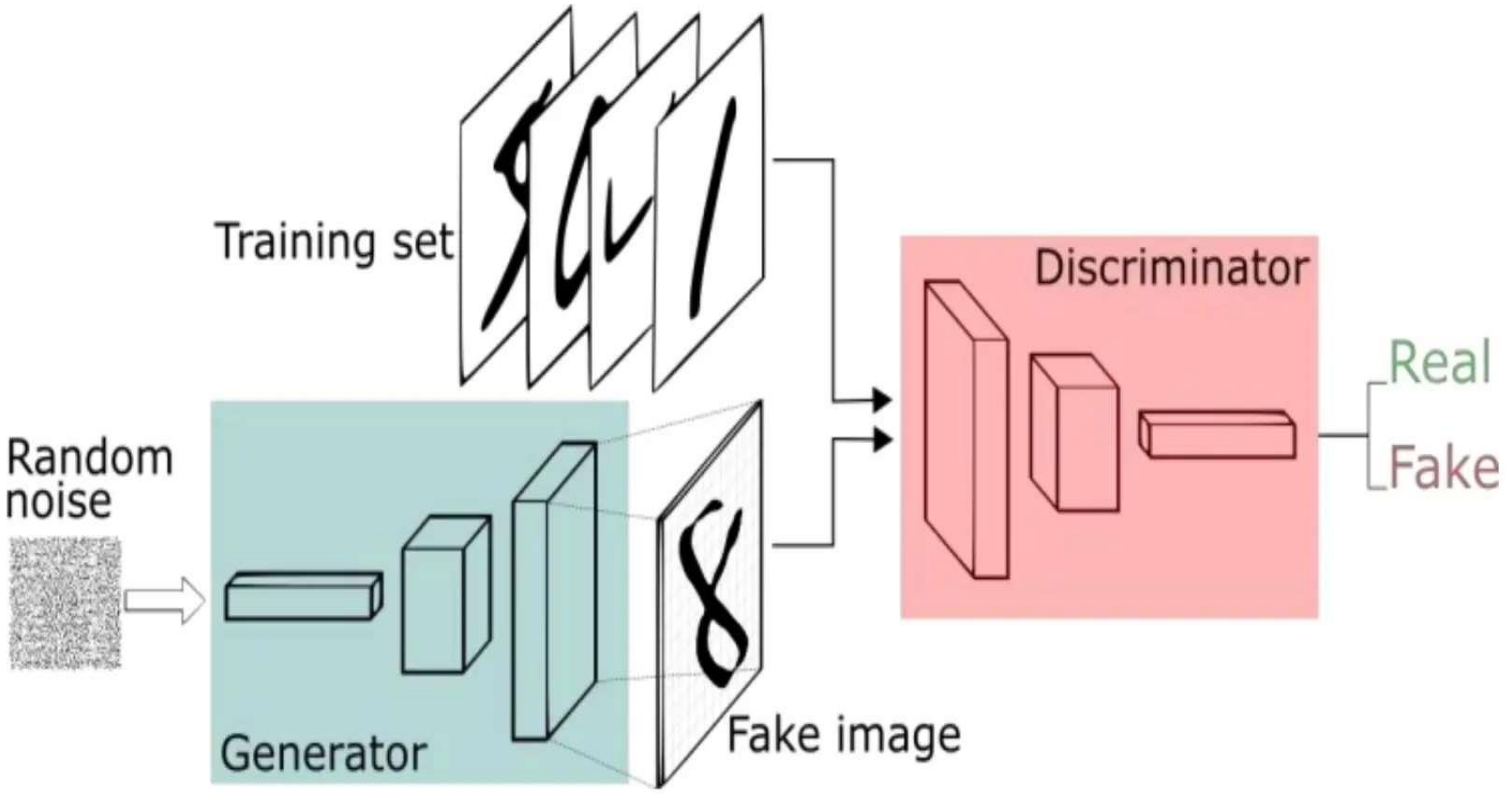
STEPS OF A GAN

- The **Generator** considers random values to generate an image – input.
- The generated image is sent to the **Discriminator** along with a stream of images taken from the real dataset (to use as reference).
- The Discriminator returns the probabilities of the generated image being real. The result is a number between 0 (fake) and 1 (authentic).

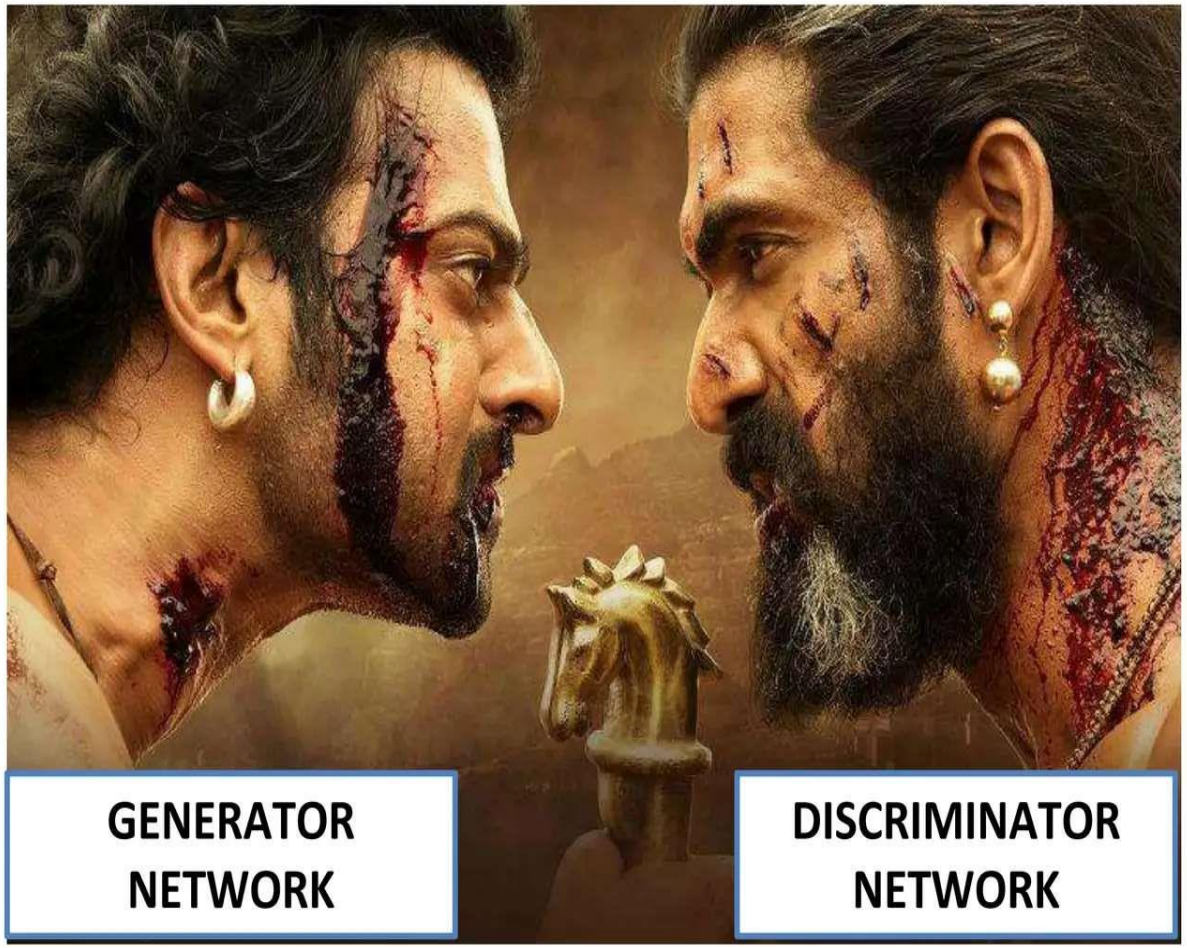
STEPS OF A GAN



HOW GANs WORK

- The discriminator network is a standard convolutional network (binary classifier that labels images as real or false).
- The generator is the opposite: while the standard convolutional classifier takes the image and downsamples it to return a probability, the generator takes a random noise vector and upsamples it to generate an image that will be analyzed by the discriminator.
- Both the discriminator and the generator are trying to optimize a different and opposite fitness function (loss function).
- During training, the generator and the discriminator will change their behavior.
- They will be one against the other because of the losses.
- This is why we say that the two networks “compete” with each other.

HOW GANs WORK



TRAINING DISCRIMINATOR

- The discriminator network is trained to distinguish between real and generated data, playing an adversarial role with the generator.
- It uses a loss function to measure the difference between real and fake data, guiding the training of the entire GAN system.