우리의 loss는 크게

$$l_1 loss = |y - \hat{y}|$$
$$l_2 loss = (y - \hat{y})^2$$

generator loss

Discriminator loss

• generator loss
{
generator B2A
generator A2B
cycle loss
Identity loss
}

∨ generator B2A, generator A2B

$$l_2 loss\ (1 - D(G(A)) - B2A$$
$$l_2 loss\ (1 - D(G(B)) - A2B$$

∨ cycle loss → pixel2-pixel

$$l_1 loss\ (\text{cycle A}, A) + l_1 loss\ (\text{cycle B}, B)$$
B→A　　　　　　　　　　　　　　A→B

∨ Identity loss

$$l_1 loss\ (Ai, A) + l_1\ loss\ (Bi, B)$$

진짜 A, B가 들어오면 그대로 유지 !!
X→Y 일때 X의 형태를 유지하도록 도와줌

Discriminator loss

$$\left(\begin{array}{l} \text{discriminator loss A} \\ \text{discriminator loss B} \end{array} \right.$$

. discriminator loss A, B

$$P(\text{fake } A) = 1 \qquad P(\text{real } A) =$$

$$L_{full} = L_{adv}(G_{X \to Y}, D_Y) + L_{adv}(G_{Y \to X}, D_X)$$

$$+ \lambda_{cyc} L_{cyc}(G_{X \to Y}, G_{Y \to X})$$

$$+ L_{id}(G_{X \to Y}, G_{Y \to X})$$

$L_{adv} \to$ 일반 gan loss인데 cycle이라 쌍으로
두개 생긴거임

$$L_{adv}(G_{X \to Y}, D_Y) \qquad \widehat{\parallel} \qquad \swarrow$$

$$L_{adv}(G_{X \to Y}) = D_Y(G_{X \to Y}(X) - G(X \to Y(X))$$

X 바탕 Y
P(fake)
↑

X 바탕
Y
loss 최소