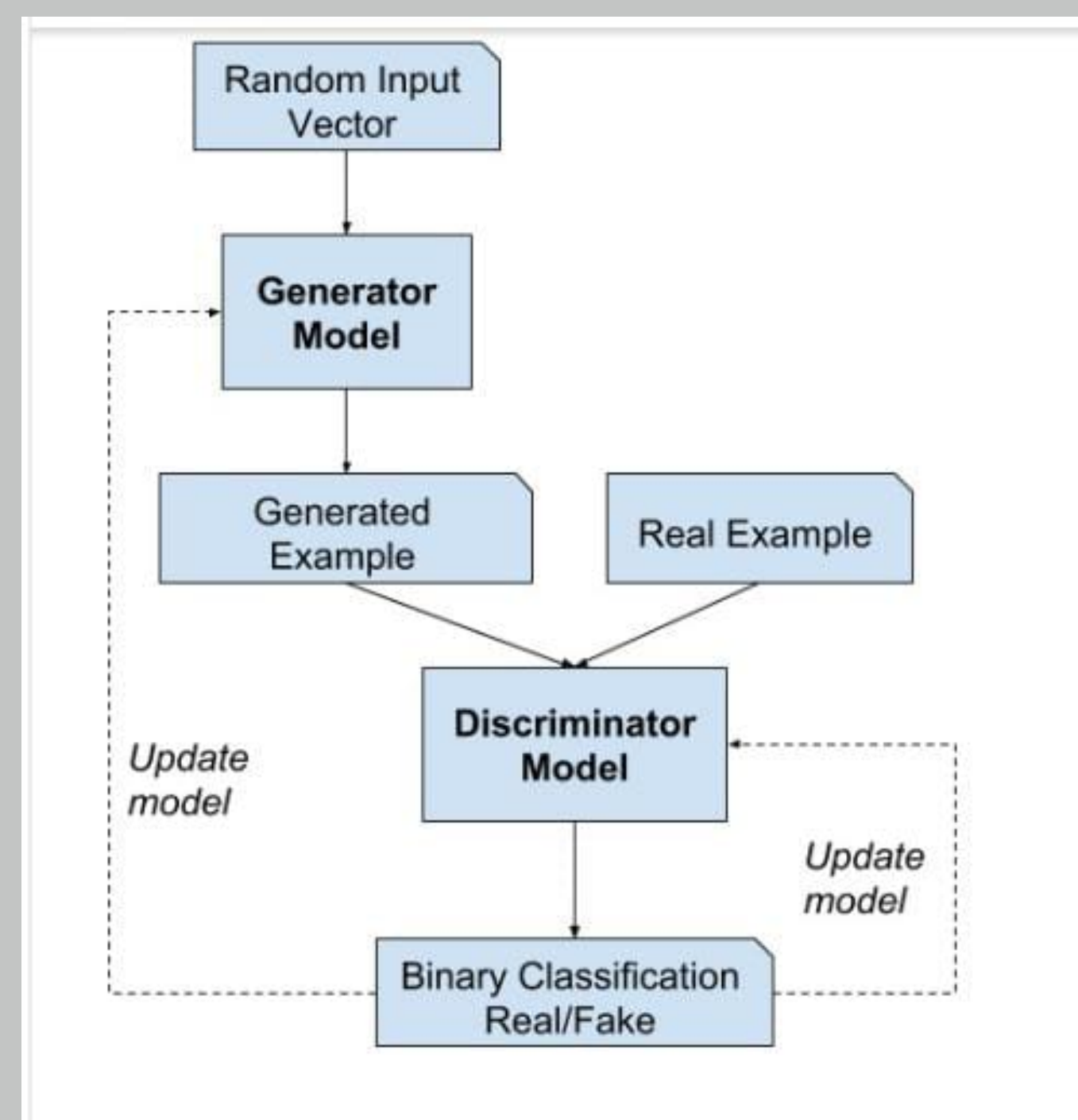
Institute of Electrical, Electronics and Computer Engineering - NAVTTC - PU

About GANs

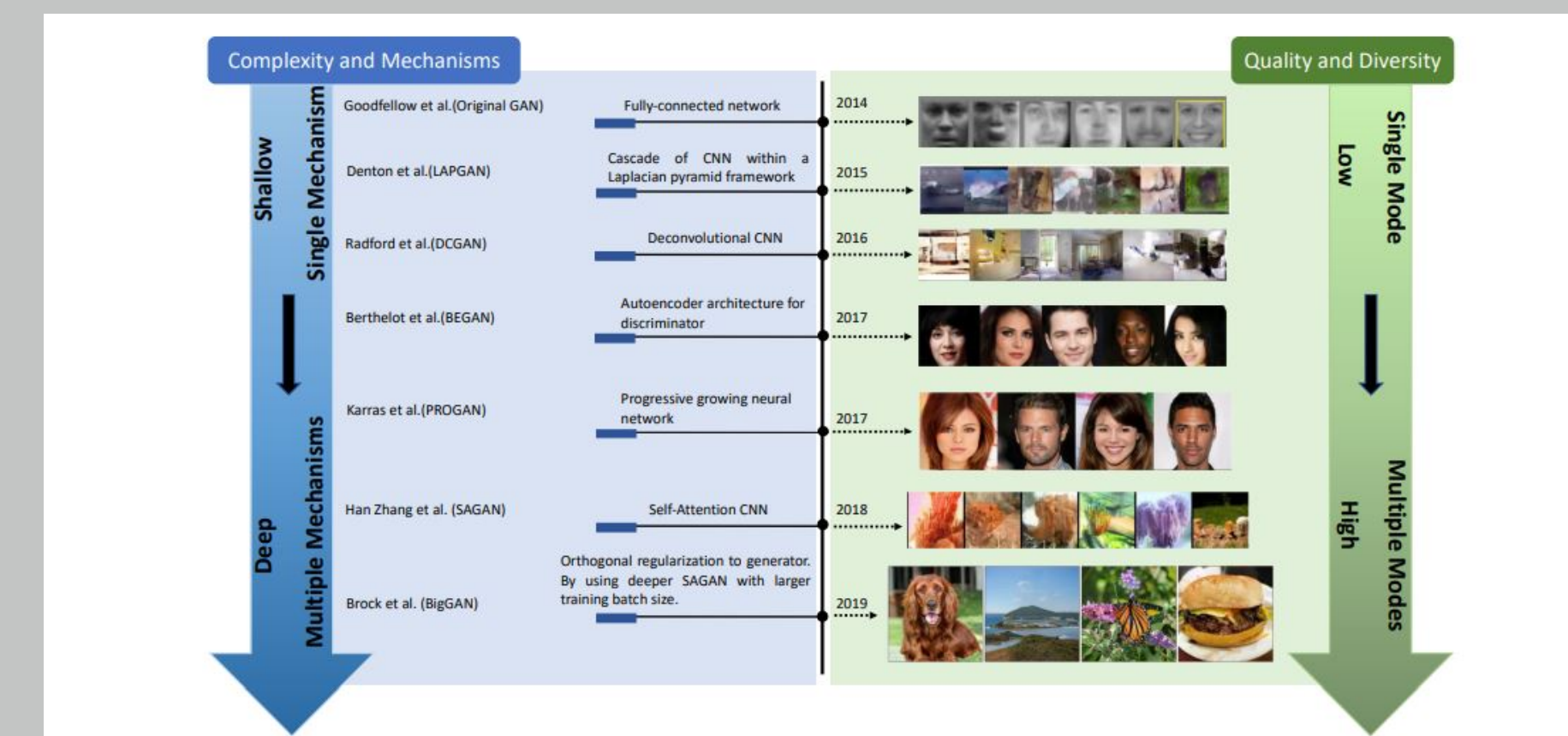
- ▶ GANs, or Generative Adversarial Networks are nothing but those models that use an unsupervised learning approach. In a generative model there are samples in the data which are input variables X but it lacks the output variable Y and we use the only input variables to train the generative model and it recognises patterns from the input variables to generate an output that is unknown and is based on the training data only.
- ▶ Deep neural networks are used mainly for supervised learning: classification or regression. Generative Adversarial Networks or GANs, however, use neural networks for a very different purpose i.e Generative modeling.
- ▶ To get a sense of the power of generative models, just visit thispersondoesnotexist.com. Every time you reload the page, a new image of a person's face is generated on the fly. The results are pretty fascinating.

Generative Adversarial Network

- ▶ Generative modeling is an unsupervised learning task in machine learning that involves automatically discovering and learning the regularities or patterns in input data in such a way that the model can be used to generate or output new examples that plausibly could have been drawn from the original data set.

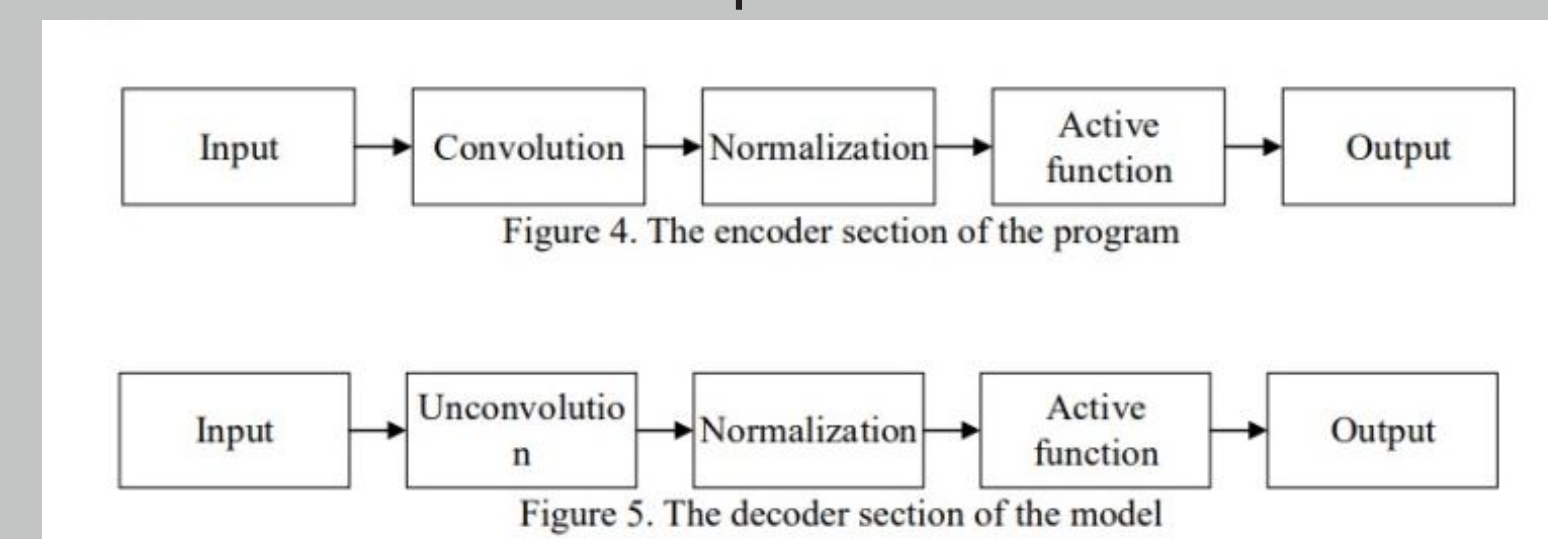


History of GANs

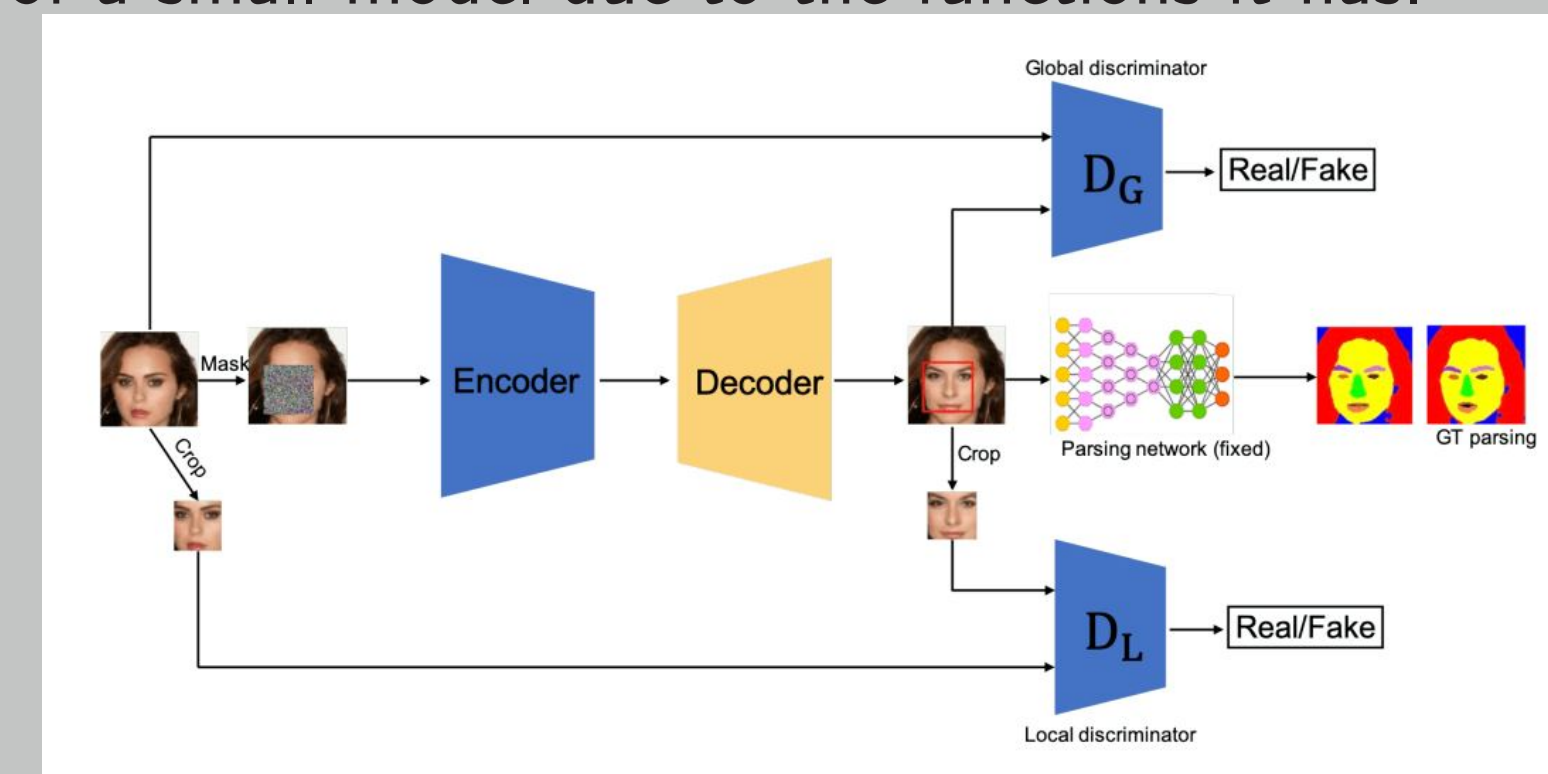


Generator/Discriminator Models

- ▶ Instead of using typically connected layers of encoder-decoder, this Generative model uses convolution block and convolution transpose block.



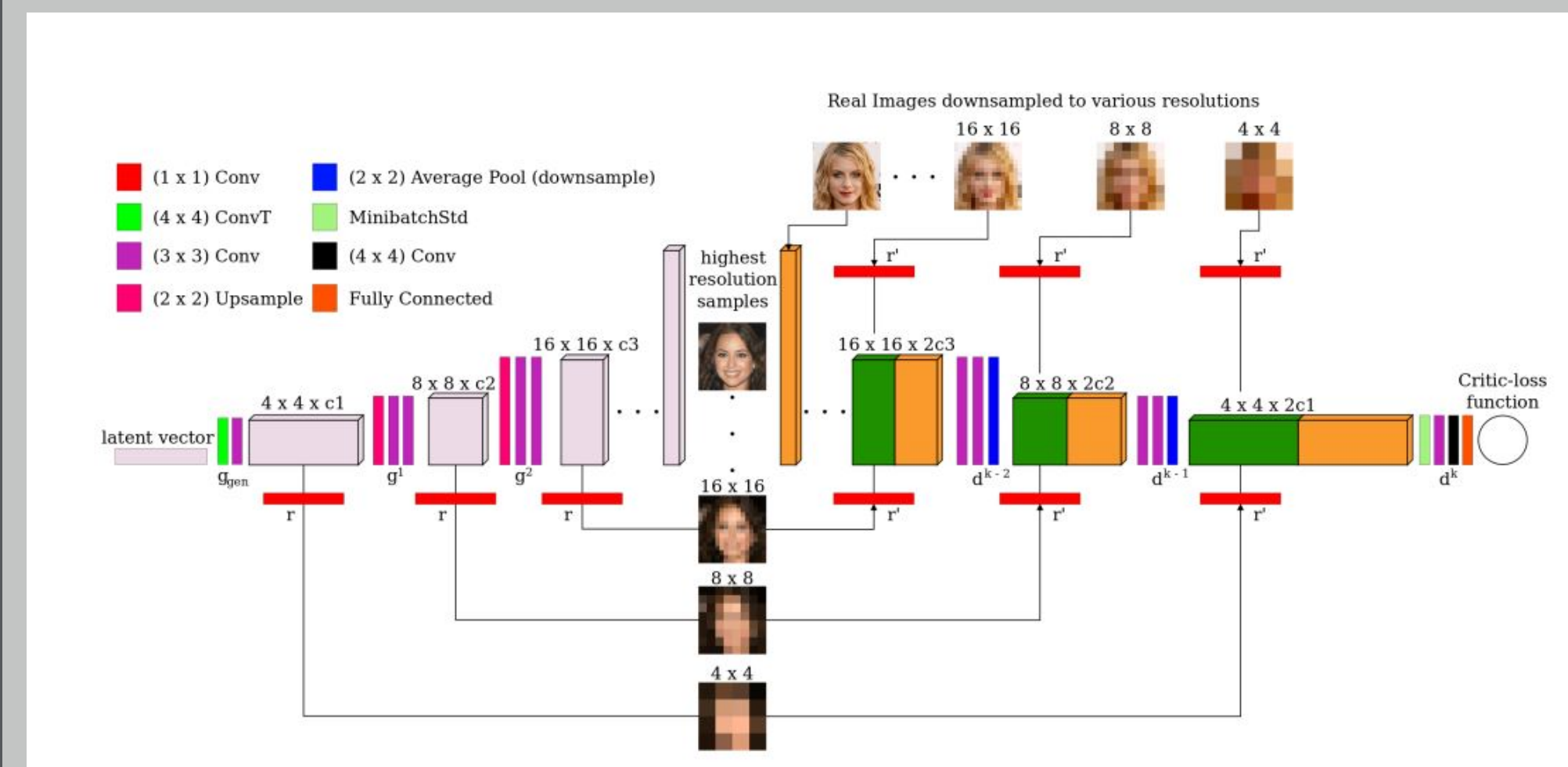
- ▶ Compared to the generator model the discriminator model is kind of a small model due to the functions it has.



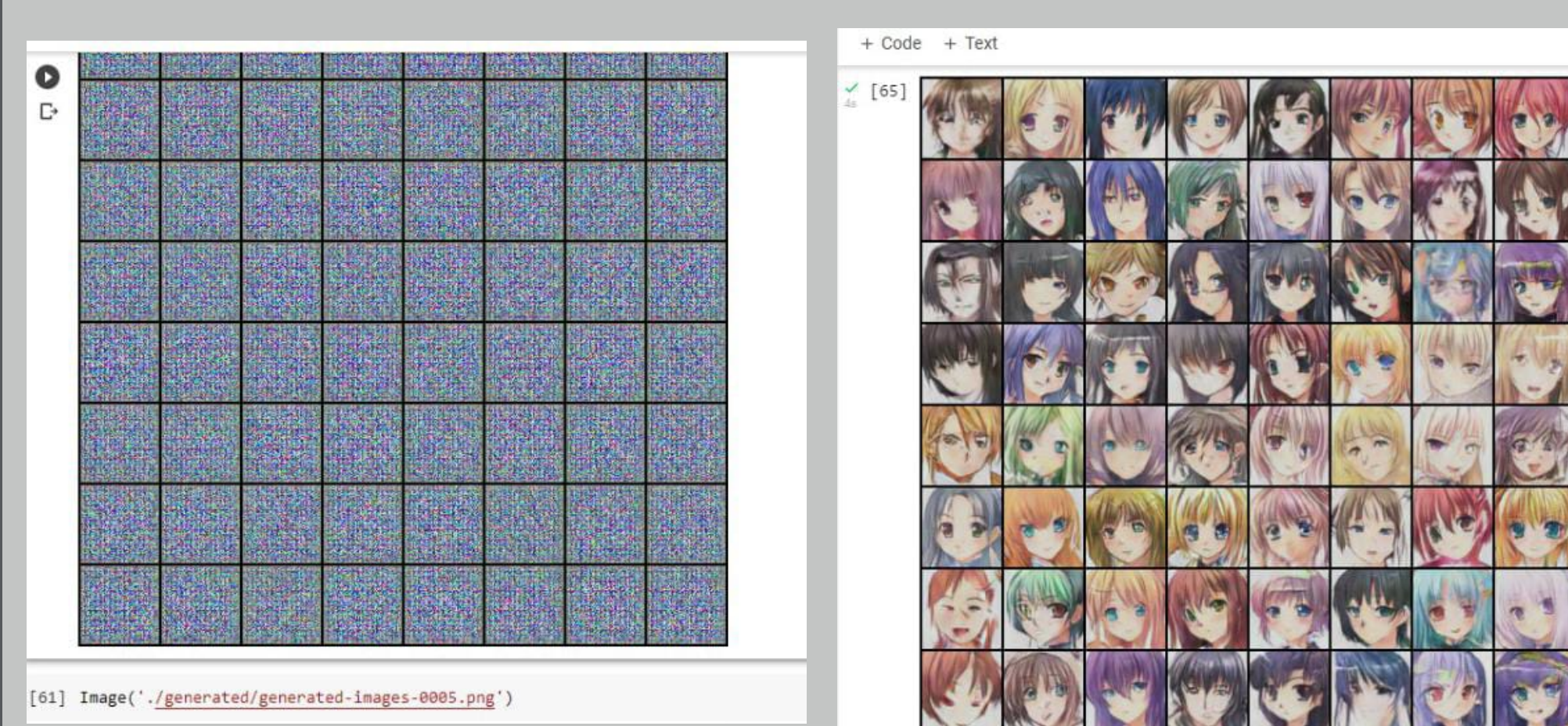
Training Process

- ▶ A Generative Adversarial Network which was trained on 6,991 human face and 7100 Anime facial images which were subjected to training after cropping and removing noise.

Neural Style Transfer

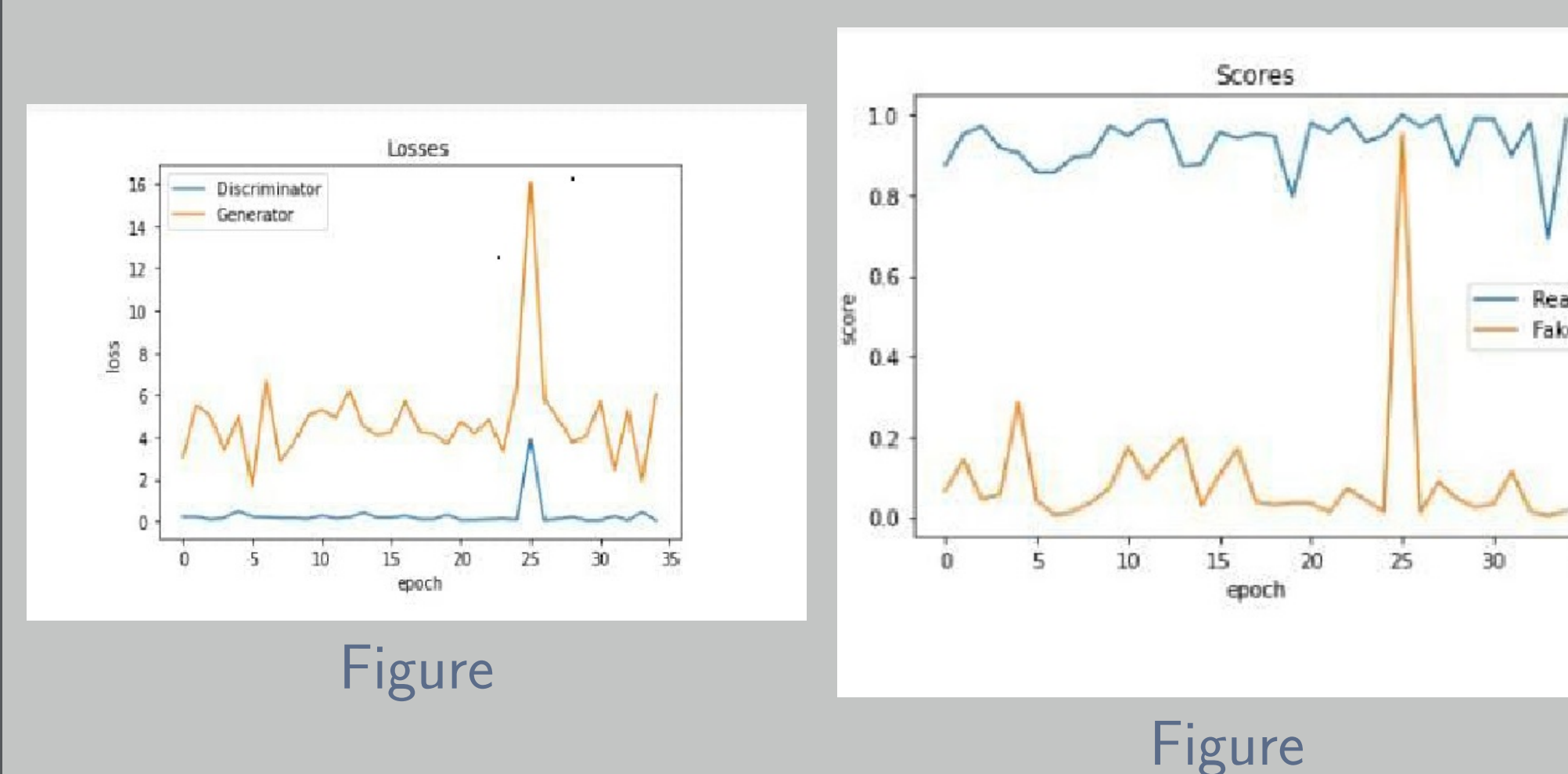


Visuals



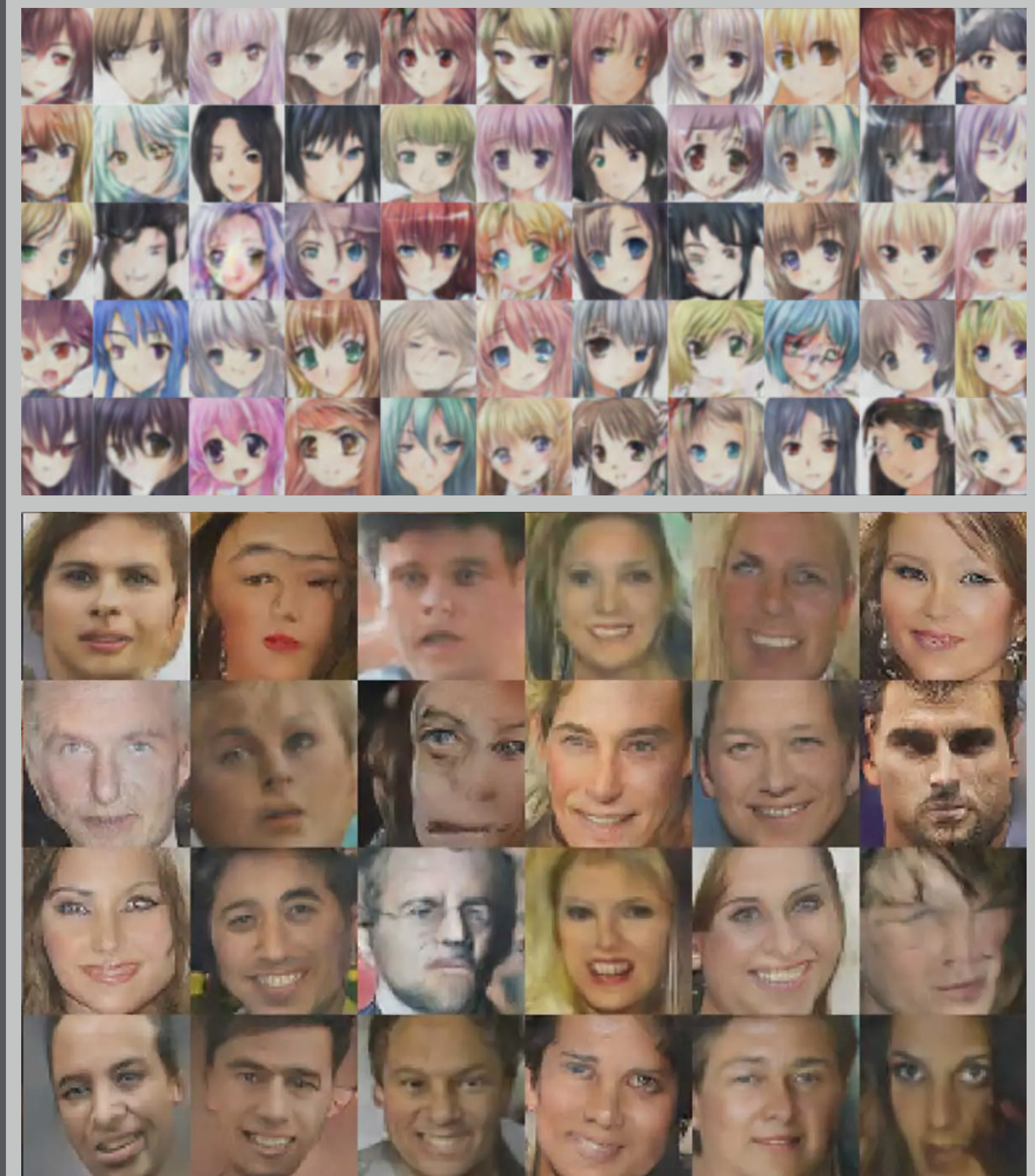
- ▶ Conversion of Raw data to visual Character faces (left to right).

Line Graph Representation



- ▶ Above is the representation of the relationship between Generator and Discriminator Models.
- ▶ Generator models are responsible for the Generation of new pattern. This generated pattern or output of Generator serves as an input for the Discriminator model which checks whether the pattern is real or fake.

GANs Finals Outcomes



Future Goals

In this project we have kept our focus on creating 2D Anime Character and Human faces. According to the stats the Anime and NFT industry is worth 200B+ dollars. We are looking forward to the creation of a strong Generative Adversarial Network to generate NFTs and images with even stronger visuals.

