

A Review on Image Inpainting Techniques and Its analysis

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Abstract:

Our life's important part is Image. Without disturbing its overall structure of images, we can remove the unwanted part of image with the help of image inpainting. There is simpler the inpainting of the low resolution images than that of the high resolution images. In this system low resolution image contained in different super resolution image inpainting methodologies and there are combined all these methodologies to form the highly in painted image results. For this reason our system uses the super resolution algorithm which is responsible for inpainting of single image.

Keywords — **Exemplar-based inpainting, single-image super-resolution.**

I. INTRODUCTION

Today, there are many researches are performing on the images and for that research field, image has become useful phenomenon. For capturing memories, the images are only used in old days. But now images have changed their face. There may be two-dimensional, or three-dimensional images. They may be captured by optical devices – such as cameras, mirrors, and lenses. Today, images can be very helpful for encryption, processing, authentication, sharing etc. purpose. But the main aim of image is still being preserve i.e. to store the memories. In image, due to extra part or distortion sometimes useful images get discarded or deleted. For restoring image or painting seems as natural as its original version a super resolution (SR) algorithm is very useful for guessing and filling in the lost image information. First using inpainting the object in the required target area is removed. To recover details on missing areas the result gain is given as input to a super-resolution algorithm. For removing the objects which are not required, the Exemplar-based inpainting is very used. There is more efficient algorithm is a Super-resolution algorithm since inpainting produces a low resolution image.

Initially inpainting is used for scratch removal. The removal of object, text and other automatic modification of images are include in the next

applications. To remove objects from images and fill the hole by taking information from the surrounding area pixels is the process of object removal. By using the various effective image inpainting techniques which can able to fix and recover the small defects occurring inside the image is the image inpainting process corrupted part of the image are replace.

Because this technique do changes in the image by the observer the image are not recognize. Here for automatic inpainting of digital image we introduce an algorithm, and used by existing restoration methods replicate the basic techniques. There play an important role by the image inpainting technology in computer graphics and has many applications such as old films renovation, object removal in digital photos, coding image and transmission. This method restores lost/selected parts of an image with the help of the background information in a visually possible way. So the use of image inpainting is to recover the original image as well as to create some image that has a close appearance with the original image.



Figure 1. Before and after inpainting.

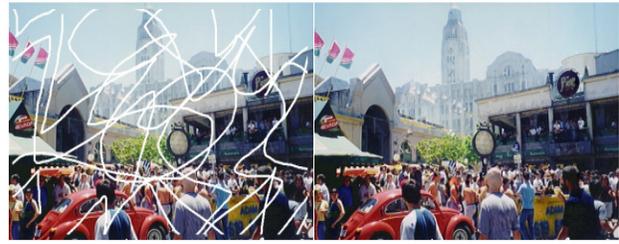
To improve the quality of the image from remove-undesired object, there varies the reason behind region completion varies. The object removal starts with mask out the undesired object, making the area where the object previously occupies a hole. These hole will be filled with the help of graphical pixel filling techniques.

From a group of HR-LR patches known as Dictionary the exemplar based SR, correspondences between HR and LR patches are learned and then it applied to a low resolution image for recovering its higher resolution version. As a deploring problem and solve the inverse problem, SR method consider Super Resolution image reconstruction using Bergman iterations. The HR image is estimated based on some prior knowledge about the image in the form of regularization. There is proposed a new regularization method which is based on multi scale morphological filters.

II. LITERATURE SURVEY

The existing inpainting technique and their work are shows. In this section. There are two techniques off this system which are the diffusion based or the exemplar based techniques. Because of it is having some limitation, it leads to the development of hierarchical approach of super-resolution based inpainting.

A. Image inpainting



Since 1892, when French explorers landed at the great bend of the Mississippi River and celebrated the first Mardi Gras in North America, New Orleans has brewed a fascinating melange of cultures. It was French, then Spanish, then French again, then sold to the United States. Through all these years, and after the 1900s, others arrived from everywhere: Acadians (Cajuns), Africans, indige-



Figure 2. Restoration of a color image and removal of superimposed text.

For filling the some loosed portion of the image that image inpainting is shown in this paper. But, this method is not suitable for high quality images. It uses patch based inpainting. The area at which the inpainting algorithm is to be apply is selected here manually by the user. Here this area is marked as the sigma notation. Masking on image is denoted by sigma. In this the masking is removed by using Efros and leungs algorithm. This method is responsible but this feeling is not reasonable for filling the losses inside the image [1].



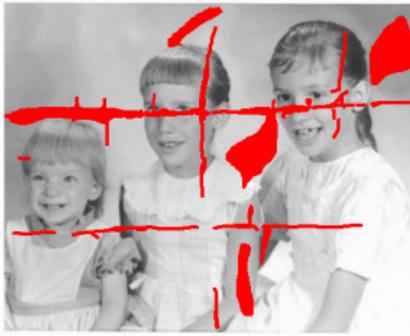


Figure 3. Restoration of an old photograph.

B. Vector-valued image regularization with PDEs: A common framework for different applications.

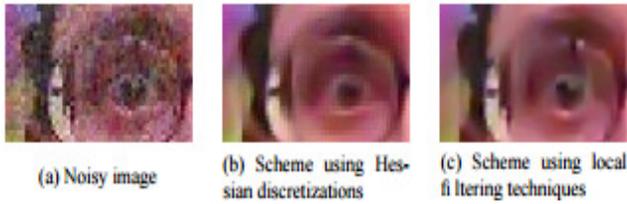


Figure 4. Comparisons of numerical schemes.



Figure 5. Image inpainting using PDE.

Here for images diffusion elimination, the vector valued algorithm is used. As minimization of functions, expression divergence, and laplacians the image is passed through it. To in paint the image this uses mathematical formulae, but for representing the flows of large image distortion it is not efficient [2].

C. Variational restoration of non-flat image features: Models and algorithms

Here with an increased priority term which defines the filling sequence of patches in the image the author had states a novel exemplar based Image Inpainting method. By propagating the image patches Inpainting method is based on patch generation into the interior of the target region from the source region patch by patch. This method uses a diffused PDE to constrain the processing order; so, it has a good property of preserving the linear structure. Here by the local pixel information the size of exemplar is dynamically calculated; by the PDE the block and seem effects are removed. Because for complex geometric structures completion the exemplar-based model could not be used, a bi-directional diffused PDE adopts by the novel model to assist the completion procedure [3].

D. Fragment-based image completion.

For completion of image by example fragments this method is used that interleaves a smooth approximation with detail completion. The unknown region iteratively approximates by our method and fills in the image by adaptive frames. It fills the image by a combination of fragments under combinations of spatial transformations. The principles of figural familiarity and figural simplicity followed by it. Thus, in the low guessing areas by applying a simple smoothing process an approximation is generated. To some underlying structure it is a classification of the pixels that agrees with the parts of the image for which we have high confidence.

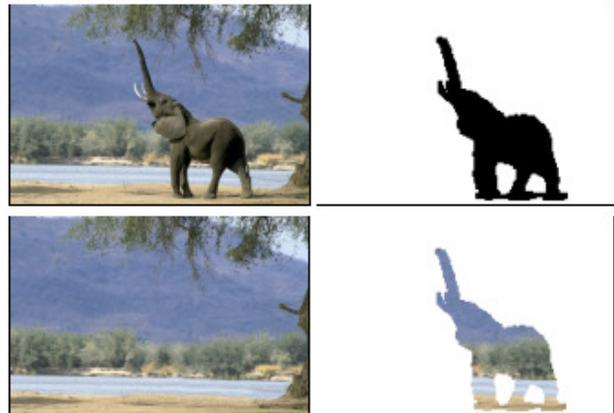


Figure 6. Algorithm for fragment based inpainting.

With the synthesis of image fragments this paper present an iterative process that interleaves smooth reconstruction. For guide the completion process it iteratively generates smooth reconstructions [4].

E. A non-hierarchical procedure for re-synthesis of complex texture

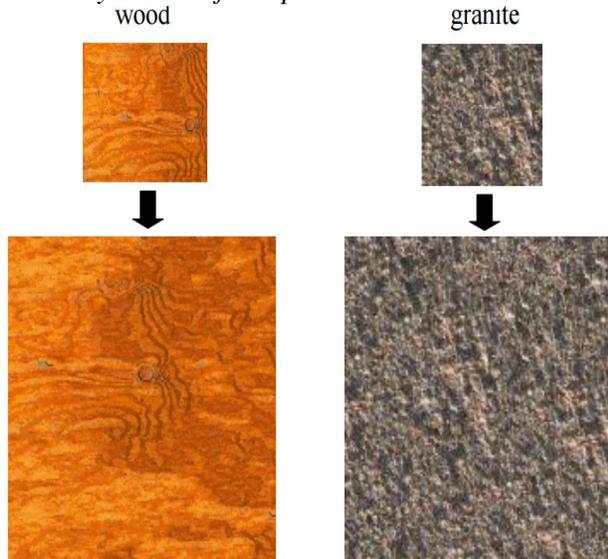


Figure 7. Sample Result

A procedure is described as a given input image with the same texture for synthesizing an image. For achieving this, by successively adding pixels selected from the input image there is built up an output image. By searching the input image the pixels are chosen for patches that are closely match pixels which are already present in the output image.

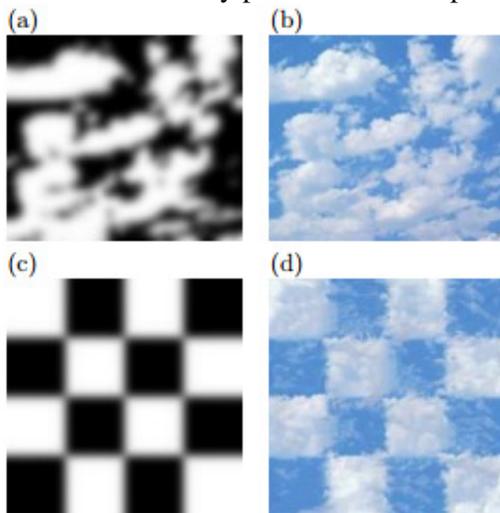


Figure 8: Constraining a cloud texture to a checkerboard pattern. Input map (a), input texture (b), output map (c), and output of the extended synthesis procedure (d).

For the output image is described, a selecting an ordering procedure which large complex features of the input transfers. Even if there are considered only the interactions of nearby pixels for reproducing large features this procedure is capable. In the output texture, the procedure can be altered to allow specification of the placement of particular features. There are described the several applications of this [5].

F. Texture synthesis by non-parametric sampling

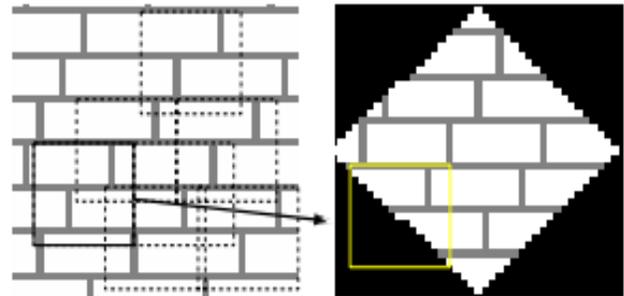


Figure 9. Algorithm Overview

By the texture synthesis process a new image grows outward one pixel at a time from an initial seed. There is assumed a Markov random field model, and by the conditional distribution of a pixel there given all its neighbours synthesized so by querying the sample image far is estimated and all similar neighbourhoods are finding. By a single perceptually intuitive parameter the degree of randomness was controlled. As possible as much local structure are preserving by the method and there produces good results for a wide variety of synthetic and real-world textures [6].

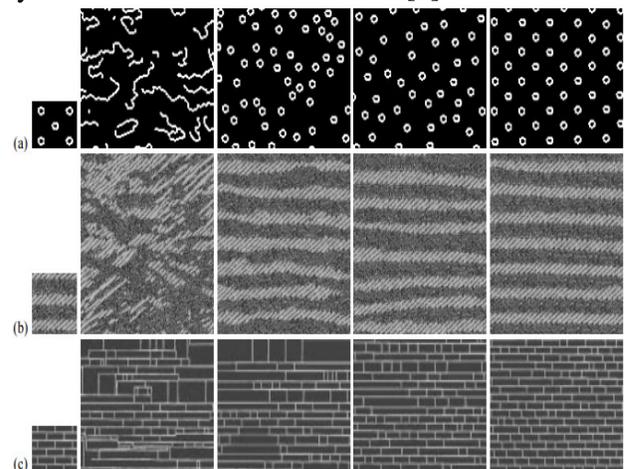


Figure 10. Result

III. CONCLUSION

For giving better output using this inpainting method is and by finding exact match of the pixel, it overcomes the limitations of the all existing work done by previous authors. For filling the gaps in the image it uses the super resolution algorithm. Here it can result in better and efficient output because multiple Image inpainting techniques combine.

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