
GAN 실습

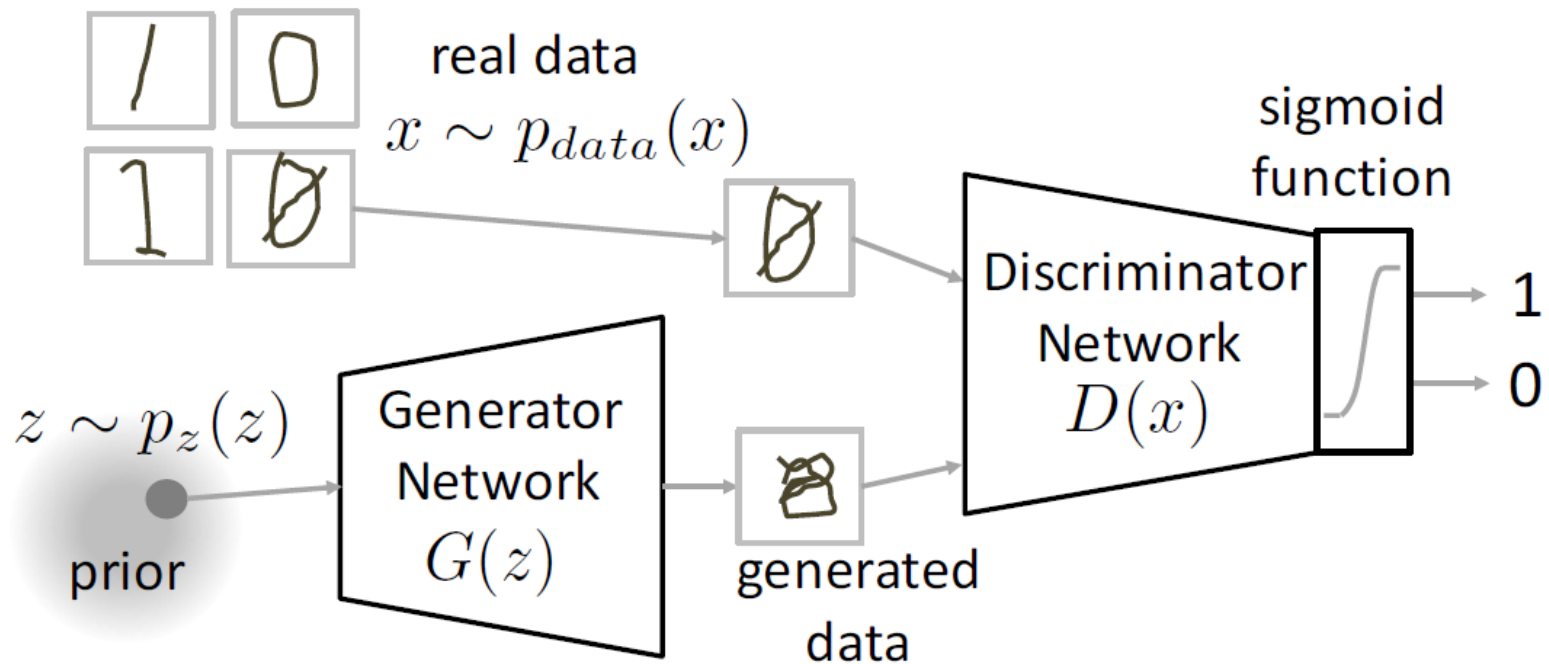
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1. GAN 복습

❖ GAN(Generative Adversarial Network)

- 생성 모델(Generative Model)의 새로운 패러다임을 불러온 모델
- 경쟁적 학습을 통해 Sample데이터와 매우 유사한 Sample을 생성



1. GAN 복습

❖ GAN(Generative Adversarial Network) – Pseudo code

Algorithm 1 Minibatch stochastic gradient descent training of generative adversarial nets. The number of steps to apply to the discriminator, k , is a hyperparameter. We used $k = 1$, the least expensive option, in our experiments.

for number of training iterations **do**

for k steps **do**

- Sample minibatch of m noise samples $\{z^{(1)}, \dots, z^{(m)}\}$ from noise prior $p_g(z)$.
- Sample minibatch of m examples $\{x^{(1)}, \dots, x^{(m)}\}$ from data generating distribution $p_{\text{data}}(x)$.
- Update the discriminator by ascending its stochastic gradient:

$$\nabla_{\theta_d} \frac{1}{m} \sum_{i=1}^m \left[\log D(x^{(i)}) + \log \left(1 - D(G(z^{(i)})) \right) \right].$$

end for

- Sample minibatch of m noise samples $\{z^{(1)}, \dots, z^{(m)}\}$ from noise prior $p_g(z)$.
- Update the generator by descending its stochastic gradient:

$$\nabla_{\theta_g} \frac{1}{m} \sum_{i=1}^m \log \left(1 - D(G(z^{(i)})) \right).$$

end for

The gradient-based updates can use any standard gradient-based learning rule. We used momentum in our experiments.

- Generative Adversarial Networks(2014)

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