Supplementary materials for:
Towards Open-Set Identity Preserving Face Synthesis

Anonymous CVPR submission

Paper ID 64

1. Analysis of λ

The hyper parameter λ in Equation (2) in the paper influence the capability of maintaining the attributes. In this section, we conduct an experiment to investigate the sensitiveness of parameter λ.

In the experiment, we use the same framework structure and training strategy, and vary λ from 0.01 to 1 to learn different models. We compare the face synthesis results of these models in Figure 1. It shows that λ influence the capability of the framework for maintaining attributes. When $\lambda = 0.01$, the generated images lose the attributes details, especially the emotion. When $\lambda = 1$, the generated images have many artifacts. On the other hand, the generated images using $\lambda = 0.1$ are realistic and maintain the attributes. Therefore, a small value of λ cause the generated images losing the given attributes, a big value of λ cause the generated images have many artifacts. Therefore, we choose $\lambda = 0.1$ to maintain the attributes and realism of the generated images in our experiment.

2. Face Synthesis using Random Noise as Attributes

In our framework, the attributes distribution is regularize to a prior distribution $P(\boldsymbol{z}) \sim N(0, 1)$ by the loss function $\mathcal{L}_{KL}$. So we can sample the attribute vector $\boldsymbol{z_A}$ from the prior distribution as the attributes to generate face images.

With the random noise as the attributes, Figure 2 shows the face synthesize results on the identities appeared in training dataset. Our framework demonstrate good performance for synthesizing diverse, realistic and identity-preserving face images.

Another important feature of our method is that it can synthesize unseen faces from the training set. Figure 3 shows the zero-shot identities face synthesis results. With the random noise as the attributes, our framework can also generate high quality face images which keep the identity of the given faces.

3. More Face Morphing Results

In this section, we conduct face morphing on more complicate attributes. Please refer to the video for the detail.

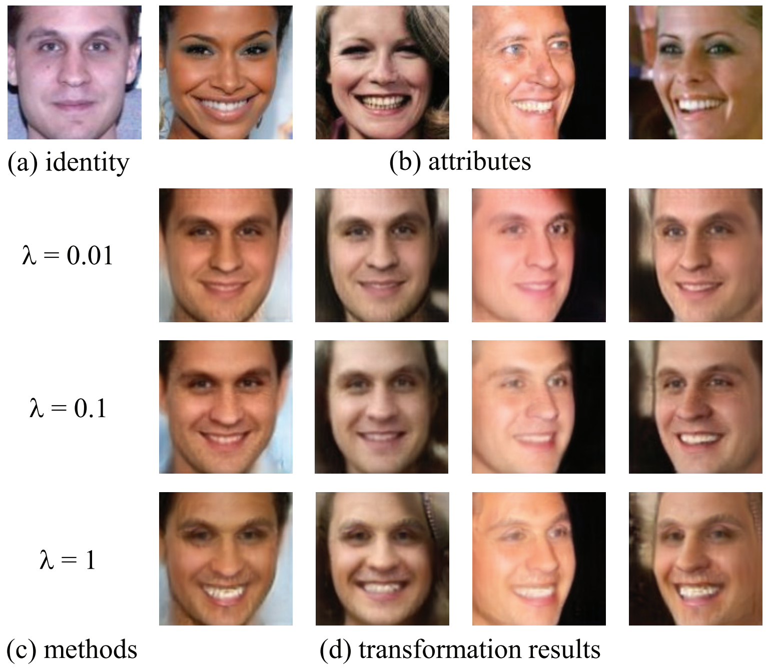

Figure 1. Model comparison: face synthesis results using the framework training with different λ.

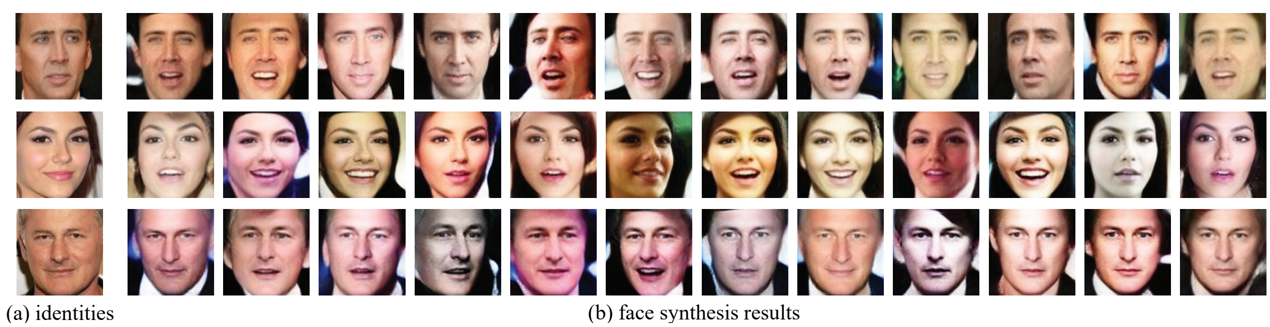

Figure 2. Face synthesis results using the identities appeared in training dataset and random noise as attributes.

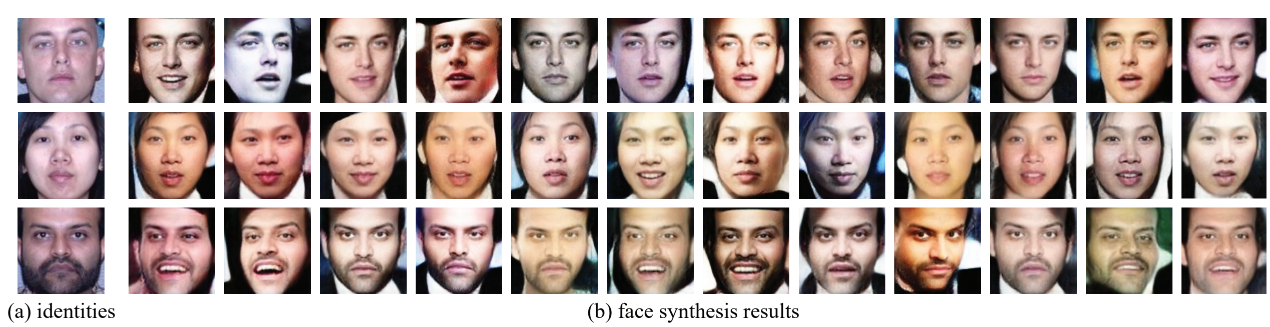

Figure 3. Face synthesis results using zero-shot identities and random noise as attributes.