

GAN EXPLANATION

Generator:

A generator network maps vectors of shape (latent dim,) to images of shape (32, 32, 3)

We use tanh as the last activation in the generator, instead of sigmoid, which is more commonly found in other types of models. We sample points from the latent space using a normal distribution (Gaussian distribution), not a uniform distribution

Sparse gradients can hinder GAN training. In deep learning, sparsity is often a desirable property, but not in GANs. Two things can induce gradient sparsity: max pooling operations and ReLU activations. Instead of max pooling, we recommend using strided convolutions for downsampling, and we recommend using a LeakyReLU layer instead of a ReLU activation

Discriminator:

Develop a discriminator model that takes as input a candidate image (real or synthetic) and classifies it into one of two classes: “generated image” or “real image that comes from the training set.”

Adversarial Network:

Model turns latent-space points into a classification decision “fake” or “real”—and it’s meant to be trained with labels that are always “these are real images.” So, training gan will update the weights of generator in a way that makes discriminator more likely to predict “real” when looking at fake images

Training:

Draw random points in the latent space (random noise).

2 Generate images with generator using this random noise.

3 Mix the generated images with real ones. 4 Train discriminator using these mixed images, with corresponding targets: either “real” (for the real images) or “fake” (for the generated images).

5 Draw new random points in the latent space.

6 Train gan using these random vectors, with targets that all say “these are real images.” This updates the weights of the generator (only, because the discriminator is frozen inside gan) to move them toward getting the discriminator to predict “these are real images” for generated images: this trains the generator to fool the discriminator

Deployment To Cloud:

1. To create web app using Gradio or Streamlit.
2. Host it on AWS or Azure .