GAN Training Lab

Aim

Train a GAN to generate CIFAR-10-style 32x32 images.

Theory

GANs train Generator vs Discriminator in a minimax game. Generator maps noise to images; Discriminator distinguishes real/fake.

Algorithm

1. Load CIFAR-10.

2. Build G (upsampling) and D (conv-downsampling).

3. Use BCE loss.

4. Train D on real & fake; train G to fool D.

5. Save sample grids.

Pseudocode

z = randn()

fake = G(z)

lossD = BCE(D(real),1)+BCE(D(fake),0)

lossG = BCE(D(fake),1)

Results

Progressive improvements in generated images.

Conclusion

GANs are powerful but unstable; training requires careful tuning.