



Enriched framework to remove camera shake in Blurred images using Gaussian kernel grazing method

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Abstract:

Camera shaking is a problem which leads to blur images and many photographs. This causes object present in the image unclear. The deblurring methods the Convolution of a sharp image with a uniform blur kernel, Conventional blind deconvolution are used to give a better visualization of the image. It typically assumes frequency-domain constraints on image for motion path during shaking. These camera motions follow the given path and try to gives a clear visual. There is no such system which uniformly or equally removes the blurriness. So this paper introduces the idea of weighted fourier burst accumulation method for resolving camera shake problem. The proposed algorithm performs a weighted average in fourier domain. The weights are based on the fourier spectrum magnitude. Photoshop is a one of system which use to remove the blur of an image.It is mostly use software mechanism which automatically reduce image blurring caused by camera motion.

Keywords: Block formation; Gaussian kernel; equivalent blur kernel estimation; reverse kernel application.

Introduction:

One of the most difficult photography problems to solve is a blurry image. Usually ,when you go back and look at a photo thats blurry ,you simply delete it and move on with your other photos. Its generally regarded as a point of no return, where an image is just not worth saving .Well that could all change with Smart Deblur ,which is capable of fixing blurry images with ease.

Gaussian blur is a result of blurring an image by gaussian function. It is widely used effect in graphics software, typically to reduce image noise and reduce detail. The visual effect of this blurring technique is a smooth blur resembling that of viewing the image through a translucent screen, distinctly different from the effect produced by an out-of-focus lens or the shadow of an object under the usual illumination. Mathematically, applying gaussian blur to an

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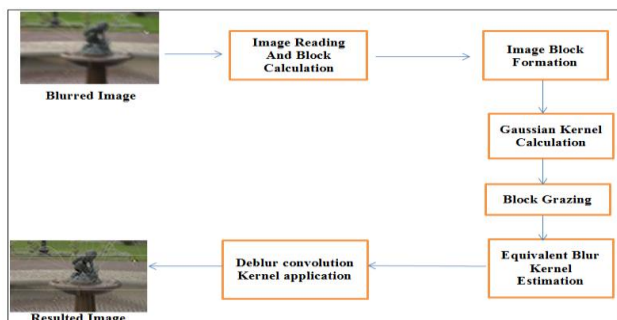
image is the same as convolving the image with the gaussian function. Gaussian blur is a type of blur of image blurring filter that uses a gaussian function for calculating the transformation to apply to each pixel in the image.

Disadvantage Of Existing System:

The Weighted fourier Burst accumulation was used to remove the blurriness of the image. In this technique, only the high density blurred block is considered.

Proposed Methodology:

a. System Overview Diagram:



A. Gaussian kernel calculation:

The gaussian blur is type of image blurring filter that uses gaussian function. gaussian function is used for calculating the transformation to apply to each pixel in the image. The gaussian function at every point on the particular image will be non-zero. It means that the entire image would need to be included in the calculations for each pixels. gaussian blur effect is typically generated by convolving an image with a kernel of gaussian values. The equation of gaussian function is :

$$G(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{x^2}{2\sigma^2}}$$

B. Block Grazing:

In Block Grazing, the image block is considered, the each block of image is sharpened in this phase. The sharpening is done and the pixel calculation is done.

C. Reverse Kernel Calculation:

In image processing, kernel is a small matrix useful for blurring, sharpening, edge detection etc. The values of a given pixel in the output image are calculated by multiplying each kernel value by the corresponding input image pixel value. If kernel is symmetric then place the centre of kernel on the current pixel. Then kernel will be overlapped with neighbouring pixels too. Now multiply each kernel element with the pixel value, it overlapped with and add all the obtained values. Resultant value will be value of the current pixel that is overlapped with center of kernel. If the kernel is not symmetric, it has to be flipped both around its horizontal and vertical axis before calculating the convolution.

D. Pixel Normalisation:

Normalisation is a process that changes the range of pixel intensity values. Dividing each element in the kernel by the sum of all the absolute values of the elements in the kernel. Normalisation ensures that the pixel values in the output image are of the same relative magnitude as those in the input image.

In this paper, the input are taken like blurred image due to the camera shaking. There

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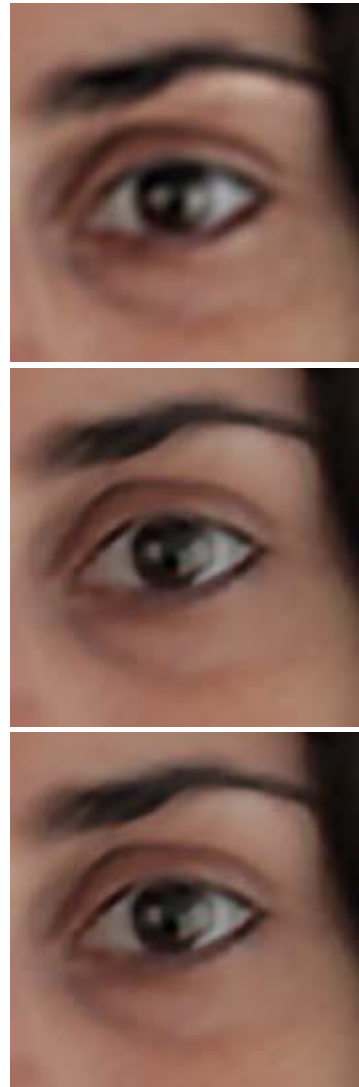
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are some techniques are applied on that image such as gaussian kernel calculation, block grazing,reverse kernel application, pixel normalisation. hence we get the blur free image i.e clear image.

Algorithm:

- 1.Blurred Image.
- 2.Image reading and block calculation.
- 3.Image Block formation.
- 4.gaussian Block Calculation.
- 5.Block Grazing.
- 6.Equivalent Blur kernel estimation.
- 7.Deblur convolution kernel application.
- 8.Resulted image.

Result:



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Future scope:

In the future, We will apply these all techniques on the Videos to remove the blurriness. These techniques are block formation, Gaussian kernel calculation, reverse kernel calculation, kernel estimation.

These techniques reduce the noise of the particular image.

Conclusion:

Here we presented techniques to remove the blurriness of image due to the camera shake. The algorithm is built on the idea that each pixel in the image is generally differently blurred. This being a consequence of the hand shaking. By doing Gaussian kernel calculation, we reconstruct an image combining each and every pixel. Experimental results showed that the reconstructed image is sharper than the original one. This algorithm has several advantages because each and every pixel in the particular image is considered and calculated.