

# Image Blur Detection Using Local Power Spectrum

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**Abstract**—In this paper work, blur detection of images is carried with local power spectrum. De blurring of image plays a important role in image processing and computer vision techniques. In deblurring of image, the first step is considered the input image as a motion blurred image. Our blur detection is based on block by block local mean calculation. After that find out the global mean for the blurred image, then comparison of local mean with global mean takes place. The experimental result shows that the robustness of proposed algorithm. The proposed method performing operations on image for detecting blurred regions. After that detected blurred content converted in to an un blurred region that shows the final output of this method.

**Keywords**- Image Degradation, Blur detection, Local spectrum, Global spectrum omponent;

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## I. INTRODUCTION

By using image processing, we can perform different operations on an image, in order to get a resultant image. In recent years, every day a new technology coming out. From that a new mobile phones and cameras are increasing day by day. The quality of image is degraded due to capturing problems. The main reason for this low quality of images is blurring. Blur detection topic has a scope for research in image processing. So in this paper, we concentrate on how to detect the blur and by using local power spectrum getting the output as a un blurred image.

Increasing the quality of the captured image by using various blur detection techniques. The blur detection is initiate helpful in the real life applications and are established in the areas of image segmentation, image restoration. The growth of the blur detection practices have improved the various systems to remove the blur or un-focused part from the image which is owed to imperfection of the camera or due to the de-focus of the gesture of the portion, extreme strength of light.

The previous work in the blur analysis is explained in this section. The previous approaches regarding to blur detection are edge sharp analysis. In this analysis firstly, find out the blur measurement of edge sharpness. The author would prolong this thought by first fitting gradient magnitude with edge direction to a normal distribution. After that find out standard deviation for the distribution and gradient magnitude together referred as blur measure.

## II. IMAGE RESTORATION

An image worth thousands of words and atmospheric-turbulence affects the image quality so it is necessary to restore that degraded images. Generally, main causes of degradation are a blur, noise, and motion. Restoration of the image is a very big challenge in the field of image processing. To restore the image there must have knowledge of degradation. Restoration process improves the appearance of the image. Reconstruction of the image can be performed using 2 types of model (i) Degradation Model (ii) Restoration

Generally, degradation caused at the moment of image acquisition and transformation of the image from one device to another device.

Restore the image using Non-blind restoration techniques and blind restoration techniques. Non-blind techniques further classified into linear restoration as well as Non-linear restoration techniques

## III. PROPOSED METHOD

In this proposed method, we used the local power spectrum technique to convert blurred image to an un blurred image. For this consider the input image as motion blurred image (a) with 256\*256 sizes and the output is un blurred image(s) with 256\*256 size. The proposed method is explained by using following flow chart shown below.

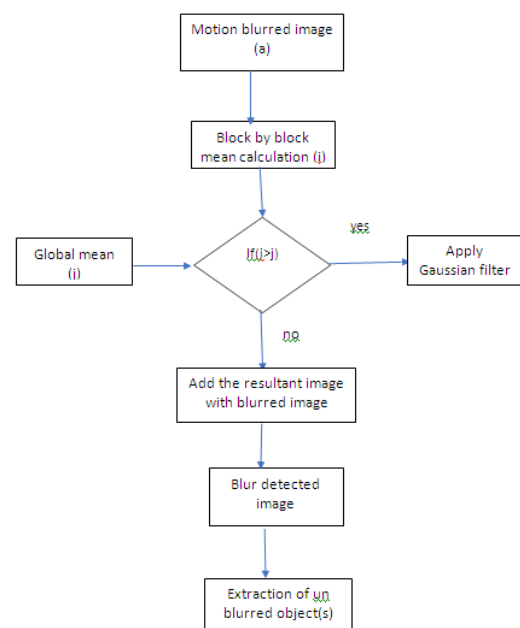


Figure1. Proposed Blur Detection Method

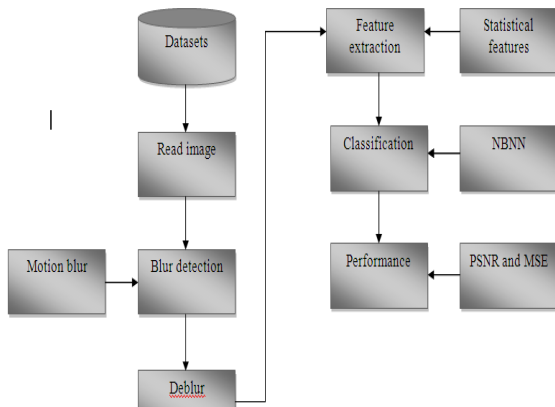
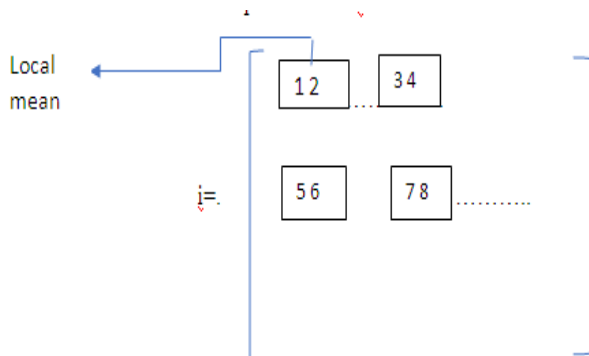


Figure2: Blur Detection Method

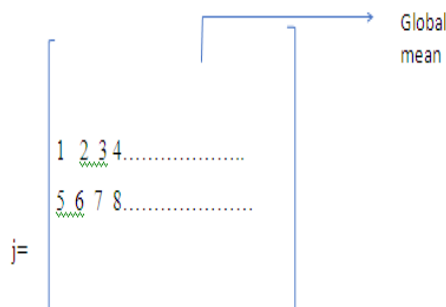
The various design parameters calculated in this paper are as follows:

A. Proposed Algorithm–

1. Consider input image as a motion blurred image (a).
2. For the input image perform the block processing operation and find the mean for individual block represented as i.



3. Find the global mean for the input image represented as a j



4. If  $i > j$  then perform the Gaussian operation on the image.

$$h = \text{fspecial}('gaussian', [3 \ 3], 0.1) \tag{1}$$

$$bb = \text{imfilter}(b(p1:p2, p3:p4), h) \tag{2}$$

5. Else add the blurred image with resultant image.  
 $s(p1:p2, p3:p4) = ll$  (3)

$$s(p1:p2, p3:p4) = ll + b(p1:p2, p3:p4) \tag{4}$$

6. Then we get the blur detected image, from that we can get the extraction of un blurred object(s).

IV. EXPERIMENTAL RESULTS

The proposed algorithm is executed on MATLAB software. Initially the blurred image is given as input the proposed algorithm. The blurred regions are identified with features of the input image. The global and local mean  $s$  is computed to identify the blurred regions of the input image. Once these regions are identified to deblurr the image with gaussain filtering and mask processing techniques. The algorithm is verified on various blurred images. The results of the proposed method are shown in the following figure.



Figure3: Experimental results: Input Blurred Image, Blur Detection, Unblurred Image

V. CONCLUSION

The de-blurring of image plays a vital role in computer vision techniques. In this project, a local power spectrum method is used for the de-blurring of image. In the proposed method if local mean values are greater than global mean values then we apply Gaussian filter to the blurred pixels. By observing experimental results the local mean values are mostly greater than global mean values except in 154-176 pixels. The performance measures proved that the proposed method is efficient. The resultant image is having both visually and qualitatively.

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