

VE581 Project Proposal

Deep Learning Face Super-Resolution with Facial Prior

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I. INTRODUCTION

Face Super-Resolution (SR), a.k.a. face hallucination, aims to generate a High-Resolution (HR) face image from Low-Resolution (LR) input. SR can be cooperated with other face-related tasks, such as face recognition, face alignment and face parse. Both traditional statistical analysis and image processing algorithm [4] and deep learning method with CNN [3] and with Generative Adversarial Network (GAN) [2] are applied to solve SR problem. In order to get a better High-Resolution result, it has been proved by Chen et al. [1] and Yu et al. [6] that the facial component prior could better guide the super-resolution process. Therefore, we are going to apply facial prior to do this face super-resolution project.

II. OBJECTIVE

The goal of this project is to implement the Face Super-Resolution Network(*FSRNet*) and Face Super-Resolution Generative Adversarial Network(*FSRGAN*) raised by Chen et al.[1] and try to do some improvements.

The first task is data processing. The training data

comes from Helen data set which provides basic facial feature label and data [5]. To generate LR image, the original HR image will be shrank with x2/x4/x8 scales and recover to the original size using Bicubic method.

The second task is to build and train the model. We will fine-tune our model and adjust the super-parameter to get a appropriate result. The benchmark for our model will be the result provided by Chen et al.[1].

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