

# High Resolution Rebuilding of Image Gradient Profile Sharpness

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**Abstract:** Single Image HIGH resolution is an lively and classic image processing problem, which aims to reconstruct a high resolution (HR) single image from a low resolution input image. Due to the several use of profile dictionary under-determined nature of this type of problem, an successful image prior is necessary to make the problem solvable, and to improve the quality of reconstruct super resolute image. In this paper image super resolution algorithm is proposed based on gradient profile sharpness. Gradient Profile Sharpness is an edge sharpness matrix which is extracted from two gradient description models, i.e. a Gaussian mixture model for the description of different kind of gradient profile. The proposed approach will generate superior HR image with better visual quality, lower reconstruction error than the input image. To improve the HR image pixel quality, we will be use some TOOLS. And compare the PSNR values to the input image

**Keywords** – HR Image, Gradient profile sharpness, Gaussian Mixture, PSNR Values.

## I. INTRODUCTION

Image [1] Super Resolution (SR) is a process which artificially produces a high resolution (HR) image from one or more low resolution (LR) images. Image SR is utilized in various applications involving low cost, low resolution camera sensors to improve the resolution for better image analysis or to make the images visually appealing for the end user. Examples of such applications include medical imaging, satellite imaging, cell phone cameras, digital photography etc. Image processing literature contains a wide variety of SR algorithms which can be broadly Classified into multi image SR and single image SR. Multi image SR targets to estimate a HR image from several LR snapshots with sub-pixel shifts. Various single image SR algorithms appearing in the literature are mostly interpolation based or based on learning from a large training database of HR-LR pairs of natural images. The problem definition of the system is to detect Low Resolution (LR) patches from Input Images. Removal of additive white Gaussian noise by using various method and Quality of generated image is low which have less noisy image. Improve the quality and reconstruct the HR Image. The remainder of this paper is organized as follows: Section II briefly reviews the related literature on single image SR. In Section III, we describe the proposed work of the Gradient Profile Sharpness method for single image SR. In Section IV, we describe details of experiments conducted on a set of natural images are given. Section V concludes the paper and future

## II. PROPOSED WORK

Image super resolution algorithm is proposed based on gradient profile sharpness (GPS) and Profile Dictionary. GPS is an edge sharpness matrix which is extracted from two gradient description models, i.e. a triangle model and a Gaussian mixture model for the description of different kind of gradient profile. The proposed approach will generate superior HR image with better visual quality, lower reconstruction error and compare the PSNR value of GPS method to input image •

## III. DATA FLOW DIAGRAM

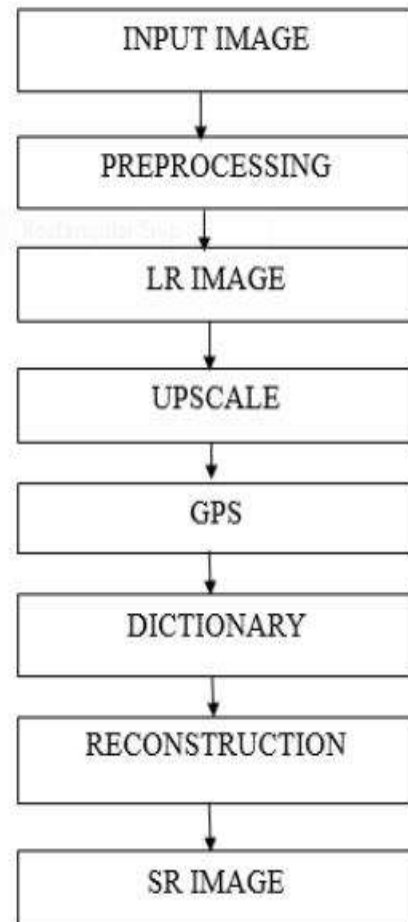


Fig.1 General Flow

In fig. 1 General Flow diagram of Super Resolution Reconstruction of Image Gradient Profile Sharpness. First we take Input Image is pre-processed it we get smooth image then converted into low resolution (LR) image upscale and patch it. Apply gradient profile sharpness matrix for the edge sharpness of input image. Create a dictionary which contain a pair of upscale and high resolution patches. With help of dictionary replace the patch from the output of gradient profile sharpness in which the best patch is replace it and obtained the sharp image and last reconstructed the super resolved image which contain less reconstruction error as compare to the original image.

#### IV. PHASES OF GENERAL PROPOSED WORK

##### PHASE I:

1. Analysis of literature data
2. Searching of Data Set

##### PHASE II:

3. Preprocessing
4. Upscale the patch
5. Create Dictionary

##### PHASE III:

6. Reconstruct the LR in HR with high pixel quality.
7. Super Resolution single image is formed.

#### V. EXPERIMENTAL RESULTS

In this section we are briefly describe the live database [18]. For the construction of training data, we randomly chose images on a public website. The experiment is performed on a PC running a single core of Intel Pentium 3.0 GHz CPU. We are using the MATLAB 13a for execute it.



In Fig. 2 Original Image, we are simply taking an image from live database and perform further operation.



In Fig. 3 Weiner filtered Image, here we are applying wiener filter to smooth an image as in the original resolution of image



In Fig. 4 Low Resolution Image, we apply a resize function on the original image and obtained a low resolved image as output. Which of half of the size of input image.



In Fig. 5 Upscale Image, here we obtained an upscale image for the use of creating a dictionary.

Which is of same resolution of the input image.

## VI. CONCLUSION AND FUTURE WORK

In this paper, Single Image super Resolution Reconstruction using gradient Profile Sharpness is discuss based on the edge sharpness matrix i.e. triangle model and Gaussian mixture model. Super resolution is the fundamental research area in image processing and overcome the resolution problems of imaging systems. An interesting point finding from the above survey is that, since different SR methods have been developed for different applications using different model parameters and assumptions. And also execute the further process i.e. apply wiener filter for smoothening image and after that converted into low resolution image then upscale it with the help of input image. In Future Work, single image super resolution with high PSNR value and output of an image will be sharp, high quality pixel will be obtained.

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