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BINARIZATION FOR THE FANCY AND ORDINARY NUMBER PLATE SYSTEM USING BERNSEN ALGORITHM

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ABSTRACT:

Shadow removal algorithm is nothing but the binarization of image. For binarization we use BERNSEN Algorithm. An Improved BERNSEN Algorithm approaches for Number Plate Recognition (NPR) applied to the intelligent transportation system. NPR is an image processing technology used to identify the vehicles by their Number plates. Number plate recognition is mainly based on two methods. One is Number plate detection method which is based on Improved BERNSEN Algorithm and the other is number plate character recognition method. The Proposed NPR algorithm consists of three modules 1) Locating the number plates; 2) Segmenting the Characters; and 3) Identifying the number characters. The system is not at all complicated, speedy energize and suitable for routine as well as unique cases like pictures and discovery of history related papers etc. The respective system is applicable to complicated as well as olden cases. Also by binarization system, documentary pictures for destroying the data from original platform limit and cleaning with picture process algorithm. The lion's share of such document is to establish routine and boost binarization system for those number plate pictures which are not yet cleaned contemporary conclusions are also showed.

INTRODUCTION:

Number Plate Recognition (NPR) systems are usually designed to automatically read the number plate of vehicles passing through a certain region and at along definite distance where protected cameras are situated. Although the existing method for lump is watch which make use of optical characteristics recognition. In case of all available methods the camera is stetted. Consequently it can be look at the motor vehicles closely going through a specific area. On the contrary, a mobile NPR method is useful instrument for legal inquiries of suspected motor cars etc. whenever needed. A mobile phone camera based NPR system has two parts (a) Mobile client which is able to take the number plate picture of motors and cause to go the picture to an extended server for approval and a remote server where the approval of number plate takes place. (b)In addition the server has helped to outside data which contains number of motor vehicles and data in keeping with vehicle details. Here we marked the problem of picture s binarizationand text region extraction from vehicle number plate images captured using cellularphone cameras. The system of binarization plays a major role in effectively localizing the text region in the number plate and further greatly assists in the character extraction and recognition tasks. Many binarization techniques have been fixed in the literature but no one of them are an exclusively created to keep safe the data area in the picture. Moreover substandard images owing to server lighting up conditions, motor velocity, point of view and extension changes, as well as complicated background result into many more challenges in the binarization procedure for a moving motor number plate recognition system. The important functional units include image pre-processing, binarization, heuristic filtering and character recognition. After color to gray image conversion the next task is to convert pictures to only black and white so that to keep safe data area of the number plate so that no text region of interest is lost; the application of heuristic straining removes original data constituents which would have travelled the binarization system. It must not be disregarded that there is no known measure test bed, in accordance with information available to us to test the working mechanism of a NPR

method. However we gathered our own vital information. Besides, we have to work on mobile camera resolution images with the apprehending that these images had to be forwarded to the server for the purpose of recognition. However, we collected motor pictures as follows: (a) the pictures are required for knowledge of color pictures of original subcontinent numbers under different situation. (b) All pictures size 640x480 consider with many more mobiles at our disposal. Our collection of images had a fair deal of variability in terms of lighting conditions, area of shade on the thin sheet area, plates from forward and backward part of the motor with notification skewed image and backward and front area of the number plate. The main focus of the paper is to propose binarization technique that preserves the data area and it can pull out characters from the binary images. The paper is organized as follows: we describe the role of binarization in text region extraction with the help of most used BERNSEN technique.

BINARIZATION:

Binarization is the system of transformation any gray scale image in to black and white picture. This transformation is in accordance with searching limits gray value and settled either a pixels has a specific gray value is to be transferred to black or white. In general inside the picture the pixels having more gray value than the limits is carried to white and pixels having gray value less than the limits is carried to black. Binarization is the point of research for over fifteen years, However to get threshold value of any picture. Many of the algorithms are generic kind using statistical norms. Calculated on the picture with or without having local data or particular text within the picture. No other system is as convenient and original is to search the universal limit for completed picture and binarization.The picture using the single limit. According to this technology the particular difference is exactly pressed. Although they likely to have significant data values, whereas when considering the limit particularly the limit is to be utilized for the middle point pixels of the window or for the complete window .The binarization is carried out through pixels to pixels where every pixels can have computed limit value or area by area basis where complete pixels in the area or window likely to have limit value In many instance, the binarization system unsuccessful owing to lower grade of the picture. The lower rank is likely to happen because of low system of profile of image or because of low grade of real origin. Reduced to lower rank is likely to bring about an account of varying lighting up on genuine origin. The main share of research for binarization is to cover or vital data from lower grade image. In the respective matter, we have given effect to binarization technology follows Otsu, Sauvola and BERNSEN but from all above, I believe in Bernsen system.

FORMULA OF RGB TO GRAY SCALE:

Gray RGB color code has equal red, green Blue, valuesR=G=B For each image pixel with red, green and blue values of (R, G, and B):

$R' = G' = B' = (R+G+B) / 3 = 0.333R + 0.333G + 0.333B$

BERNSEN ALGORITHM:

This is the preprocessing step in license plate detection. BERNSEN algorithm is aimed for odd Illumination, particularly for shadow removal. Let f(x, y) denotes a gray value of point (x, y).Consider a block whose center is a point (x, y) and size is (2w +1) × (2w +1). The threshold T(x, y) of f(x, y) is computed by

$$T_1(x,y) = \frac{\max_{-w\le k,l\le w} f(x+l,y+k) + \min_{-w\le k,l\le w} f(x+l,y+k)}{2}$$

Suppose that f(x, y) denotes the gray value obtained with the Gaussian filter, σ is the scale of the Gaussian filter, and k and l are the parameters of the window. An improved BERNSEN algorithm is depicted here.

Step 1) Compute the threshold $T_1(x, y)$ of f(x, y)

$$T_1(x,y) = \frac{\max_{-w\le k,l\le w} f(x+l,y+k) + \min_{-w\le k,l\le w} f(x+l,y+k)}{2}$$

Step 2) Create the Gaussian filter for the window.

s = (2w + 1) × (2w + 1) of f(x, y).

Step 3) Compute the threshold T2(x, y) of f ^(x, y) as

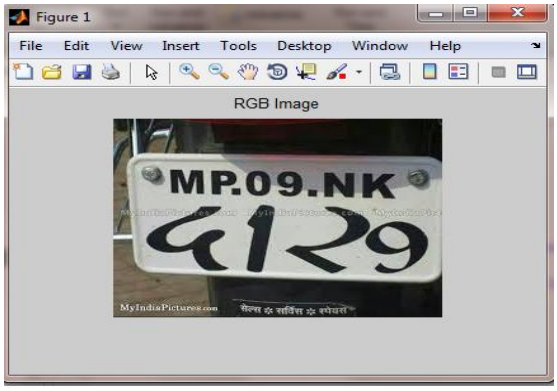
$$T_2(x,y) = \frac{\max_{-w\le k,l\le w} \hat{f}(x+l,y+k) + \min_{-w\le k,l\le w} \hat{f}(x+l,y+k)}{2}$$

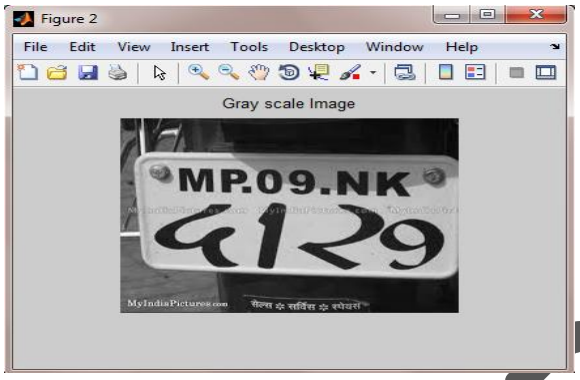
Step 4) to remove noise applying median Filter.

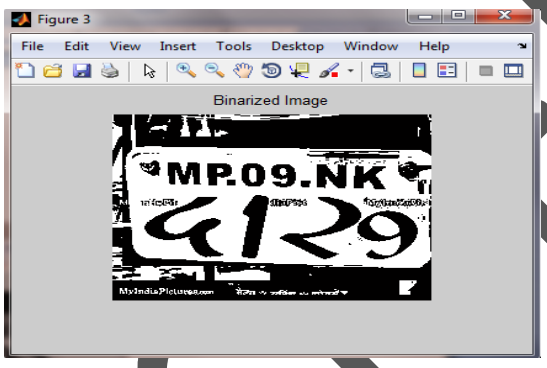
Number plates were obtained under various illumination scenarios and complex backgrounds, shadows or uneven illumination were unavoidable on the license plate. Hence, shadow or uneven illumination removal becomes a required footprint. Here developed Bernsen algorithm is proposed for uneven illumination, particularly for shadow removal.

RESULT:

FANCY NUMBER PLATE:







ORDINARY NUMBER PLATE:

CONCLUSION AND FUTURE SCOPE OF WORK:

Here we mentioned answer for architecture to approve number plate recognition method. We proposed a BERNSEN algorithm techniques for binarization of fancy and ordinary number plate images. We observed that the said system does comparatively good. This method has been recognized under different conditions. This kind of system is useful for almost all number plates in various countries around the globe. In future we also evaluated the character recognition in the binarized images and also the character recognition accuracy is higherfor the proposed BERNSEN algorithm compared to the other binarization schemes.

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