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Diverse Inpainting Methods : A Review

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Abstract :*The process of refurbishment of the vandalized or lost regions or modifying the imagecontents gradually is called image inpainting. The objective of the inpainting is to reconstruct the lacking area in a visually feasible way. It allude to the process of filling-in lacking data in a designated area of the visual input. Various algoriths are available for the inpainting. Here, we present a literature review of different image inpainting techniques.*

Keywords -*Crack detection, Digitized paintings, Crack filling*

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I. INTRODUCTION

Image inpainting is a method for rebuilding damaged pictures or removing unwanted elements from pictures. In real world, many people need a system to regain damaged photographs, drawings, designs, artworks etc. It recovers the lost or corrupted parts of an image so that the reconstructed image looks natural. damage may be due to heterogeneous reasons like scratches, graphics or superimposed text etc.

Image inpainting alter and fill the missing region in an image in an imperceptible way, by a viewer not familiar with the native image. This system could improve and return a beautiful photograph using a technique called image inpainting. One can use image inpainting technique to reconstruct image damage due to dust, overlaid text, scratches etc.

Mostly we see paintings suffer from breaks in the surface, the varnish, or the enamel. These type of patterns are normally called cracks and it can be caused by drying, aging and mechanical factors. Drying cracks are usually caused by the dispersal of unstable paint components and the resultant diminishment of the paint.Age cracks can result from distinctive contraction in the wood-panel or canvas support of the painting, which stresses the layers of the painting. Mechanical cracks result from painting distortions due to external causes, e.g., tremors and influences. The cracks on paintings can degrade the image quality. However, one can use digital image processing techniques to identify and eliminate the cracks on digitized paintings.

II. LITERATURE SURVEY

The image inpainting concept was first introduced by Bertamio et al. [1]. The method was stimulated by the real inpainting process of artists. The image evenness information interpolated by the image Laplacian is propagated along the isophotes directions, which are estimated by the gradient of image rotated by 90 degrees.

The authors in this paper decompose the image into sum of two functions and then reconstruct each function separately with structure and texture filling-in algorithms[2].

In [3], the authors proposed a method for crack detection and restoration. Cracks normally have low luminance and can be considered as local intensity minima. The top hat transform is performed for crack detection. To separate out cracks from rest of the image, thresholding operation is required. As a result, they get a binary image marking the possible crack locations. Different filtering techniques are used for crack filling.

The method in [4], manually select a point on the crack. Then it automatically tracks the crack. After selection, the crack removal is automatic. Morphological technique is used to extract text from the images presented in [5].In [6], the inpainting technique is merged with the techniques of finding text in images and a simple algorithm that links them. The technique is insensitive to skew, noise and text orientation.

In [7], Criminisi used a best exemplar patch to propagate target patch including missing pixels. This method combines structure propagation with texture synthesis and hence produce very good results. The authors in [8] have applied the CCL (connected component labelling) to detect the text and fast marching algorithm is used for Inpainting. A morphological methodology (MAO) is used to identify cracks and a modified adaptive median filter (MAMF) is used to fill the cracks [9]. Authors in [10] used top-hat and bottom-hat transform for crack detection and the outputs of the crack detection stage are compared to know which transform gives better results. Speed and accuracy of a picture enhancement is compared using 8 pixelneighborhood with exemplar based Poisson and successive elimination method [11]. Vandalized and non-vandalized regions from the image

are detected using template matching and Poisson image editing is used for inpainting of vandalized regions [12].

III. CONCLUSION AND FUTURE WORK

This paper contains an overview of image inpainting. The review of some image inpainting techniques are presented. It is a technique to fill lacking region or reconstruct damage area from an image. Inpainting technique may be automatic or manual. In Manual detection, users have to choose the area of interest to be inpainted, whereas automatic technique detects the area of interest automatically, without user interaction.in our next research paper, we will propose a new effective technique for image inpainting.

REFERENCES

[1] M. Bertalmio, G. Sapiro, V. Caselles, and C. Ballester. (2000) "Image inpainting." in Proc. SIGGRAPH, pp. 417–424.

[2] Marcelo Bertalmio, LuminitaVese, Guillermo Sapiro, Stanley Osher, "Simultaneous Structure and Texture Image Inpainting", IEEE Transactions On Image Processing, vol. 12, No. 8, 2003.

[3] I. Giakoumis N. Nikolaidis, and L Pitas, "Digital lmage Processing Techniques for the Detection and Removal of Cracks in Digitized Paintings", IEEE Transactions on Image ProcessingV, ol . l5, No.I , pp. l78-l 88. Jan. 2006

[4] M. Bami, F. Bartolini, and V. Cappellini, "Image Processing for Virtual Restoration of Artworks", IEEE. Multimedia, Vol.7, No. 2, pp.34-37, Jun.2000

[5] Yassin M. Y. Hasan and Lina J. Karam, "Morphological Text Extraction from Images", IEEE Transactions On Image Processing, vol. 9, No. 11, 2000

[6] Eftychios A. Pnevmatikakis, Petros Maragos "An Inpainting System For Automatic Image Structure-Texture Restoration With Text Removal", IEEE trans. 978-1-4244-1764, 2008

[7] Criminisi, P. Perez, and K. Toyama. "Region filling and object removal by exemplar-based image inpainting." IEEE Trans. Image Process, vol. 13, no.9, pp. 1200–1212, 2004.

[8] S.Bhuvaneswari, T.S.Subashini, "Automatic Detection and Inpainting of Text Images", International Journal of Computer Applications (0975 – 8887) Volume 61– No.7, 2013

[9] Abhilekh Gupta, VineetKhandelwal, Abhinav Gupta and M. C. Srivastava, "Image Processing Methods for the Restoration of Digitized Paintings." ThammasatI nt. J. Sc. Tech..Vol. 13, No.3, July-September2008

[10] Pranob K Charles ,K Balaji, V.V.S. Murthy,RajendraPrasad.K, Sripath Roy K, Purnachand S, Suresh A , "A Pragmatic Technique For Detection and Removal of Cracks in Digitized Paintings", International Journal of Modern Engineering Research (IJMER) www.ijmer.com Vol.2, Issue.1, pp-041-045 ISSN: 2249-6645

[11] Muthukumar S, Dr.Krishnan .N, Pasupathi.P, Deepa. S, "Analysis of Image Inpainting Techniques with Exemplar, Poisson, Successive Elimination and 8 Pixel Neighborhood Methods", International Journal of Computer Applications (0975 – 8887) Volume 9– No.11, November 2010

[12] Chintan M. Parmar, Manjunath V. Joshi, Mehul S. Raval, and Mukesh A. Zaveri, "Automatic image inpainting for the facial images of monuments." In Proceedings of Electrical Engineering Centenary Conference 2011, pages 415420, IISc Bangalore, India, 2011.

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