

Session - 12

# GANS

April 05, 2024

## GAN output in paper



## Your GAN output



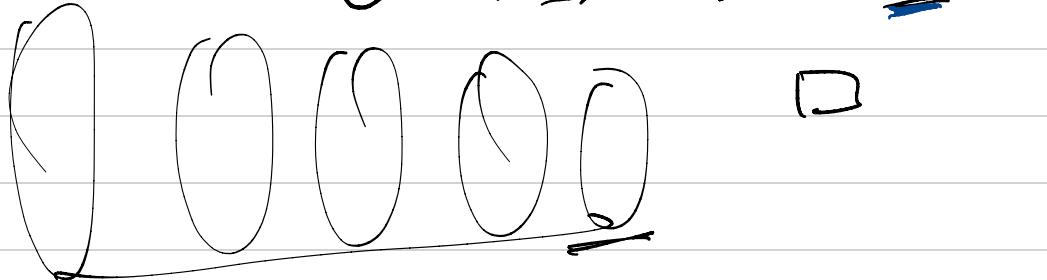
## When you're training a GAN



## AGENDA

- 1 GAN
- 2 Pytorch & Lightning
- 3 Hydra & Ashleve  
↳ Pyrootutis





Ob  $\rightarrow$

3 classes

$$2 \rightarrow \underline{\underline{16}}$$



$13 \times 17 \times 512$



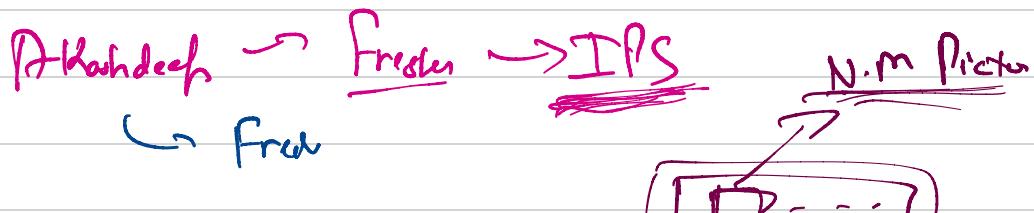
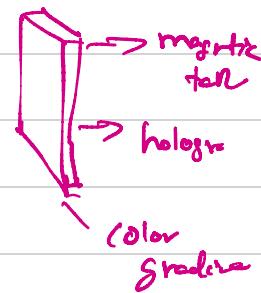
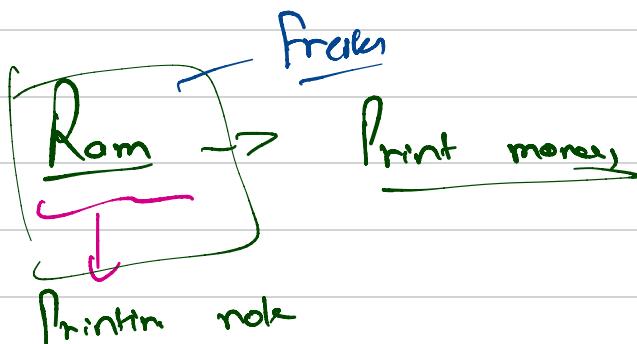
$(1 \times 1 \times 512) \times 16$

# CIAA

Generative  
→  
Gen synth

Adversarial  
→  
Opponent

Network 2  
→  
C. Univeral



RAM → Is + gen of F=12e currents) → marks

Atash → looks at currents → N.M → Folc

O - Folke / 1 - Real → O

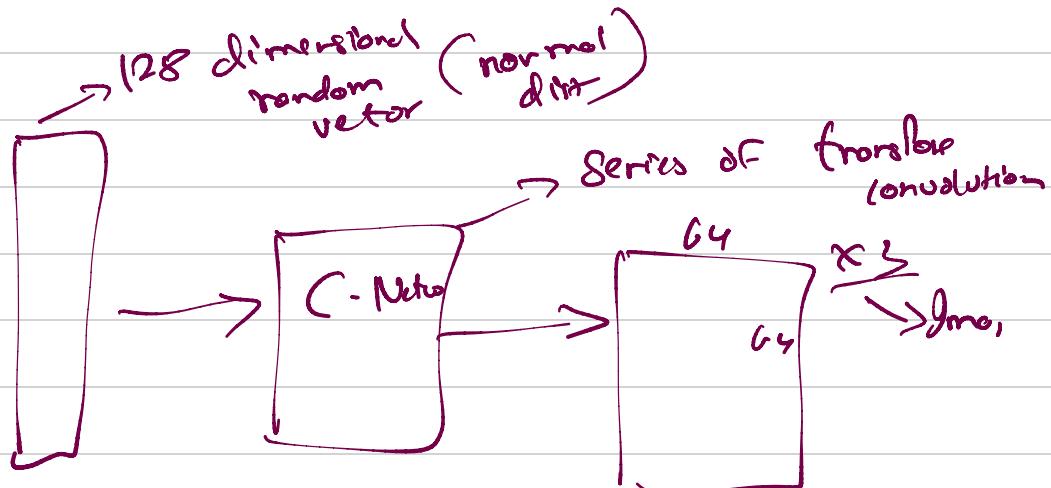
Ram  $\rightarrow$  2<sup>nd</sup> gen  $\rightarrow$  lighter shade of green

Akbar  $\rightarrow$  2<sup>nd</sup> gen  $\rightarrow$  diff

Ram  $\rightarrow$  nth gen  $\rightarrow$  Create  $\rightarrow$  Perfect cat

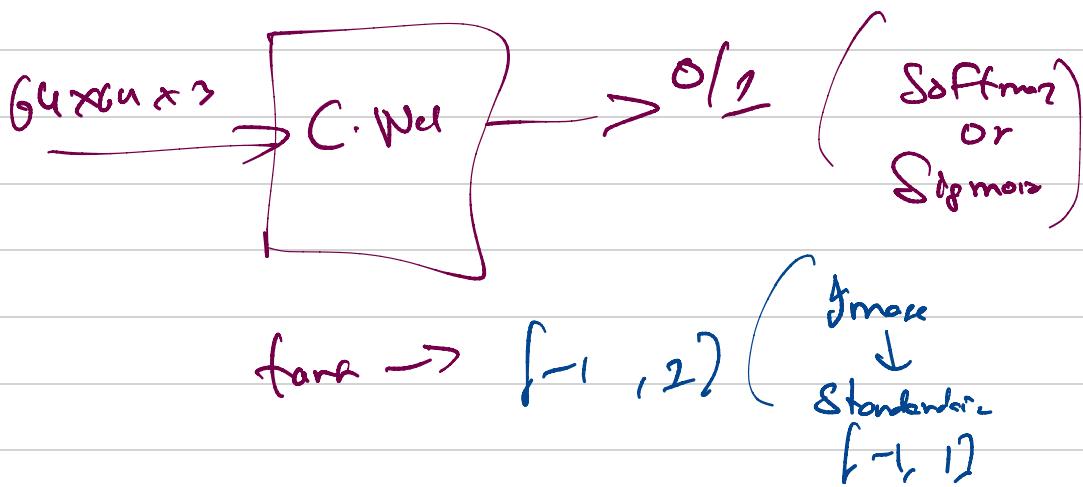
Akbar-dash  $\rightarrow$   $\approx 1$

## → Generative Part



$$\text{Fake} - \text{Image} = G(z)$$

## Discriminator part



0 - False / 1 - Real

Generator (Rom)

max  $D(\text{Fake - } f_{\text{image}})$

discriminator mode

Adversary

$D(f_{\text{image}}) \rightarrow [0, 1]$

Discriminator. (Attack)

max  $D(\text{real image})$

+

min  $D(\text{Fake - image})$

max  $D(n)$   $\underline{\underline{G(z)}}$

+

min  $D(G(z))$

min  $D(G(z)) = \max(1 - D(G(z)))$

max  $D(n) + (1 - D(G(z)))$

Real image

Random vector

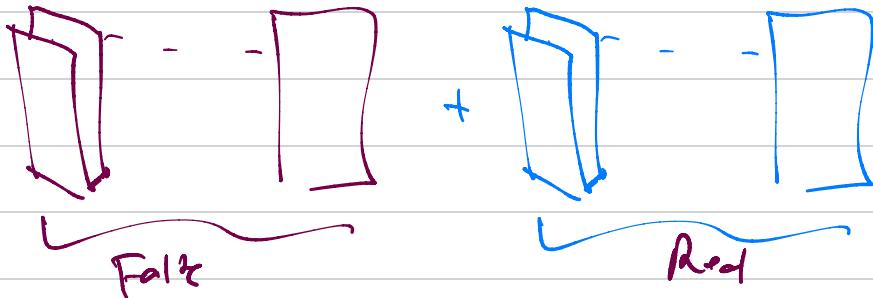
$$\frac{1}{m} \text{max} \left( \log(D(m)) + \log(-D(h(x_2))) \right)$$

Averaging

$$D(m) \rightarrow P$$

$$\log(P) + \log(1-P)$$

binary cross entropy



20, 64x64x3 Concat 20, 64x64x3  
2

40, 64, 64, 3

$I_{\text{Image}_1} \sim B \times C \times H \times W$

$I_{\text{Image}_2} = B \times H \times W \times C$