Unpaired image transformation via informative coupled generative adversarial networks

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Problems: The image transformation task is challenging since it is difficult to preserve the key properties of source images and to make the details of target being distinguishable.

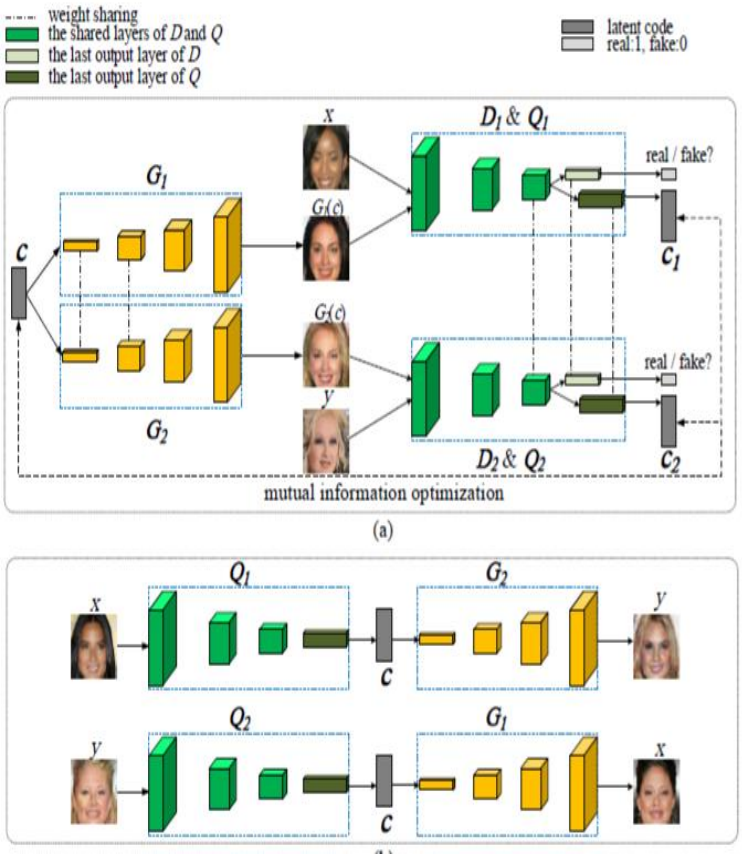
Ideas :

➢ An informative coupled generative adversarial network is proposed (ICoGAN).

1. We propose the mutual information mechanism in weight-sharing structure to learn proper common representations.

2. We combine the mutual information and the perceptual loss to solve the problems incurred in unsupervised data settings.

2. We evaluate the performance of the ICoGAN on several image transformation tasks, and show the importance of each component.



Framework of the ICoGAN

Main Contributions and Conclusions:

- By appending perceptual loss to full objective, we encourage generated images having similar high level features with ground-truth.
- Using mutual information term as a part of the full objective, we make the input vector interpretable and the model training efficient.
- We demonstrated the ICoGAN's effectiveness and promising potential for image transformation tasks.

Visualization results produced by the ICoGAN on edges to photos tasks.