

# Supplementary material for “Learning to Discover Cross-Domain Relations with Generative Adversarial Networks”

February 24, 2017

## **Abstract**

Supplementary material for “Learning to Discover Cross-Domain Relations with Generative Adversarial Networks”

## **1 Toy domain experiment**

Included standardGAN.gif (standard GAN), GAN+R.gif (GAN with reconstruction loss), and DiscoGAN.gif (DiscoGAN) shows entire procedures of toy experiment in Section 4.1. respectively.

## 2 Real domain experiment

### 2.1 Edge to shoes along with iteration

We trained the DiscoGAN Model using Edge2Shoes Dataset. This Figure 1 shows the Edges to Shoes results along with iteration.



Figure 1: Edge to shoes experiment for the number of training iterations

## 2.2 Angle alignment in car to car experiments

We tests the various condition for angle between domain A and B, including  $150^\circ$  vs  $75^\circ$ ,  $75^\circ$  vs  $150^\circ$ ,  $30^\circ$  vs  $15^\circ$ ,  $15^\circ$  vs  $30^\circ$ ,  $360^\circ$  vs  $360^\circ$ .



Figure 2: Car to car experiment. The range of input (above row) degree is  $150^\circ$ . The range of output degree is  $75^\circ$

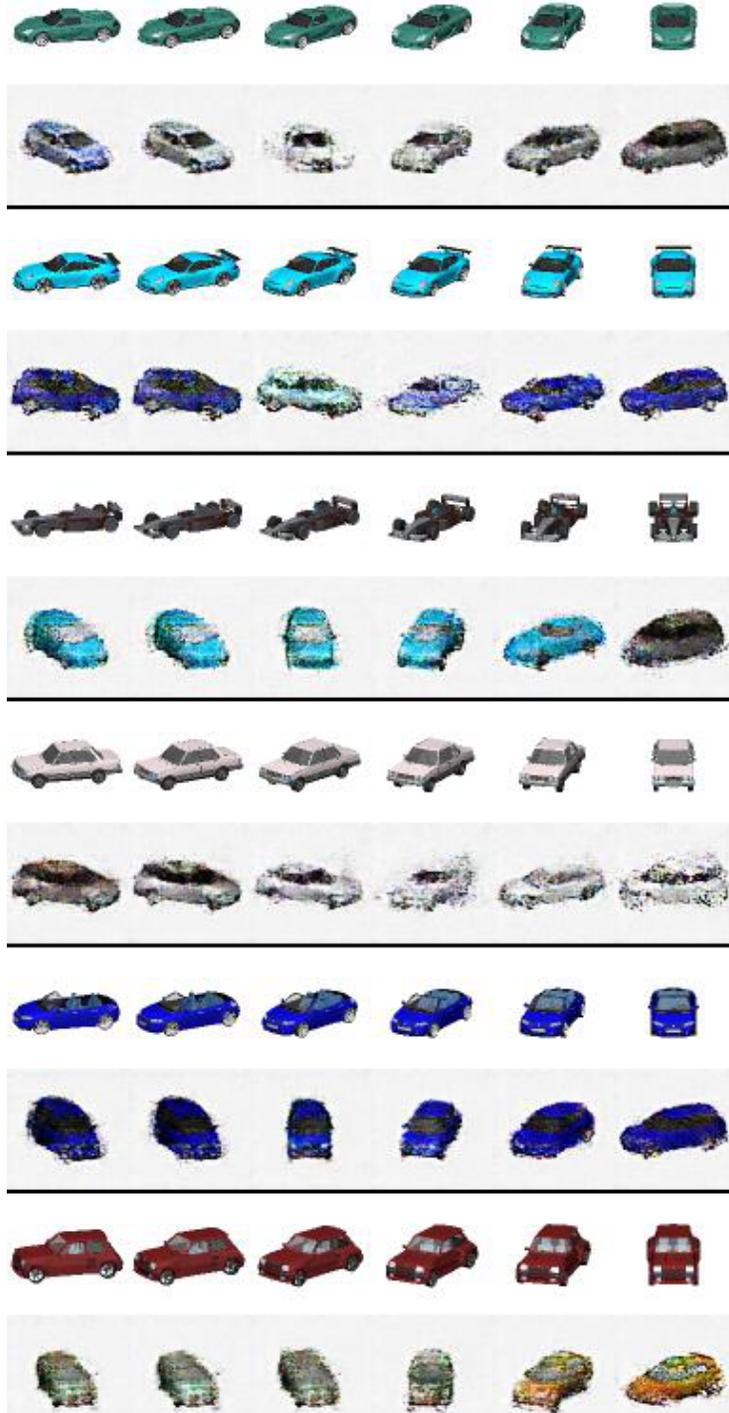


Figure 3: Car to car experiment. The range of input (above row) degree is  $75^\circ$ . The range of output degree is  $150^\circ$

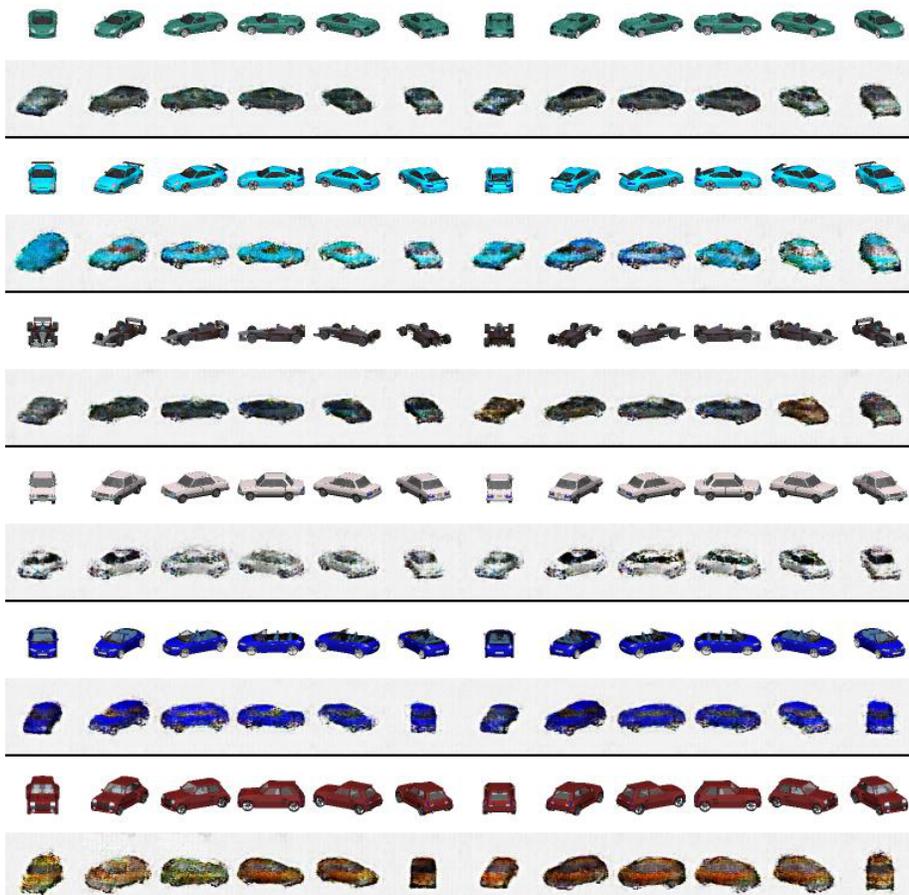


Figure 4: Car to car experiment. The range of input and output (above row) degree is  $360^\circ$ . The Moving angle of input is  $30^\circ$ . The Moving angle of output is  $15^\circ$ .



Figure 5: Car to car experiment. The range of input and output (above row) degree is  $360^\circ$ . The Moving angle of input is  $15^\circ$ . The Moving angle of output is  $30^\circ$ .

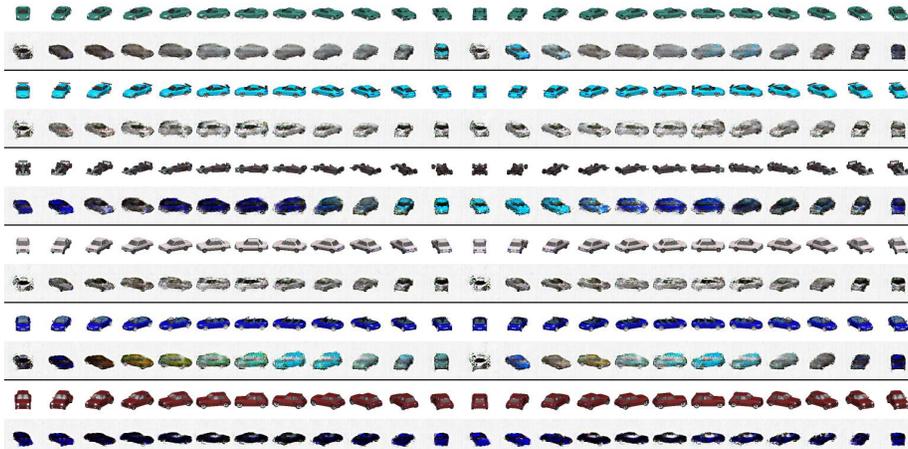


Figure 6: Car to car experiment. The range of input and output (above row) degree is  $360^\circ$ . It is one to one matching.

### 2.3 Angle alignment in face to face experiments

It shows the angle alignment in face to face experiments using GAN, GAN+R and DiscoGAN.

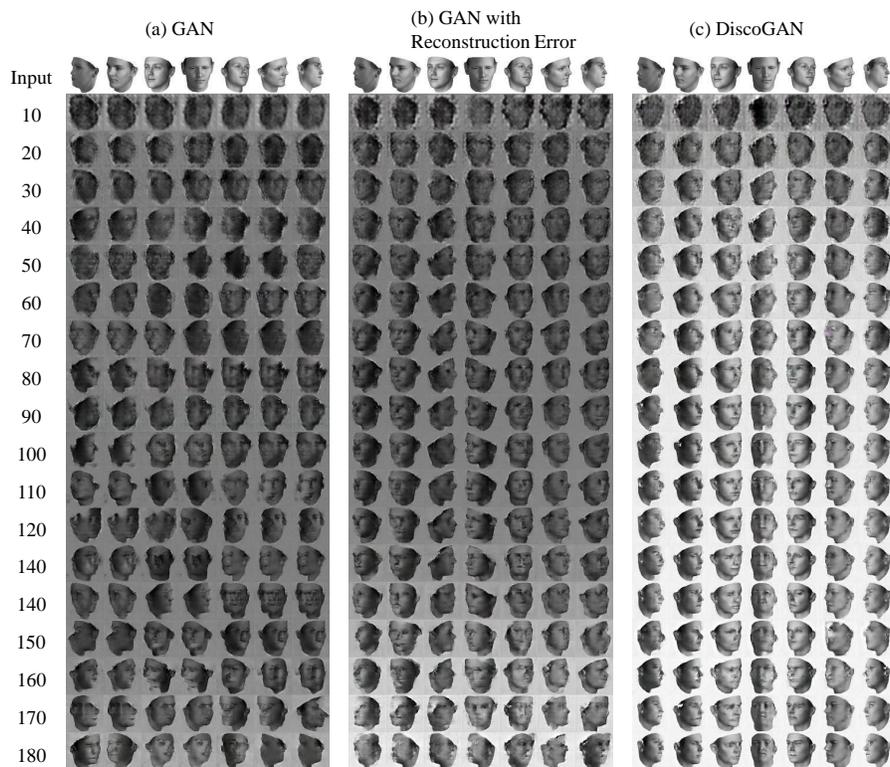


Figure 7: Angle alignment Experiments in face to face using GAN, GAN+R and DiscoGAN.

## 2.4 Gender translation

We used the cropped face image in facescrub dataset. There are divided the man and woman. So, we try to transfer between man and woman.

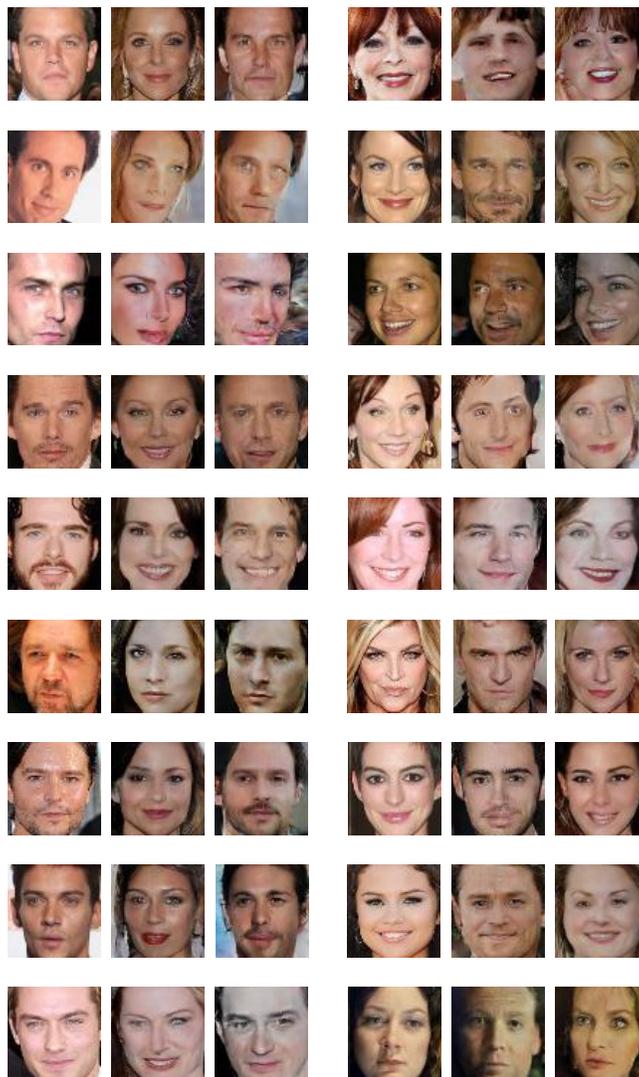


Figure 8: Gender Translation Experiment. DiscoGAN can transfer simultaneously between man and woman. It shows that maintains the context of identity during transformation.

## 2.5 Edge to bag and corresponding reconstruction

We try to colorize the edge image or sketch the edge in handbag image dataset.

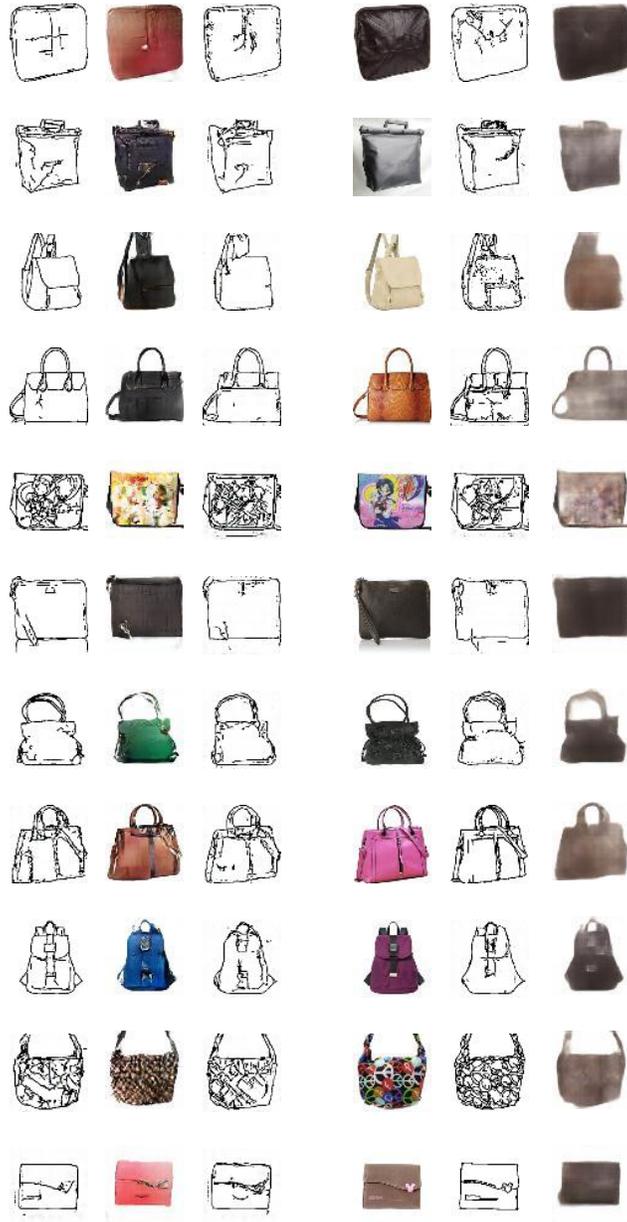


Figure 9: Edge to Handbag Experiment.