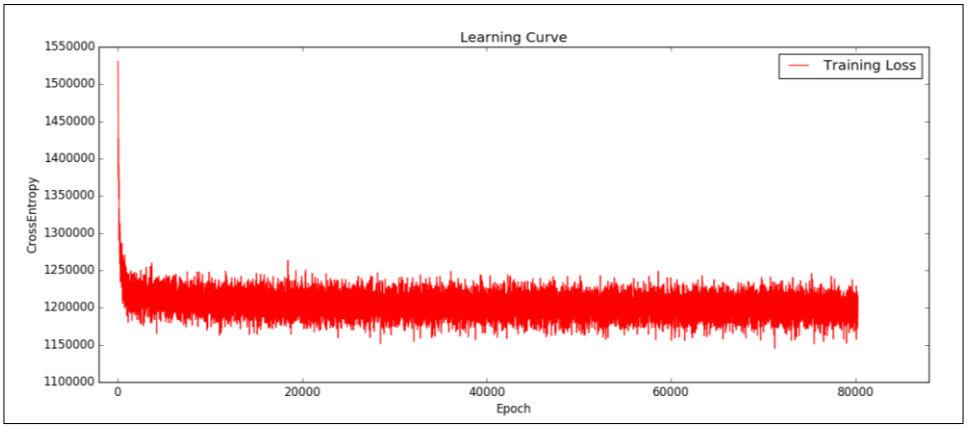
Deep Learning HW3

電子所 陳惟民 0650273

1. Variational Autoencoder

i. **Images preprocessing:** Random Horizontal Flip

- dimension of latent z: 32
- minibatch size: 80



ii. **Some examples reconstructed**

Original Images	Decoded Images
	

iii. **Generate images**

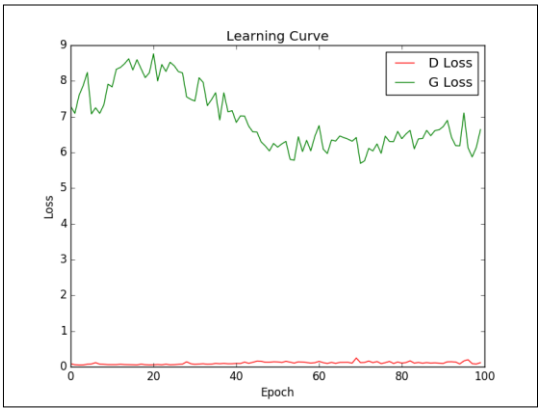
Set prior p(z) to normal distributed random numbers.

2. Generative Adversarial Network

i. Data preprocessing

- All resize to (64x64)
- Random Horizontal Flip

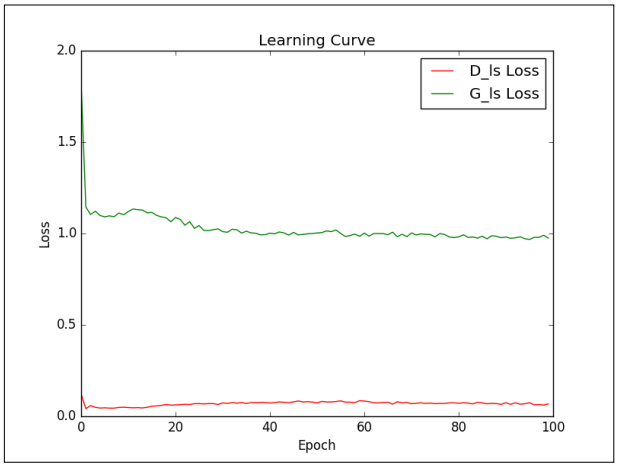
ii. DCGAN with vanilla GAN objective

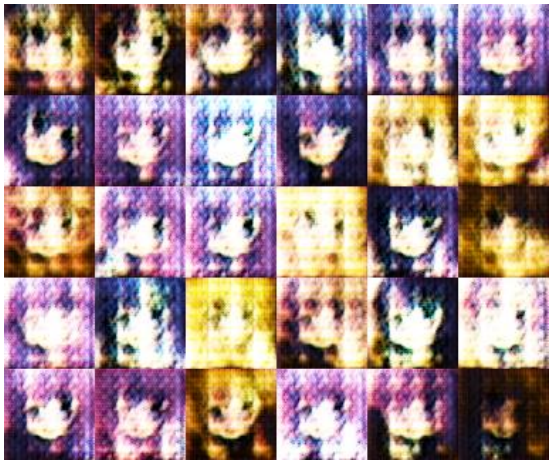


After 10 epoch	After 40 epoch
	

After 100 epoch

iii. DCGAN with Least Square GAN(LSGAN) objective



After 10 epoch	After 40 epoch
	

After 100 epoch

iv. Do some discussion about log loss and L2 loss

Log-loss is a “soft” measurement of accuracy that incorporates the idea of probabilistic confidence. log-loss is the cross entropy between the distribution of the true labels and the predictions.

L2 loss can prevent overfitting

v. Compare the results between VAE and GAN and explain their differences.

Results:

VAE can only generate blurry images.

GAN can generate images with higher resolution.

We can compare the difference between original images and re-constructed images directly by using VAE model. But since it doesn’t have an adversarial network, it can only generate some blurry images.