

# Introduction

Using MNIST dataset to train cGAN model and facades dataset for pix2pix model.

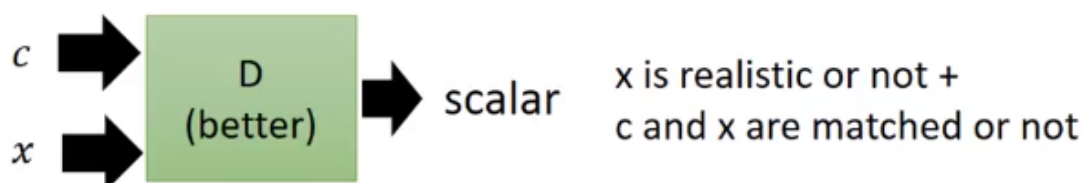
## Network structure


cGAN會額外接收一個input:c, c可以是任何資訊例如文字或圖片去幫忙discriminator判斷是否為c的real。



而pix2pix中的c是圖片，加上pix2pix2有使用skip connection及PatchGAN。

[Scott Reed, et al, ICML, 2016]

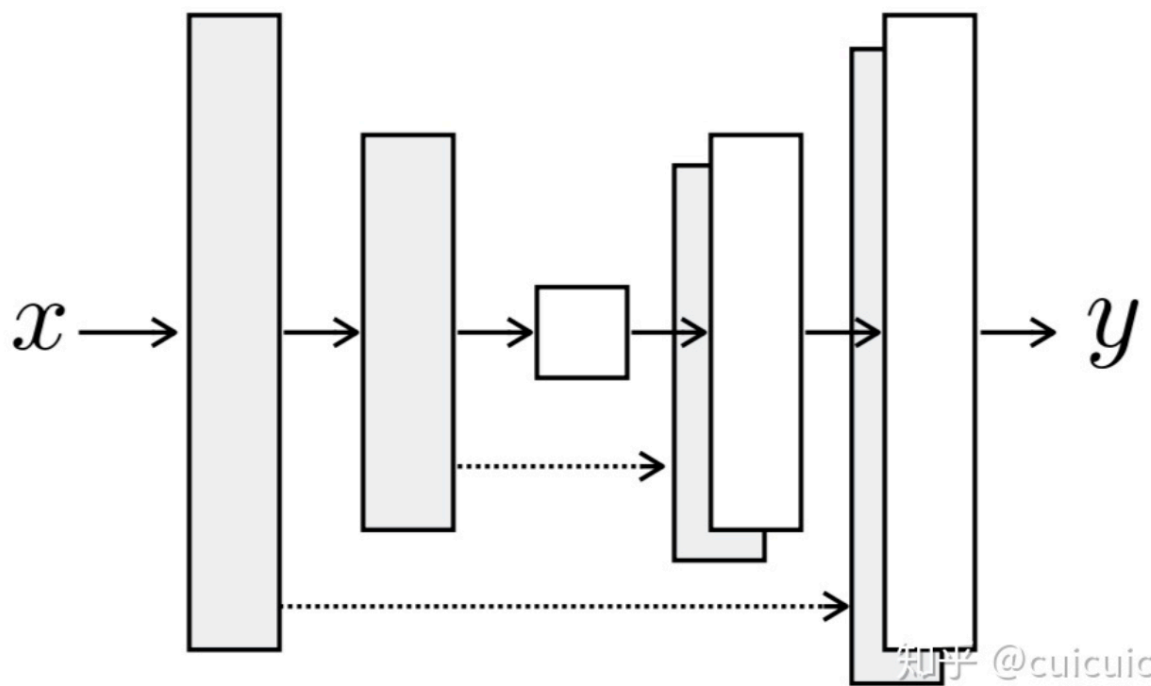
### Conditional GAN



True text-image pairs: (train ,  ) 1

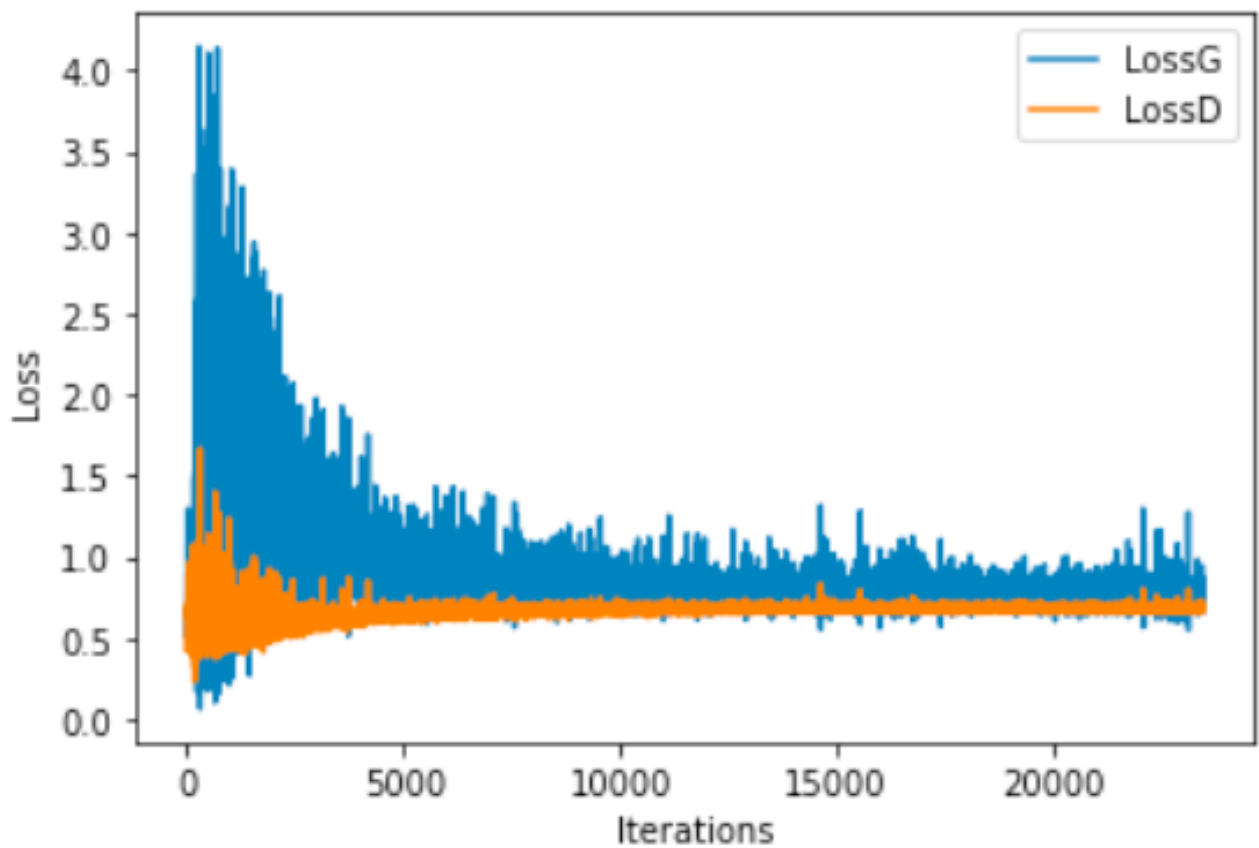
(cat ,  ) 0      (train ,  ) 0

cGAN

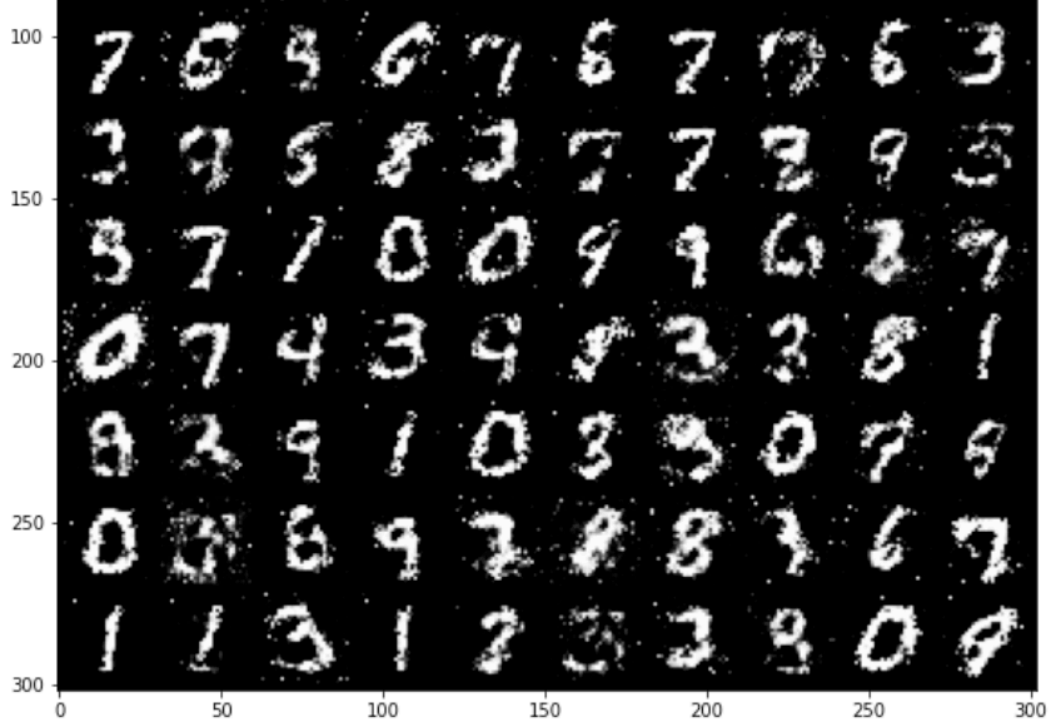


Pix2pix

## Experiment result



cGAN Loss



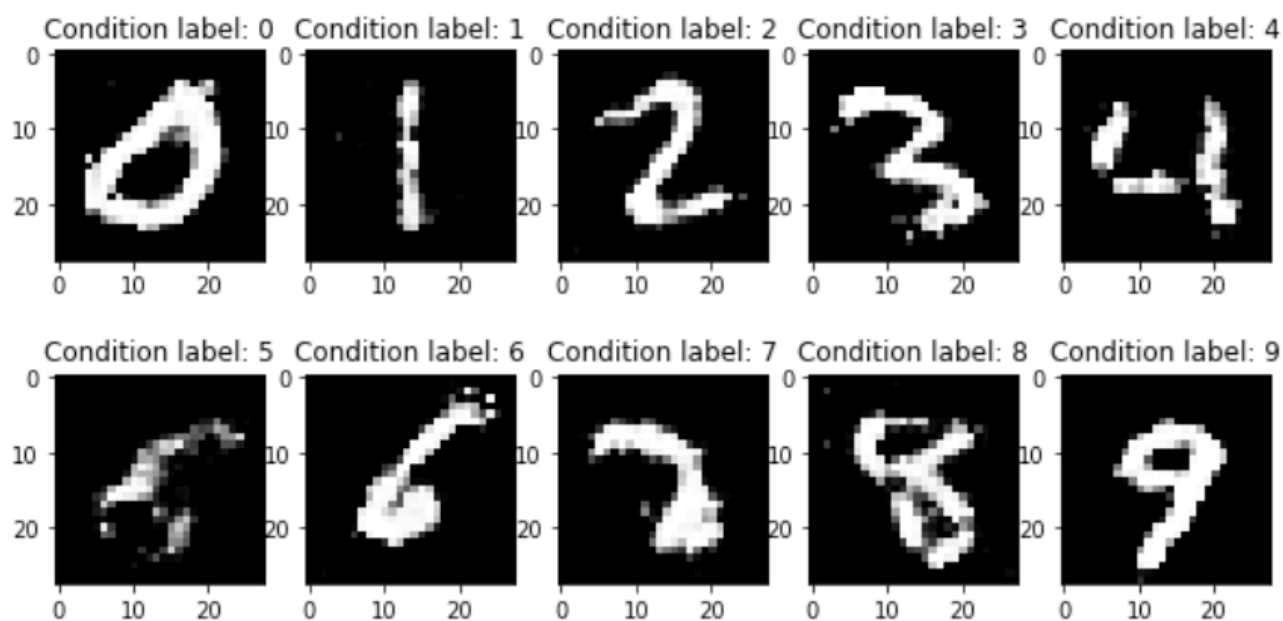
10\*10 Grid images epochs=5

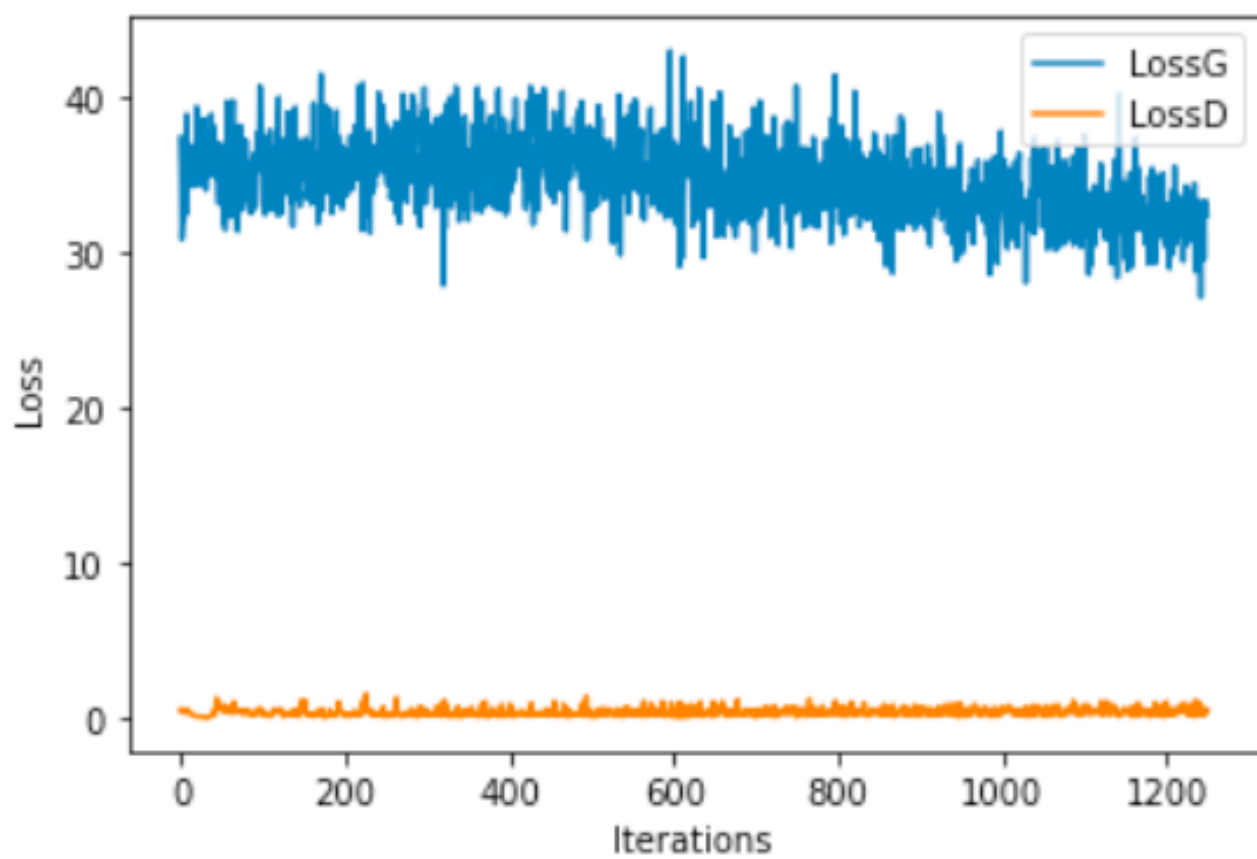


10\*10 Grid images epochs=25

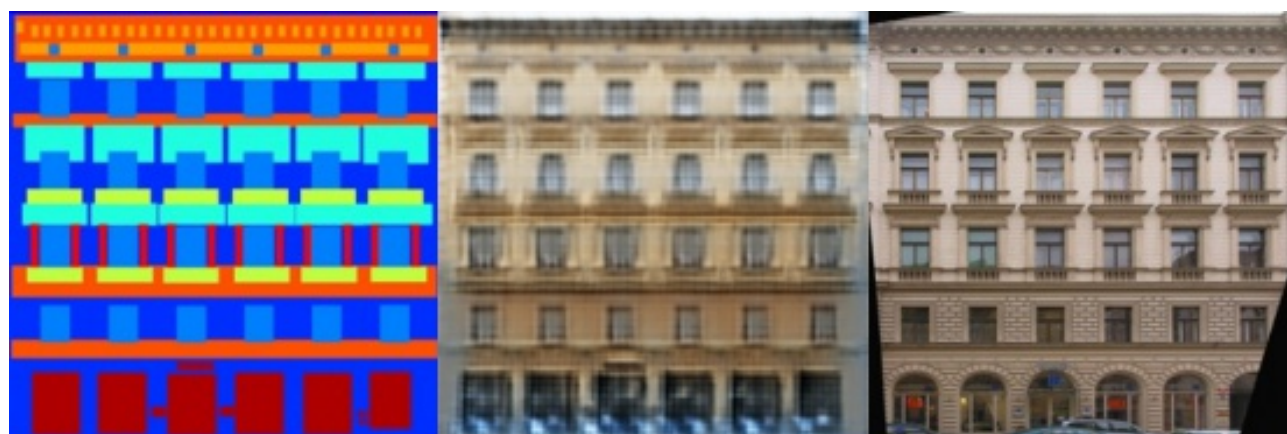


10\*10 Grid images epochs=50





Pix2pix Loss





# Experiment discussion

## Difference between cGAN and Pix2pix

- cGan take label as input also that make cGan can determine the image is real of that class
- cGan have class limit(special purposes) but pix2pix doest

## Why we use BCE Loss for training

Because discriminator only have two class(real or fake)

## Setting

I use bigger batch size() for more stable loss

LossD:0.6787 LossG:0.7252

Lr = 0.001 make LossD much smaller but LossG much bigger

LossD:0.1106 LossG:8.3422

Lr = 0.0001 make LossD become 0 but LossG very big

LossD:0.0 LossG:14.3095

beta1 = 0.3 LossD from 0 to 50

LossD:0.0 LossG:12.2952 epochs=13

LossD:50.0 LossG:0.0 epochs=14

nz = 1000 nothing new

LossD:0.6879 LossG:0.9052



# Edges2shoes

