

REVIEW OF IMAGE DEBLURRING TECHNIQUES

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Abstract: *The image processing is an important field of research in which we can get the complete information about any image. One of the main problems in this research field is the quality of an image. So the aim of this paper is to propose an algorithm for improving the quality of an image by removing Gaussian blur, which is an image blur. Review of different deblurring techniques is obtained for a good quality image. The deblurring techniques are basically used to sharp an image using different methods & parameters.*

Keywords: *Gaussian blur, deblurring, image deblur.*

I. INTRODUCTION

In image processing world, the blur can be caused by many factors such as defocus, unbalance, motion, noise and others. As we know our vision is one of the important senses in our body. So we can say that image processing plays an important role in our life. An image is a 2-D digital function or we can say that it can be considered as a matrix in which the row and column represent the position of image and the elements represents its pixel value. An image is made up of digital data by inputting it and the output of this digital data is an image. An important problem in image processing is its blurring problem which degrades its performance and quality. Gaussian function is used firstly to degrade the image quality and blurring an image because it is a low pass filter. In digital world there are mainly three type of blur we study mainly. These are of three types i.e.-

1. Average Blur
2. Gaussian Blur
3. Motion Blur

In this paper we consider the Gaussian blur for improving the image which is blurred and noisy and the blur is removed by using some method. Image quality is the main task of image processing world. Image deblurring basically is to get the sharp image by removing its noise and blur from an image. Blurring may be due to many factors such as noise, dust, camera shake, object shake etc. Deblurring may be done by different methods such as sharpening the edges, filling the pixels which are blank and removing the noise. So the main thing in this review is to obtain the deblurred image by using a degraded and blurry image.

II. LITERATURE REVIEW

Deblurring of an image is an important task in image processing. A large number of research papers on blurring have been published using the different methodology for improving the overall image quality. A number of techniques are used for getting the best results.

The work presented by Saini and Himral [1] focuses on

mainly image restoration concept for getting true image from the noisy and uncorrupted image. In it there is use of Blind Deconvolution strategy for recover a sharp image using the image restoration technique. A true image provides the valuable information.

Mane and Panwar [2] represented its approach in edge detection field using the blind deconvolution methodology with canny edge detection method. Using this method ringing effect of a blurring image is reduced. It is used for mainly the motion blurred image in which there is no information of blur kernel is given. Firstly the image is degraded using degraded model and then recovered the original image.

De and Masilamani [3] presented a new method concerned the NR-IQA (No-reference Image Quality assessment). In this paper the standard deviation of Gaussian filter kernel is used for different images. This concept is used for deblurring the images. When there is blur increases in image the frequency component is decreases. So it is an image quality measure for the image. Image Quality measure is obtained after center Fourier transform for detecting sharpness in an image.

Saleh Al-amri, Kalyankar and Khamitkar S.D. [4] studied the method of Restored Gaussian Blurred Images when there is no information of PSF is given. In this paper different type of deblurring methods are compared and different experiments are done on different type of techniques, such as Wiener Filter, Lucy-Richardson Algorithm Method, Blind Deconvolution Algorithm Method, Regularized Filter Deblurring Method etc.

Gavilan, R. Arahah and Ierardi [5] presented their work on roll angle estimation. The estimation of plane angles is used to remove the blur in an image. Gradient algorithm is also used in this technique. These are basically vision enhanced methods for the aerial images. It is related to the automatic landing methods.

Singh and Sahu [6] purposed a method for deblurring images using transformation spread functions (TSFs). Quality measurement parameters are also calculated in this. HDR images are derived by PSFs. Deblurring is said to be a method used to sharp and clear the image. In this paper, the PSF is estimated for blurry image.

Henawy, Amin, Ahmed, Adel [7] concerned about the blur kernel and the deblurred image both. They also introduced the blur type, noise model and different deblurring techniques. Image blur may be occur due to many reasons such as camera shake, object movements etc. After that he obtained image degrades and we cannot see it clearly. According to this paper, all captured images are less or more

blurry. And there are a lot of factors for degrading the quality of an image.

Madghe and Kasturiwala [8] discussed the methodology of image enhancement for improving the quality of an image by using GLAS algorithm. The image enhancement is basically a process of obtaining the original image which is free from blur and noise. The two methods of image enhancement are: Spatial domain and Transform domain. These methodology increases the quality of an image. Image enhancement is the demand of today's world for improving the quality of image.

Kamboj and Moudgil [9] worked on Hybrid Median Filter to remove the noise or blur from an image. They considered different filtering techniques for sharpening an image but the suitable technique purposed by them is hybrid median filter by which we can get the better result of a blurry image. By using different filter the value of PSNR is calculated and the hybrid filter gets the better result than median filter.

Tyagi and Singh [10] have discussed about the detection of region to be inpainting in an image and then fill the hole and scratches by reconstructing them to get fine image. There are two approaches used for image deblurring one is texture synthesis and inpainting to restore the image. For filling the pixel value two types of algorithm are used i.e. Boundary fill and Flood fill algorithm.

Bhawre and Ingle [11] presented an approach which is based on Group based sparse representation (GSR). The technique used in this approach is self-adaptive dictionary learning. In this papers, the three image restoration problem such as inpainting, deblurring and compressive sensing recovery. In this method, the discontinuities of a blurred image are filled with inpainting method.

III. CONCLUSION

The review of different research papers has given the different parameters for various techniques for deblurring the image. The overall complete review is about the image quality. Many of parameters are used to improve the quality of an image. So the proposed algorithm is about the image quality. Deblurring uses different parameters such as degraded model, restoration techniques, different algorithms and other techniques.

REFERENCES

- [1] Sonia sainia and Lalit himral, "Image processing using Blind deconvolution deblurring technique". International journal of applied Engineering and Technology Vol. 4 (2) April-June, pp. 115-124.
- [2] Mr. A. S. Mane and Mrs. M. M. Pawar "Removing Blurring From Degraded Image Using Blind Deconvolution With Canny Edge Detection Technique". International Journal of Innovative Research in Advanced Engineering Volume 1 Issue 11 (November 2014).
- [3] Kanjar De and V. Masilamani* "Image Sharpness Measure for Blurred Images in Frequency Domain". International Conference on Design and Manufacturing, icondm 2013.
- [4] Mr. Salem Saleh Al-amri, Dr. N.V. Kalyankar and

Dr. Khamitkar S.D. "Deblurred Gaussian Blurred Images". Journal of Computing, volume 2, issue 4, april 2010, issn 2151-9617.

- [5] Francisco Gavilan , Manuel R. Arahal ,Carmelina Ierardi " Image Deblurring in Roll Angle Estimation for Vision Enhanced AAV Control ". IFAC-Papers On Line 48-9 (2015) 031-036.
- [6] De jee Singh, R. K. Sahu, "Analysis of Quality Measurement Parameters of Deblurred Images". International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, Vol. 3, Issue 10, October 2014.
- [7] M. El-Henawy,A. E. Amin, Kareem Ahmed, Hadeer Adel, "A Comparative Study On Image Deblurring Techniques". International Journal of Advances in Computer Science and Technology (IJACST), Vol.3, No.12, pp. 01-08.
- [8] Anup M. Madghe, Prof. Sanket B. Kasturiwala "A Review on Image Enhancement by Geometric Adaptive Sharpening Algorithm". International Journal of Research in Advent Technology, Volume 1, Issue 4, November 2013.
- [9] Jyoti Kamboj Er. Suveg Moudgil " , Implementation of Hybrid Median Filter Using Nural Network and Fuzzy Logic". International Journal of Emerging Research in Management &Technology ISSN: 2278-9359, Volume 4, Issue-5.
- [10] Shivali Tyagi, Sachin Singh "Image Inpainting By Optimized Exemplar Region Filling Algorithm" International Journal of Soft Computing and Engineering (IJSCE) ISSN: 2231-2307, Volume-2, Issue-6, January 2013.
- [11] Roshan R. Bhawre , Yashwant S. Ingle "An Approach for Image Restoration using Group-based Sparse Representation". International Journal of Advanced Research in Computer Science and Software Engineering, Volume 5, Issue 3, March 2015.