To learn image super-resolution, use a GAN to learn how to do image degradation first

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Abstract

This paper is on image and face super-resolution.Author think prior work is not really good for increasing the quality of real-world low-resolution images.So author gives a new way to resolve this problem.This way include two steps,one is training a Hight-to-Low resolution images GAN net using unpaired images.Then trainning a Low-to-High GAN using the images from High-to-Low GAN to transfer low-resolution to high.

Keywords: Image and face super-resolution, Generative Adversarial Networks, GANs.

1. Introduction

Author said that at present,there are a lot of papers focusing on image and face super-resolusion,but most of them using images artificially generated by simple bilinear downsampling.Author's paper presents one of the very first attempts towards real-world image super-resolution.A few results are shown in Fig. 1

Figure 1. Super-resolution results produced by our system on real-world low- resolution faces from Widerface [4]. Our method is compared against SRGAN [2] and CycleGan [3].

2. Closely related work

The author's work based on Convolutional Neural Networks (CNNs).And main approach to super-resolution is to use a fully supervised approach where a low-resolution (LR) image is processed by a network comprising convolutional and upsampling layers in order to produce a high-resolution (HR) image which is then matched against the original HR image using an appropriate loss function.As author said that they inspired by the recent work [1].

3. Method

This paper gives a way that can tansfer a LR facial image of size 16 16 to a HR image of 64 64.The overall architecture, which is end-to-end trainable, is shown in Fig. 2.

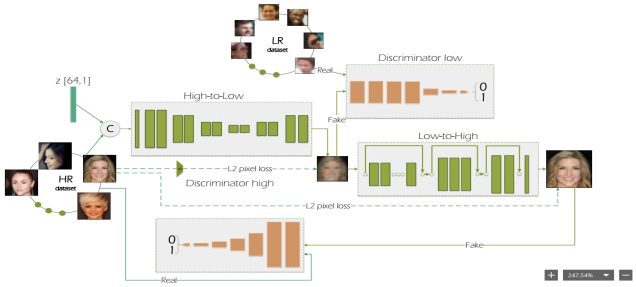

Figure 2. Overall proposed architecture and training pipeline.

References

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