



Image Inpainting by Using Super Resolution Algorithm

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Abstract: The image inpainting is the process of reconstructing lost or damage part of images based on the background information. A Super resolution reconstruction produces high resolution image from sequence of low resolution images. The main aim of super resolution is to improve visual quality of available low resolution image. In this inpainting techniques allows reducing the computational complexity, improves visual quality and to be less sensitive to noise.

Keywords: SST, Super-Resolution (SR)

I. INTRODUCTION

Inpainting is the process of reconstructing lost part of image. Given image with significant portions missing or damaged. Reconstitute missing regions with data consistent with the rest of the image. Image inpainting refers to methods which consist in filling-in missing regions (holes) in an image. The Existing methods can be categories into two main parts. The first category concerns Diffusion-based approaches which propagate linear structures is called isophotes and second method is Diffusion based on partial differential equations and variational methods. Unfortunately, the diffusion-based methods tend to introduce some blur when the hole to be filled in is large. The second family of approaches concerns exemplar-based methods which sample and copy best matching texture patches from the known image neighborhood. These methods have been inspired from texture synthesis techniques and are known to work well in cases of regular or repeatable textures. The first attempt to use exemplar-based techniques for object removal has been reported because of the image result is not clear.

Super-Resolution (SR) refers to the process of creating one enhanced resolution image from one or multiple input low resolution images. The two corresponding problems are then referred to as single or multiple images SR, respectively. In both cases, the problem is of estimating high frequency details which are missing in the input image. The proposed SR-aided inpainting method falls within the context of single-image SR. The SR problem is ill-posed since multiple high-resolution images can produce the same low-resolution image. Solving the problem hence requires introducing some prior information. The prior information can be an energy functional de-fined on a class of images which is then used as a regularization term together with interpolation techniques.

II. RELATED WORK

The Inpainting technique initially starts with the two old techniques ie. Exampler and Diffusion base technique in both technique the result of image is blur To overcome the problem of Wavelet Transfer, some frameworks describes different types of image inpainting techniques. The various transforms are wavelettransform, contourlettransform, Nonsubsampled transform.

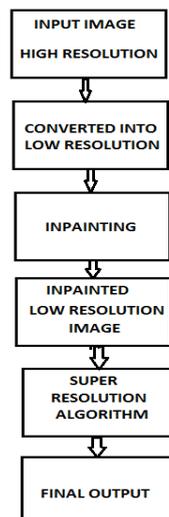


Fig. Flow diagram of image inpainting

The main drawback of wavelet transform is that there is a problem of filling missing data will occur and it has poor directional specificity of the images. In contourlet transform the image improvement cannot capture the geometric information of images and be liable to amplify noises when they are applied to noisy images also that they cannot distinguish noises from weak edges. The entire drawback is overcome by using super resolution algorithm.

III. PROBLEM DEFINITION

Super resolution imaging (SR) is a class of techniques that enhance the resolution of an imaging system in some SR techniques termed optical SR the diffraction of system is transcended, while in other a geometrical SR the resolution of digital imaging.

IV. PROJECT OBJECTIVES

The two main components are the in-painting and the super-resolution algorithms. More specifically, the following steps are performed:

1. A low-resolution image is first built from the original picture;
2. An in-painting algorithm is applied to fill-in the holes of the low-resolution picture;
3. The quality of the in-painted regions is improved by using a single-image SR method.

V. PREPOSED APPROACH

The challenging here is the image completion of large missing regions. A new inpainting method is introduced using a single-image SR algorithm. The main idea of this technique and the reasons why this technique is new and innovative is described below.

A. Overview Image inpainting: In painting is the process of reconstructing lost or deteriorated parts of images and videos. For instance, in the museum world, in the case of a valuable painting, this task would be carried out by a skilled art conservator or art restorer. In the digital world, in painting refers to the application of sophisticated algorithms to replace lost or corrupted parts of the image data.

Image restoration: Image restoration is the operation of taking a corrupted/noisy image and estimating the clean original image. Corruption may come in many forms such as motion blur, noise, and camera miss focus.

Super-resolution: Super resolution (SR) is a class of techniques that enhance the resolution of an imaging system. In some SR techniques—termed optical SR—the diffraction limit of systems is transcended, while in others—geometrical SR—the resolution of digital imaging sensors is enhanced.

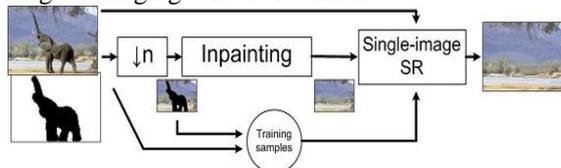


Fig: The frame work of the proposed method.

VI. ALGORITHM

- Define image update as follows:
- $I_t(i,j) = dL(i,j) \cdot N(i,j)$
 - $I_t(i,j)$ is change in intensity to used to update the image
 - $L(i,j)$ is the information to propagate
 - $N(i,j)$ is the propagation direction
 - $dL(i,j) \cdot N(i,j)$ is the change in information along the propagation direction

SST approach:

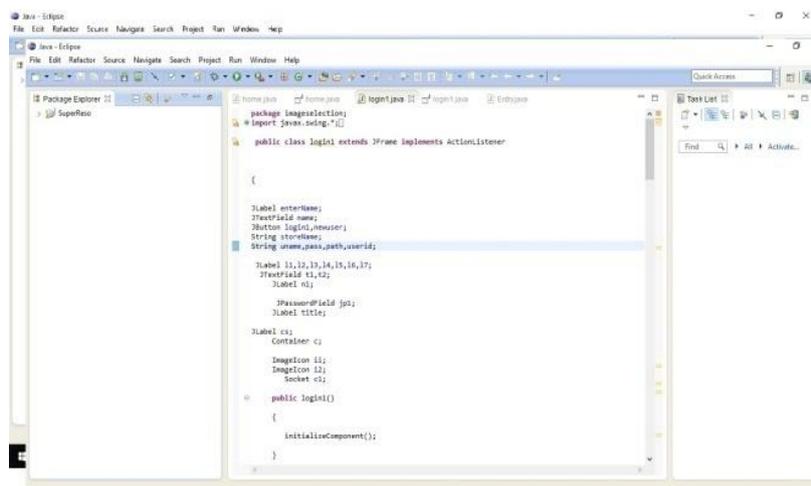


Fig.1 Screen shot for super resolution

First we have to go in eclipse then go to the super resolution folder after that home page is open then select the image then applying the inpainting in that image.

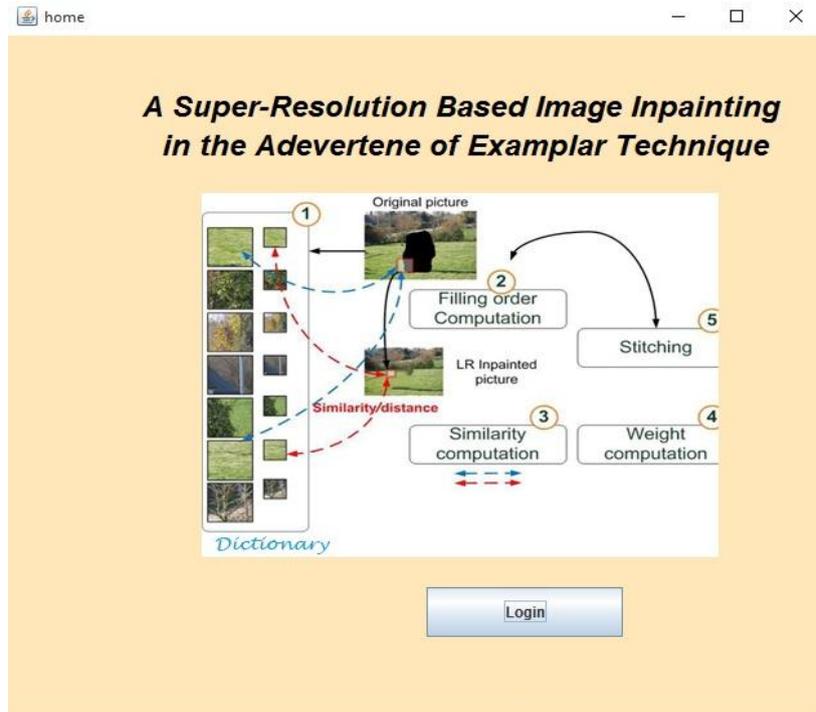


Fig.2 Login page

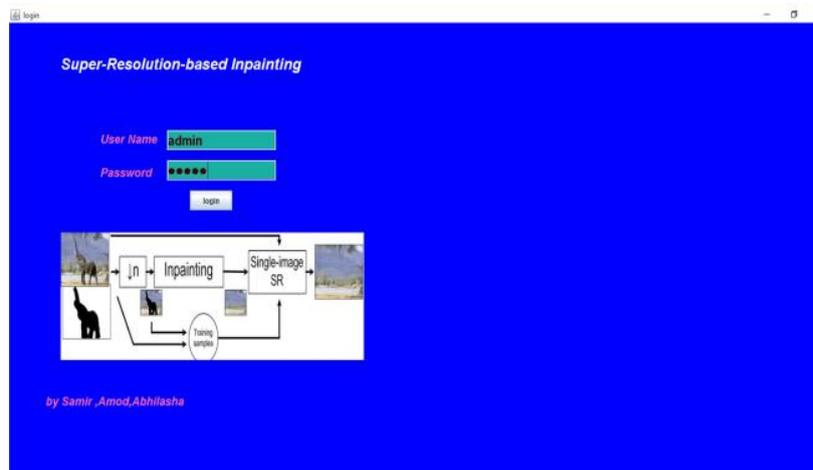


Fig.3

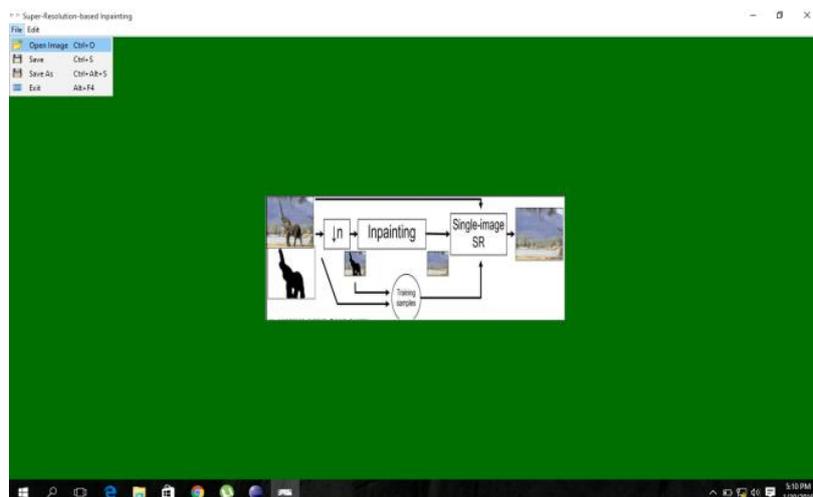


Fig.4 Open file and select image

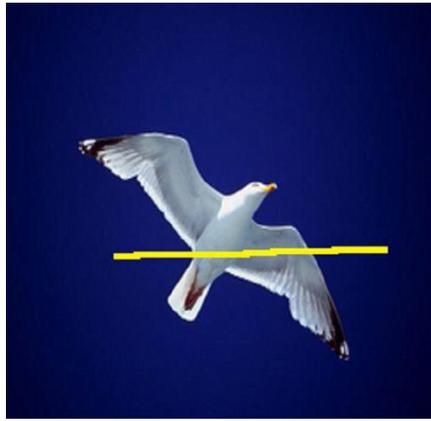


Fig.5 Original damage image



Fig.6 Inpainted image result

VII. EXPERIMENTAL RESULTS

In order to assess the performance of the proposed approach, the parameters of the algorithm are kept constant for the tests presented.

VIII. CONCLUSION

We have to conclude that, using the super resolution algorithm the image can be clear up to 90% and the damage part of the image is improve. The sr algorithm is better for the reconstruction the lost part of the image. many old images can be clear with the help of this project. The results can either be adopted as a final restoration or be used to provide an initial point.

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