© UNIVERSAL RESEARCH REPORTS | REFEREED | PEER REVIEWED
ISSN : 2348 - 5612 | Volume : 05 , Issue : 04 | January – March 2018

IMAGE TEXT DETECTION AND CONVERSION INTO TEXT FORM

[1]Shekhar Ranjan, [2]Harshali Ragite, [3]ChanchlaTripathi

[1,2]B.E Student, [3]Assistant Professor
[1,2,3]Department of Computer Science & Engineering
[1,2,3]Wainganga Collage Of Engineering & Management , Nagpur ,India

Abstract: *In this paper we are purposing a system by which we can detect the image text and convert into the text form .for which we firstly apply MSER (Maximally Stable External Region) detection to detect character candidates. After that some text features by which the text can be recognized. After recognizing the text, reject the false positives.*

ISSN : 2348-5612 © URR
9 770234 856124

1. INTRODUCTION

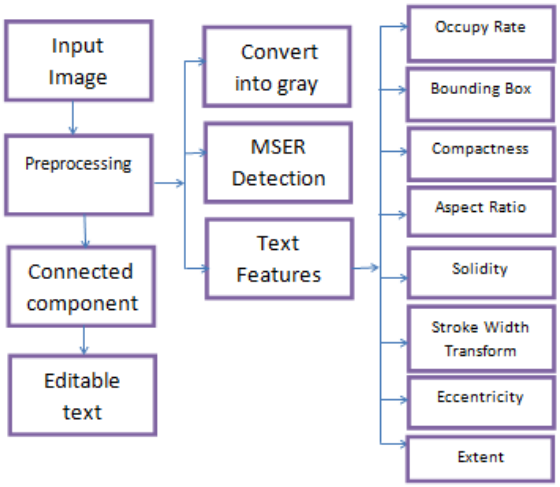
Automatic text recognition is one of the hardest problems in computer vision. An essential prerequisite for text recognition is to robustly locate the text on the images. In real life there is so essential, a method by which the image text of newspaper, book and so on, converted into editable text for good visualization and avoidance of noise which is in the background of the text.

Recognition of text from an image in bulk in quantity is quite complex problem in the eye of computer. This is due to wide variety of text. All texts are of different in font, thickness, color, size, texture, orientation, lightening and many more.

To resolve these problems we define a system by which the identification of character is easy and probably recognized all the text which is in the image.

The main contributions of this paper are, in first place, a new segmentation method based on a combination of MSER and a locally adaptive thresholding method, and secondly, a thorough study on different simple and fast-to-compute features to distinct text from non-text.

2. PURPOSED SYSTEM



1. Input Image

As an input we take an image which contains the visible text in bulk amount, which we have to recognized and converted into the text form.

2. Contrast Enhancement

As we know that all images is made up of the combination of three colors Red, Green and Blue which is known as RGB.In this part we convert the color image into gray this is because the image which contains text is categories in two parts according to its intensity, firstly the text is in high intensity and its background is in low intensity and another is that the text is in low intensity and the background is in the high intensity. In gray conversion the high intensity converted into deep black and low intensity is converted into gray which can be easily bifurcated by text and its background. Gray conversion by using this formula:

(0.299*R+0.587*G+0.114*B)

3. MSER Detection

MSER is introduced by Matas et. al. As we earlier discuss the character is quite different from its background. So using MSER, it is very easy to detect this is why MSER having the following properties:

- Invariance to affine transformation of image intensity
- Conversion to adjacency preserving
- Stability: Since only External region whose support is virtually unchanged over the range of threshold Selected.

- Multiscale detection: Since no smoothing is involved both vary fine and very large scaleis detected
- The set ofall external region can beenumerated in O(loglogn) where n is the number of pixels in the image.

Here in this system the threshold delta value is defined is 1, this is because to detect most part of the image.

4. Text Features

To recognize the text, define some features of character by which we can identify the character. This is mentioned below:

I. Occupy Rate: It is defined as the total area in which the text is present. Here it is defined as (area/height*width).
II. Bounding Box: It is the box in which the object is bounded in a rectangular box.
III. Aspect ratio: It is the ratio of the max (width, height) to the min (width, height) of the character. Mathematically, Aspect ratio: max (width, height)/ min (width, height)
IV. Compactness: It defines the spacing between the object. Mathematically, Compactness: (area /perimeter ∗ perimeter).
V. Solidity: It is defined as the (area/convex area) where convex area is the smallest convex polygons that contain the region.
VI. Stroke Width Transformation: It is defined as the space between the widths of the character. Here we calculate the stroke width by distance formula: $((x_1-x_2)^2+ (y_1-y_2)^2)^{1/2}$.
VII. Eccentricity: It is the ratio of the distance between the foci of the ellipse and its major axis length. The value is between 0 and 1.An ellipse whose eccentricity is 0 is actually a circle, while an ellipse whose eccentricity is 1 is a line segment.
VIII. Extent: It is the proportion of the pixels in the bounding box that are also in the region. Computed as the Area divided by area of the bounding box.

4. Connected Components:

It is used to group the adjacent character to make the words meaningful and reject the false

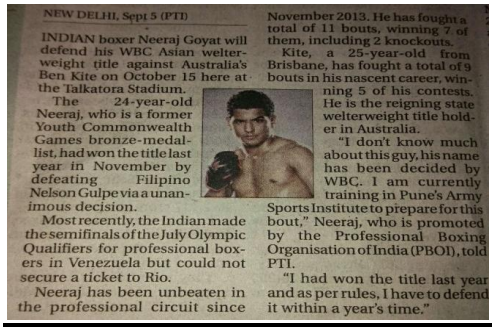
positives, which is based on the text features as previously defined.

Purposed algorithm:

1. Take an image as input.
2. Convert it into gray scale though modifying the rgb property.
3. Apply MSER to detect the character candidates.
4. Checking text features:
   - i. Occupy rate
   - ii. Bounding box
   - iii. Aspect Ratio
   - iv. Compactness
   - v. Solidity
   - vi. Stroke width Transform
   - vii. Eccentricity
   - viii. Extent

3. OUTPUT AND RESULTS

A] Input image:


NEW DELHI, Sept 5 (PTI)

INDIAN boxer Neeraj Goyat will defend his WBC Asian welterweight title against Australia's Ben Kite on October 15 here at the Talkatora Stadium.

The 24-year-old Neeraj, who is a former Youth Commonwealth Games bronze-medallist, had won the title last year in November by defeating Filipino Nelson Gulpe via a unanimous decision.

Most recently, the Indian made the semifinals of the July Olympic Qualifiers for professional boxers in Venezuela but could not secure a ticket to Rio.

Neeraj has been unbeaten in the professional circuit since November 2013. He has fought a total of 11 bouts, winning 7 of them, including 2 knockouts.

Kite, a 25-year-old from Brisbane, has fought a total of 9 bouts in his nascent career, winning 5 of his contests.

He is the reigning state welterweight title holder in Australia.

"I don't know much about this guy, his name has been decided by WBC. I am currently training in Pune's Army Sports Institute to prepare for this bout," Neeraj, who is promoted by the Professional Boxing Organisation of India (PBOI), told PTI.

"I had won the title last year and as per rules, I have to defend it within a year's time."

Fig 1: image text for input data

B] MSER region:

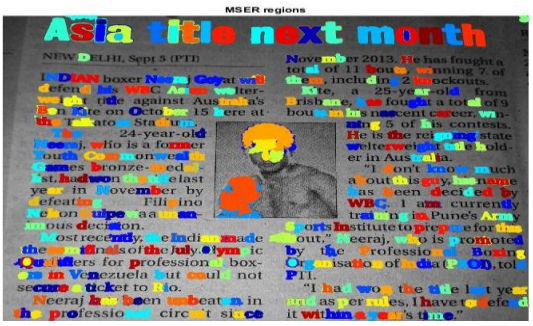


Fig 2: show the MSER region

C] Non-text region:

Fig 3: shows after removing non-text region based on geometric property

D] Stroke width region:

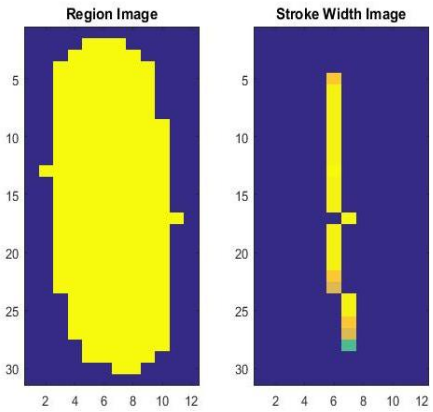


Fig 4: shows stroke width image

E] Detected Text:

Fig 4: shows the detected text

4. CONCLUSION

From earlier we can only detect the title of the document or the vehicles number plate and so on only. Now by this system the whole document is easily detect and can be modified as we want, (text can be added, removed and many other). In this method we can detect the approx. 80% of the image text.

5. REFERENCES

1. Alvaro Gonza´lez, Luis M. Bergasa, J. Javier Yebes, Sebastia´n Bronte. Text Location in Complex Images.21st International Conference on Pattern Recognition (ICPR 2012) November 11-15, 2012. Tsukuba, Japan.pages 617-620.
2. Yao Li and Huchuan Lu.SceneTextDetectionviaStrokeWidth .21st International Conference on Pattern Recognition (ICPR 2012) November 11-15, 2012. Tsukuba, Japan.pages 681-684
3. Luk´ aˇs Neumann Jiˇ r´ıMatas Centre for Machine Perception, Real-Time Scene Text Localization and Recognition978-1-4673-1228-8/12/$31.00 ©2012 IEEE.pages 3538-3545
4. Huizhong Chen1, Sam S. Tsai1, Georg Schroth2, David M. Chen1, Radek Grzeszczuk3 and Bernd Girod.ROBUSTTEXTDETECTIONIN NATURALIMAGESWITH EDGE-ENHANCEDMAXIMALLYSTABLE EXTREMALREGIONS.2011 18th IEEE International Conference on Image Processing 2610.pages 2609-2612
5. J. Matas, O. Chum, M. Urban, and T. Pajdla. Robust widebaselinestereofrommaximallystabl eextremalregions. In BMVC, pages 384–393, 2002.
6. S. M. Hanif and L. Prevost. Text detection and localization in complex scene images using constrained adaboost algorithm. In ICDAR, 2009.
7. D. Karatzas, S. R. Mestre, J. Mas, F. Nourbakhsh, and P. P. Roy. ICDAR 2011 Robust Reading Competition. Challenge 1: Reading Text in Born-Digital Images (Web and Email). In ICDAR, 2011.
8. S. H. Lee, M. S. Cho, K. Jung, and J. H. Kim. Scene text extraction with edge constraint and text collinearity. In ICPR, 2010.
9. S. Lucas. Text locating competition results. In ICDAR, 2005.
10. S. M. Lucas, A. Panaretos, L. Sosa, A. Tang, S. Wong, R. Young, K. Ashida, H. Nagai, M. Okamoto, H. Yamamoto, H. Miyao, J. Zhu, W. Ou, C. Wolf, J.-M. Jolion, L. Todoran, M. Worring, and X. Lin. ICDAR 2003 robust reading competitions: entries, results, and future directions. IJDAR, 7(2-3):105–122, 2005.