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Constrained Domains

$L_0 \rightarrow \text{manhattan } (? L_1)$

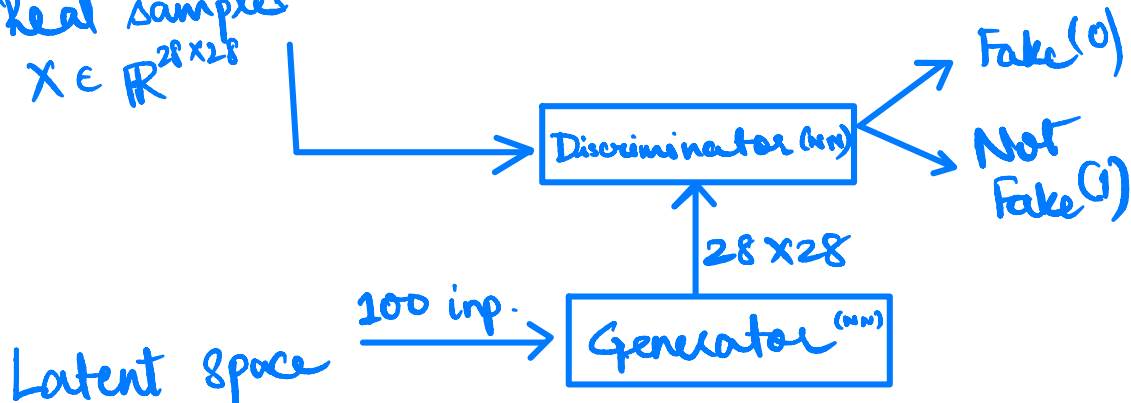
$L_2 \rightarrow \text{Euclidean}$

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GAN

Generate new data based on some given distribution (match the dist.)

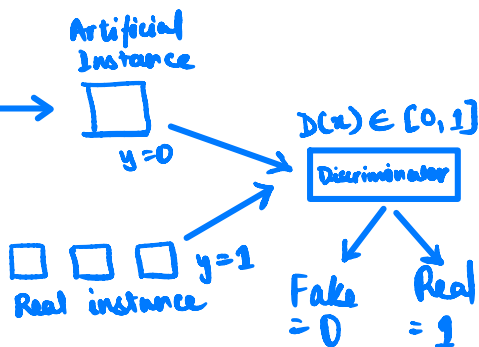
Real samples
 $X \in \mathbb{R}^{28 \times 28}$



Discriminator Training

Noise vector \rightarrow Generator \rightarrow

(A)

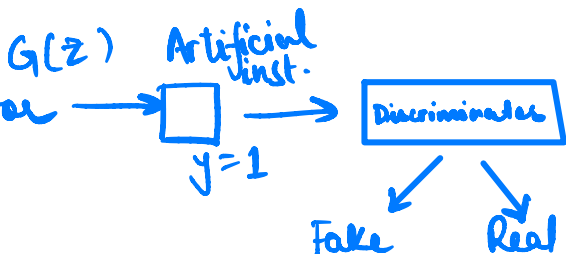


Generator Training

Noise vector \rightarrow Generator \rightarrow

z

(B)



$$\mathcal{L}(y, \hat{y}) = [y \log \hat{y} + (1-y) \log(1-\hat{y})]$$

$$y=1, P_{data}(x)$$

$$\hat{y} = D(x)$$

$$\log(D(x))$$

$$y=0$$

$$\hat{y} = D(G(z))$$

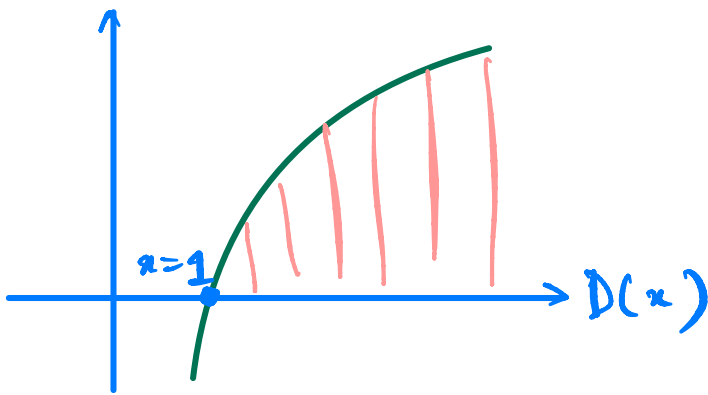
$$(A1)$$

$$\log(1 - D(G(z)))$$

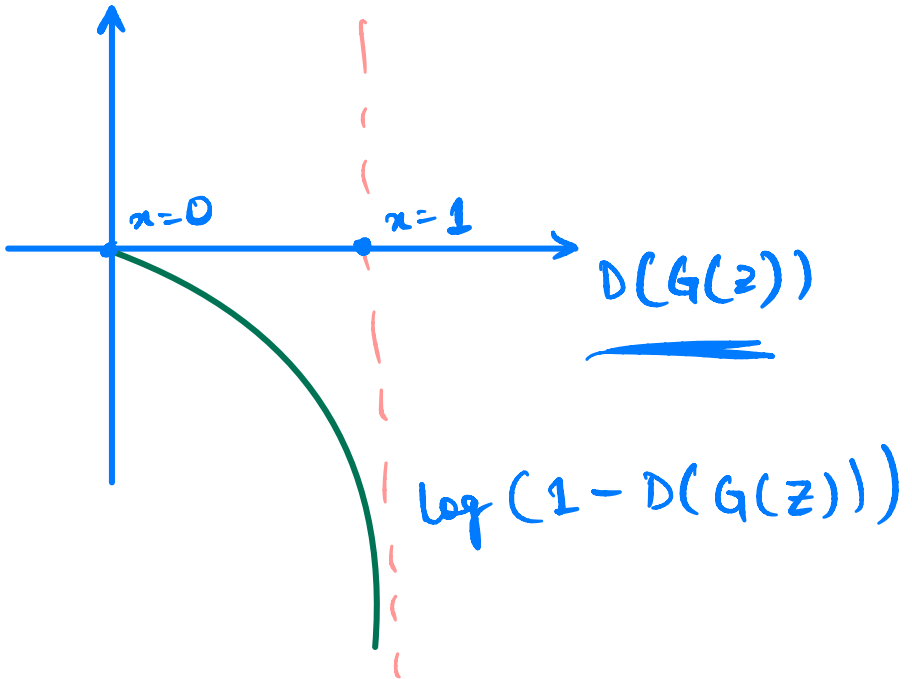
$$(A2)$$

(A)

A1



A2



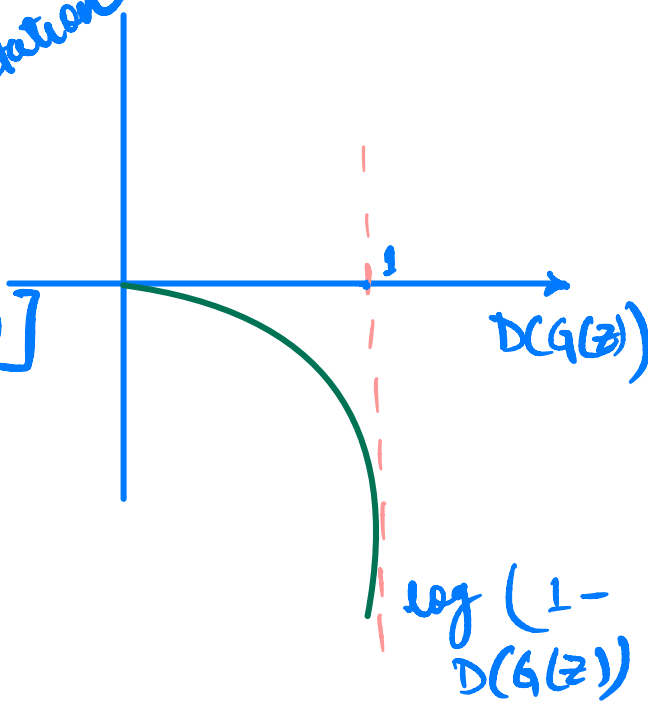
$$\max \{ \log D(x) + \log (1 - D(G(z))) \}$$

Generator Objective

$$\hat{y} = D(G(z)) = 1$$

$$\min [\log D(x) + \log (1 - D(G(z)))]$$

(b)



Combining:

$$\min_G \max_D \left\{ \log(D(x)) + \log(1 - D(G(z))) \right\}$$