BLOCK PROCESSING BASED THRESHOLDING FOR OCR PURPOSES

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Abstract— Optical Character Recognition determines only the characters of equal brightness throughout all sections of an image .Now a days mobile technologies are popular because of built in cameras available in them, images with high clarity can be captured through mobiles and many applications are developed in order to capture the mobile images which consists of characters. The characters captured should have the equal distribution of contrast over all through-out the image, if Aztec or 2D codes are not available. Accurate determining the characters require pre-processing and binarization, if global thresholding is used , it doesn't provide the required outcome for complicated scenarios. The other method is pixel based adaptive binary thresholding which is very time consuming and doesn't gives satisfactory results . In order to avoid all the problems mentioned above block processing based thresholding for ocr is proposed in this paper. The concept of segmentation and binary conversion using some predefined thresholding is done .

IndexTerms— Area-efficient, Lowpower, CSLA, Binary to excess one converter, Multiplexer

I. INTRODUCTION

Block processing based thresholding for ocr purposes is about retrieving a picture of characters which is taken in a low light areas where the characters are not visible accurately due to low light conditions In order to enhance the low light condition the image is segmented and converted in to logical 0's and 1's format and the enhancement concept is used.

Now a day's students uses mobile phones that have latest technologies and captures the images in phone. Due to low lighting conditions the characters cannot be used for ocr purposes. In order to eliminate the data losses of an image which is captured by a phone where low light affects the character recoginition,the proposed method is used and this method   saves lots of computation time, run time and calculation time.Block processing based thresholding for ocr purposes is an effective method in which the gray scale data of range 0-256 is been converted in to logical 0's and logical 1's

for optical character recoginition ,here we rectify the low light issues present in the gray scale image which is filled with characters and that picture brightness should be equally distributed among all regions .

Thresholding is a simplest method of image segmentation,there are several methods of thresholding and it is a method which replaces each pixel of an image with black pixel if the image intensity is less than some fixed constant and white pixel if the image intensity is greather than that constant

II. LITERATURE REVIEW

Otsu   A ucontrolled method of computerized threshold determination for image segmentation is awarded. An effective thresholding which is simle and robust , namely, so that you can increase the separability of the adjoined characters in an image. The method is very simple, it uses the zeros and first orfder gray streach histogram. It is easy to prolong the approach to multithreshold problems. Several experimental outcome are additionally provided to help the validity of the process

Kapur, P. Sahoo This is prority based it divides an image into. it uses prority based maxima entropy. An extension to multithresholding and to multidimensional histogram processing can also be mentioned.

Gatos, I. Pratikakis A new adaptive strategy for the binarization and enhancement of degraded files. The proposed method does now not require any parameter tuning by the user and might take care of degradations which occur due to shadows, non-uniform illumination, low distinction, large sign-stylish noise, smear and strain. We comply with a couple of distinct steps: a pre-processing process utilizing a low-pass Wiener filter, a hard estimation of foreground areas, a heritage surface calculation by means of interpolating neighboring history intensities, a thresholding by combining the calculated history surface with the original snapshot whilst incorporating snapshot up-sampling and in the end a post-processing step with a purpose to reinforce the fine of textual content regions and continue stroke connectivity. After wide experiments, our method validated superior efficiency towards four (four) well-known techniques on countless degraded record snap shots.

III. EXISTING METHOD

Input Image

A gray scale none equally illuminated image is taken as input in this stage for further processing.

Thresholding

Global thresholding where one threshold is set to whole image and then it is converted into binary by a local value calculated from the global thresholding.

Adaptive thresholding, it calculates threshold values for each pixel and then the if the threshold is less than a preset value it applies background if the threshold value exceeds the present value the foreground values is been applies.

Here value refers to the brightness or intensity of the captured image.

Segmentation

Segmentation is a concept where images are divded in to blocks based on the image size which is of 2 dimensions.

Then the images are divided in to NxN blocks where total block size N=64.

At first the mean value of pixel intensity is calculated which can be used for local binary thresholding.

After the segmentation and local binary thresholding where the images are segmented and converted in to binary images. Due to local thresholding the noise increases rapidly. And total image becomes unstable totally white to avoid that enhancement operation must be performed to future more to reduce noise so additive coefficient is added and multiplicative co-efficient is multiplied which are fixed as shown $N = 64$, $a = 0.95$ and $b = 7$.

Flow chart

The flow diagram of the region based adaptive binarization is shown below where the exact flow of procedure can be determined below
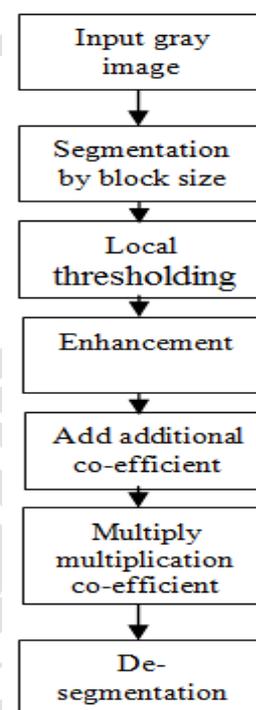
Fig. Flow chart for Block processing based thresholding for OCR purposes

IV. PROPOSED METHOD

Block processing is a concept where images are divided into blocks based on the image size which consists horizontal and vertical dimensions. Then the images are divided in to NxN blocks where total block size N=32, $a = 0.95$ and $b = 7$. Due to reducing the block size the images taken under low light can be effectively processed and the unwanted noise information is minimized. After performing the operations then finally de-segmentation operation is performed where de-segmentation can be

defined as the inverse operation of segmentation. In segmentation the images are split into blocks but in de-segmentation the blocks are merged into an image. The block diagram of the proposed method:
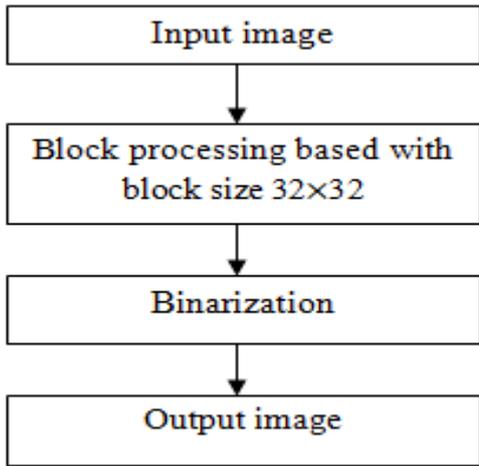

Figure 2: Block diagram of the proposed method

V. RESULTS

The input is selected as which is not visible to appear clearly. Hence, we apply block processing and binarization technique to make it visible to recognize using OCR technique.
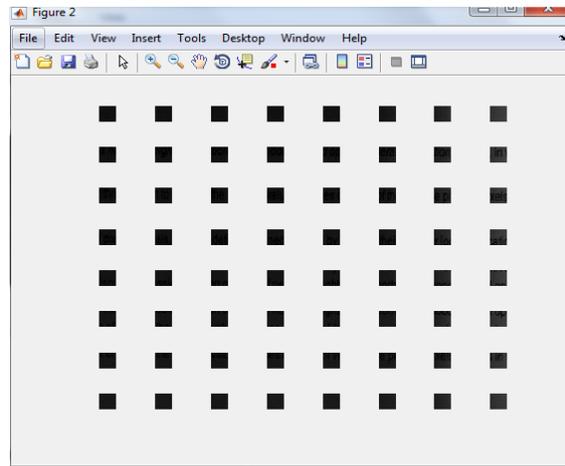

Figure: Input image


Figure: Block processing
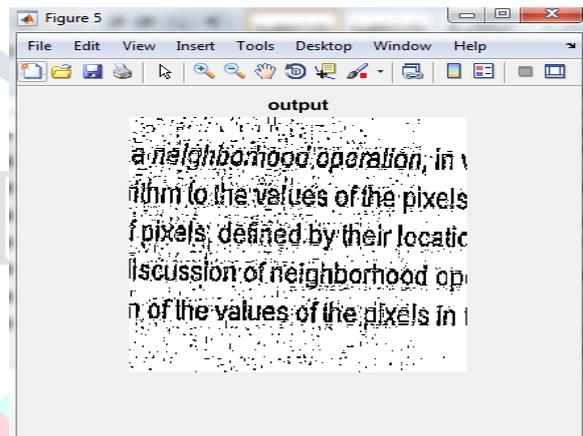
Figure: Output image
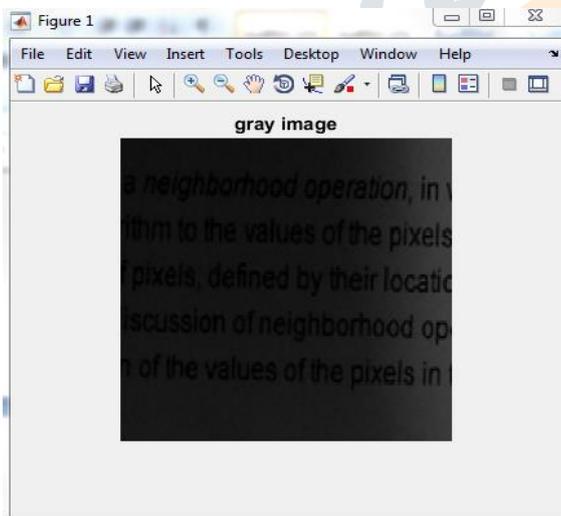
VI. COMPARISION OF RESULTS

IMAGE	EXISTING METHOD	PROPOSED METHOD
F-MEASURE	97.20	98.52
PSNR	6.00	13.11
MSE	0.0730	0.0005188

VII. GRAPH
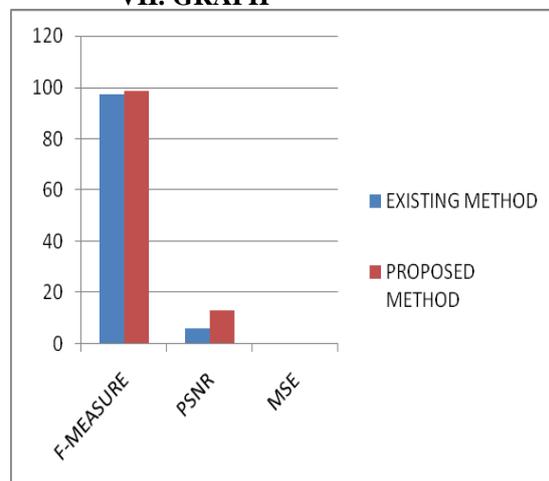
CONCLUSION

Proposed method for optical character recognition leads to comparable accuracy with much faster processing than any other popular adaptive binarization algorithm. The OCR recognition accuracy expressed using the F-Measure for the proposed method is comparable to Bradley's and Sauvola methods with reduced computation time. The proposed algorithm outperforms Niblack's and Wolf algorithms in terms of recognition results as well as processing speed.

The advantages of the proposed approach are visible especially for artificially changing images leading to slightly worse results only in comparison to much slower Niblack's thresholding. However, the proposed method should not be applied for uniformly illuminated images as in such cases better results can be obtained even using the global Otsu's method

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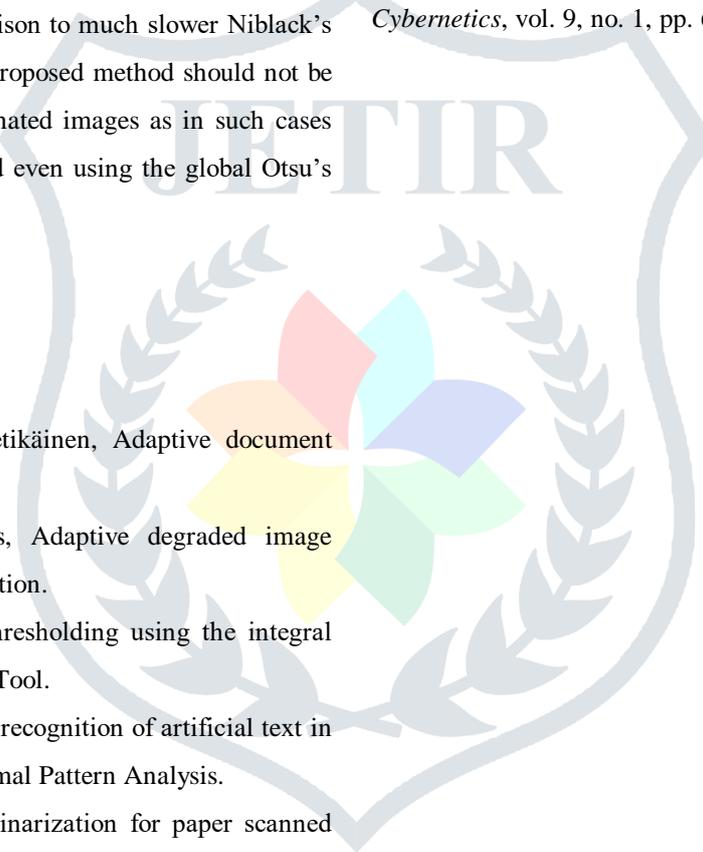
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