REVIEW ON REMOVAL OF GAUSSIAN BLUR FROM IMAGES

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Abstract: The image processing is an important field of research in which we can get the complete information about any digital images. One of the main problems in this research field is the quality of an images. 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, DIP, Gaussian function.

I. INTRODUCTION

In digital image processing, the blur can be originating 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

Gaussian blur: Atmospheric condition causes image degradation this effect is called Gaussian effect. It is a type of filter that is used for normal distribution to calculating the transformation to apply to each and every pixel in an image. This type of filter shows a bell shaped curve for the image. This shows that blurring is maximum on the center and less on edges. Gaussian blur is mainly caused by Gaussian function. It blends some pixel inclemently.

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

Mane and Panwar [1] 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.

Saini and Himral [2] 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.

S. Suryanarayana, Deekshatulu, Kishore and Rakesh Kumar [3] In this paper a novel algorithm for Gaussian noise estimation and removal is proposed by using 3x3 sub-windows in which the test pels appears. The standard deviation (STD) for all sub-windows are used to defined reference STD (σref) and minimum (σmin) and maximum (σmax) standard deviations. The average STD (σavg) is then deliberated as the average of those STDs of all sub-windows whose STD falls within the range of [σmin, σmax]. This σavg is used for identifying and removing additive Gaussian noise. The performance is differentiate with that of the standard mean filter. The present scheme is outperforming than the standard mean filter.

De and Masilamani [4] 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.

Gavilan, R. Arahal 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.

Saleh Al-amri,Kalyankar and Khamitkar S.D. [6] 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.

Singh and Sahu [7] 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.

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.

Henawy, Amin, Ahmed, Adel [9] 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.

Kamboj and Moudgil [10] 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 [11] have discussed about the detection of regionto 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 [12] 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

In this review of different research papers has given the different parameters for various techniques for deblurring the image for Gaussian blur. 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.

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