Scientific Journal of Impact Factor (SJIF): 5.71

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

Volume 5, Issue 04, April -2018

# IMPROVED FEATURE EXTRACTION AND TTS METHOD BASED BLIND OCR

Satyendra singh kaneriya[1], Abhilash Mishra[2]

[1]Dept. of CSE/IT NITM College Gwalior, India
[2]Asst. Prof. Dept. of CSE/IT NITM College Gwalior, India

**Abstract**—*Optical Character Recognition (OCR) can be utilized as a part of numerous applications, for example, machine interpretation, postal preparing, script recognition, text-to-speech, reading aid for blind, etc. Myanmar OCR system is essential to convert numerous published books, newspapers and journals of Myanmar into editable computer text files. In this research these text is converted into speech output. A novel algorithm is evaluated on variety of scenes. The detected text is compared with the template and converted into the speech output. The content examples are confined and binarized utilizing. The perceived content is changed over to a sound yield OCR. The recognized text is converted to an audio output. The speech output is given to the blind user. The text input from the user is converted into speech using based process. In this paper convert to text–to-speech for propose process. Calculate the Accuracy of Propose work.*

***Keywords***— *Optical character Recognition, Image Processing, Feature Extraction, text-to-speech(TTS).*

## I. INTRODUCTION

Optical Character Recognition (OCR) is a bit of programming that proselytes printed content and pictures into digitized frame with the end goal that it can be controlled by machine. Unlike human brain which has the capability to very easily recognize the text/ characters from an image, machines are not intelligent enough to perceive the information available in image. Therefore, a large number of research efforts have been put forward that attempts to transform a document image to format understandable for machine. OCR is a mind boggling issue as a result of the assortment of dialects, textual styles and styles in which content can be composed, and the intricate standards of dialects and so on. Hence, techniques from different disciplines of computer science (i.e. image processing, pattern classification and natural language processing etc. are employed to address different challenges. This paper introduces the reader to the problem. It enlightens the reader with the historical perspectives, applications, challenges and techniques of OCR.[1].

Independence for disabled persons is of chief significance. This paper presents a study of effective prototype system to help blind persons to become self-governing. Assistive technology is a development of a product which can be customized in a way that assists the challenged people to collect more particulars as that of normal people. At present there are abundant assistive technologies devices such as vibrating watch and talker device are common examples. Pictures with transcript act as central communication medium for conveying information. Important phase of consideration are text existence and character recognition in the assistive methods. Two basic methods for obtaini++ng region of interest is rule based method and learning based method. In rule based method, definite threshold values are preferred as cause of valuation. Opposite to this is learning methods in these neural networks are trained for gathering the information about picture. Printed text information is widely stretched in today‟s scenarios for example in consumer product labels, bank forms, receipts etc. There are assured devices like magnifying glasses, forms of optical aids that aid blind users for obtaining transcript information. Current environment helps blind user in product text reading is bar code reader with modest complexity in locating the barcode. When it comes for text extraction it is obvious that the blind users will hold the exact manner of product for recognition. There is possibility for holding the product box in upside down or with some orientation of box. So a process to identify text even with some orientation is needed.[2].

Perusing is basic in everyday life. Printed content is available wherever as archives prefer reports, receipts, proclamations, eatery menus, item bundles, guidelines, and so on. The quantity of visually impaired people in creating nation and even in created nation is expanding. There are numerous gadgets that can give great access to normal protests, for example, item bundles and questions with printed content, for example, names of various brands.

The capacity of individuals who are outwardly poor or have huge visual debilitations to peruse printed content and item bundles will upgrade free living and encourage financial and social independence. To understand the assignment that to separate content data from complex foundations with variable content examples, this framework proposes a content location and limitation calculation that consolidates recognition and transformation of content examples. The commitment of the paper is fundamentally on methodological viewpoint , displaying a viable technique for content location and acknowledgment. This really separates content characters and discriminative content highlights from foundation outliers.[3].

 

One out of each three visually impaired individuals on the planet lives in India. A gauge of 15 million visually impaired individuals lives in India. In this there are around 2 million visually impaired youngsters in India. Just 5% of them get instruction. This figure has been largely contributed to the fact that there is no cost effect assistive technology for blind children to pursue their academic purposes. This estimation would go up in future, if there is no cost effective assistive technology for the blind. The matter of blind students in India having problems with finding writer for their competitive exams further add to this problem. The unavailability of writers for blind students and cases of writers not turning up for blind students in exam has been witnessed in the past. An assistive technology in form of automated read – write capabilities using voice control would address this problem to a great extent.[4]

## II. USING TECHNIQUE

### *1. Feature Extraction*

In this stage, highlights of individual character are extricated.The performance of an each character recognition system that depends on the features that are extracted. The extracted features from input character should allow classification of a character in a unique way. Distinctive sorts of highlights are accessible like corner to corner highlights, crossing point, open-finished highlights, zoning features.[5].

### *2. Optical Character Recognition*

OCR is optical character acknowledgment module is the mechanical or electronic change of pictures of composed, transcribed or printed content into machine-encoded content. It is a typical technique for digitizing printed message with the goal that it can be utilized as a part of machine process, for example, content to-discourse. OCR is optical character acknowledgment module is the mechanical or electronic transformation of pictures of wrote, written by hand or printed content into machine-encoded content. The info is given as content, utilizing a finger gadget mounted camera which catches message and sends the information content to the OCR procedure where the extraction of content to discourse is been finished. From the caught input content is divided as word by word recognition in this manner to peruse it as particular word. Limit discovery is finished by identifying words which are fit inside the limit, if not it wipes out the content which is unfit to peruse. The process of text extraction is carried out by matching with templates one by one and then forming a whole word. The mentioned line or a word will be read from the captured input text with a suitable coding. After matching with the templates and displays it as a text and reads it aurally. In this strategy a USB camera which catches the info given in content configuration and it is sent to OCR process which forms it as content and changes over it into a discourse shape.

### *3. TTS Module*

A text-to-speech (TTS) framework changes over ordinary content into discourse different frameworks render emblematic semantic portrayals like phonetic translation into discourse. A content to-discourse framework is utilized to peruse each word as the user`s finger disregards it, and particular sound as well as haptic prompts can be utilized to flag different occasions, for example, end of line, beginning of line and so forth. It is made out of two sections: a front-end and a back-end. The frontend has two noteworthy assignments. To begin with, it changes over crude content containing images like numbers and contraction into what might as well be called composed out words. This procedure is regularly called content standardization, pre-preparing, or tokenization the front-end at that point allots phonetic translations to each word, and partitions and denotes the content into prosodic units, similar to expressions, conditions and sentences. The way toward allocating phonetic interpretation to words is called content to phoneme or grapheme-to-phoneme conversion.[6].

## III. LITERATURE SURVEY

Mr.Rajesh M, et al. [7] The proposed thought includes content extraction from filtered picture utilizing Tesseract OCR and changing over the content to discourse by e-Speak apparatus, a procedure which makes outwardly weakened people to peruse the content. This is a prototype for blind people to recognize the products in real world by extracting the text on image and converting it into speech. Proposed technique is done by utilizing Raspberry pi and convey ability is accomplished by utilizing a battery reinforcement. Accordingly the client can convey the gadget anyplace and ready to use whenever. Upon entering the camera view previously stored faces are identified and informed which can be implemented as a future technology. This technology helps millions of people in the world who experience a significant loss of vision.

 

Ahmed GARI, et al. [8] In this paper, a novel and a productive strategy in light of extraction of Harris corner highlights focuses and Hough change is introduced to evaluate skew point of printed documents. A comparative study using the ICDAR2015 database with the well-known methods in literature, shown the effectiveness and the performance of the proposed algorithm.

Cui Xiaoxiao,et.al [9] Another strategy for computerized number acknowledgment for mechanical advanced meters in substation is clarified in this paper, which acknowledge straight SVM endless supply of Oriented Gradients (HOG) highlights. The grids of Histograms of Oriented Gradient descriptors considerably exceed for feature detection of the gray image which has more information than binary image. A unique approach with division of district of character picture is proposed in this paper, which is imperative to the further HOG highlight discovery. SVM classifier is utilized as a part of the recognition parade and result demonstrates that HOG has better execution on digit arrangement in the substation examination robot device acknowledgment.

Monika Lusa,et.al [10] Automatic movement sign acknowledgment by PCs is ending up generally alluring in all actuality. Strategies for programmed activity sign location are utilized as a part of the car business, in models of car autos, as well as in mass-created models and cell phones. In this paper, a two-stage calculation in light of key focuses includes finders to identify and perceive street signs will be introduced. The principal phase of the calculation finds objects introduce in the scene and decides their shape in view of geometric properties.In order to reduce the number of found objects first phase includes two additional steps to remove too large and too small objects, and to merge objects of the same shape found in a similar area of the scene into one object. The second stage includes appropriate correlation of recognized question with street signs from the learning database in view of identified keypoints.

Hojin Cho [11] This paper gives a novel scene content location calculation, Canny Text Detector, which takes advantage of the contrast between picture edge and content for viable content limitation with enhanced review rate. As closely associated edge pixels construct the structural information of an object, we observe that consistent characters compose a meaningful word/sentence which can shared a parallel properties such as spatial location, size, color, and stroke width in spite of language. In any case, basic scene content location approaches have not completely used such comparability, but rather for the most part depend on the characters characterized with high certainty, can lead to a low review rate. With a specific end goal to rapidly and heartily confine an assortment of writings we can misuse a correlation. By the utilization of unique Canny edge indicator, our calculation makes utilization of twofold limit and hysteresis following to recognize writings of low certainty. As indicated by exploratory outcomes on open datasets we can show that our calculation beats the state-of the-art scene content identification techniques in wording of detection rate.

Govardanam, et al.[12] This paper proposes a versatile model unit that would change over the content in source material into discourse and furthermore changes over the discourse given by the client into content. The system of OCR is utilized to change over the picture caught from the source material into content configuration appropriate for amalgamation in progressive stage. The changed over content organization is handled utilizing Hidden Markov Model based content to-discourse union to deliver the comparable discourse flag. This empowers the visually impaired individual to tune in to the data in content organization. Concealed Markov Model based discourse to-content union is utilized to empower the visually impaired individual to react to content data or decipher his discourse motion into printed data. The discourse contribution from the client is changed over into content utilizing Hidden Markov Model based discourse amalgamation. The model pack will have the capacity of computerized discourse to text and text– to-speech union joined in a solitary unit. This unit is fueled utilizing a reasonable range battery to guarantee his compactness.

## IV. PROPOSE WORK

Proposed plan for this system is to help blind customers in mall for reading and directing way via Optical Character Recognition (OCR) software system. The proposed method is to help blind person in reading the text present on the text labels, printed notes and products as a camera based assistive text reader. The implemented idea involves text and speech recognizes the text using OCR. Conversion of the recognized text file to speech output. The system is good for portability, which is achieved by providing a improve output. The portability allows the user to carry the device anywhere and can use at any time.

 

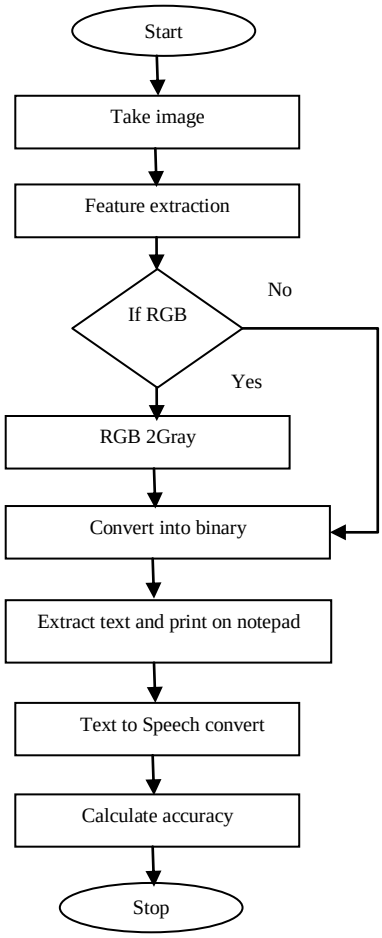


Fig.1 Flow diagram of Propose Work

**Propose algorithm**

Step.1. First take an text image.

Step.2. Extract the feature of original image.

Step.3. if RGB

RGB2Gray

Else

Gray=Gray

End

Step.4. Convert Gray image Binary.

Step.5. Extract text and print on notepad.

Step.6. Convert text into speech.

Step.7. Calculate Accuracy.

Step.8. Stop.

## V. RESULT ANALYSIS

The proposed framework comprise of an OCR module, where a USB camera which catches the info given in content arrangement and it is sent to OCR process which forms the content and change over it into a discourse shape. Captured image is sent to MA TLAB, this is to fetch word-by-word segmentation from the input image and compare it with templates. The output of detecting text will be processed from each conversion of RGB 2 GRAY.

 

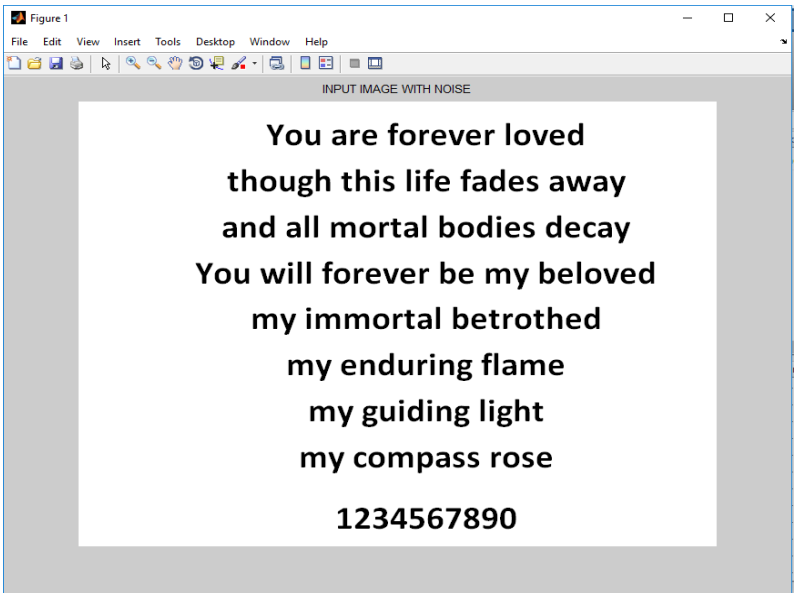


Fig. 2.Original image with noise.

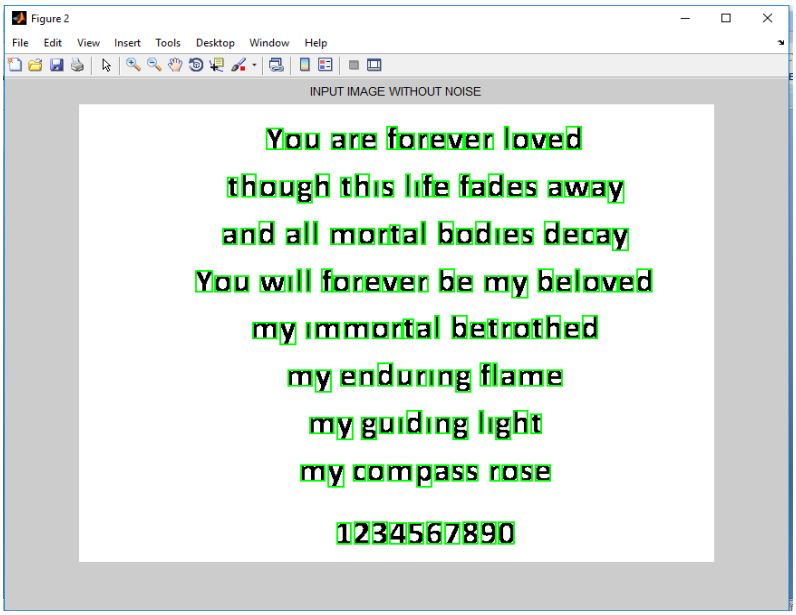


Fig. 3.Input image without noise.

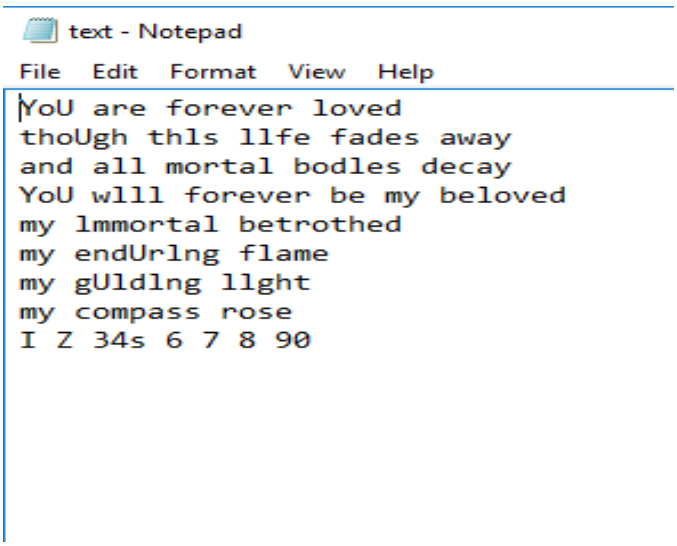


Fig. 4. Extract the text and show on notepad.

 

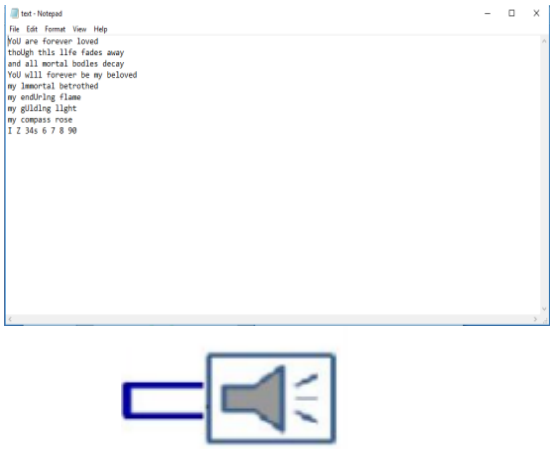


Fig. 5. Speech output for Input text

Convert text to Speech recognition.
Once the completion of matching with templates, output will be displayed in text format where the input conditions prescribed above will result in text form extracting message alone from the caught input picture as appeared in beneath Fig (10) with a case embellished and yield will be shows as content in the charge window. Through this order window endorsed yield to be delivered will be shown as word by word by and aurally implying the content aside. Thus the procedure for text detection with speech synthesizer is explained in detailed with a workflow of simulated result.

Table.1. Comparison Base Accuracy and Propose Accuracy

| Base Accuracy | Propose Accuracy |
|---|---|
| 51 | 71 |

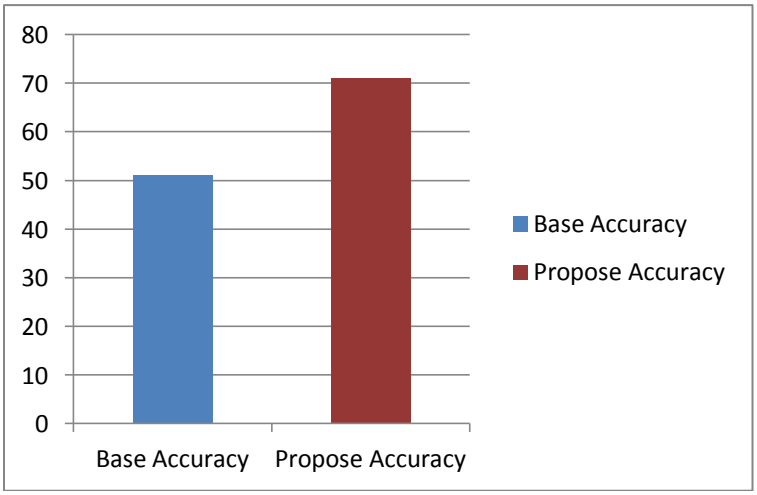


Fig.6. Graph.1 Comparison Base Accuracy and Propose Accuracy

## VII. CONCLUSION

Optical Character Recognition is used to predict the input text with pre-loaded database template. Both the characters are compared if it matches then using text to speech synthesizer, speech output is produced. The work is recreated utilizing MATLAB programming and the discourse yield is created. OCR and discourse integrating. The proposed work is tried with various information sets in printed content arrangement where commotion parts are evacuated and content is extricated to foresee the content aurally and is further enhanced by identifying the adjacent character recognition for effective reading to avoid the discontinuity. An output produced as audio output to read the corresponding input which helps the blind people to read any printed text in vocal form.

 

**REFRENCES**

[1] Noman Islam, Zeeshan Islam, Nazia Noor, "A Survey on Optical Character Recognition System". Journal of Information & Communication Technology-JICT ISSN-2409-6520 Vol. 10 Issue. 2, December 2016

[2] Swati Vikas Kodgire1 , G. S. Sable, "A Review on Optical Character Recognition and Text to Speech Conversion". International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064 Volume 5 Issue 6, June 2016

[3] Samruddhi Deshpande, Ms. Revati Shriram, "ime Text Detection and Recognition on Hand Held Objects to Assist Blind People." 2016 International Conference on Automatic Control and Dynamic Optimization Techniques (ICACDOT) International Institute of Information Technology (I²IT), Pune978-1-5090-2080-5/16/$31.00 ©2016 IEEE

[4] Govardanam, Vignesh Babu T,Sri Hari Kavin N, "Automated Read-Write kit for Blind using Hidden Markov Model and Optical Character Recognition". 978-1-4673-9223-5/15/$31.00 c 2015 IEEE

[5] Hiral Modi, M. C. Parikh, " A Review on Optical Character Recognition Techniques". International Journal of Computer Applications (0975 – 8887) Volume 160 – No 6, February 2017.

[6] Sanjana.B1 , J.RejinaParvin, "Voice Assisted Text Reading System for Visually Impaired Persons Using TTS Method". IOSR Journal of VLSI and Signal Processing (IOSR-JVSP) Volume 6, Issue 3, Ver. III (May. - Jun. 2016), PP 15-23 e-ISSN: 2319 – 4200, p-ISSN No. : 2319 – 4197

[7] Mr.Rajesh M., Ms. Bindhu K. Rajan, Ajay Roy, Almaria Thomas K. "TEXT RECOGNITION AND FACE DETECTION AID FOR VISUALLY IMPAIRED PERSON USING RASPBERRY PI". 2017 International Conference on circuits Power and Computing Technologies [ICCPCT]. 978-1- 5090-4967- 7/17/$31.00 © 2017 IEEE

[8] Ahmed GARI, Ghizlane KHAISSIDI, Mostafa MRABTI, Driss CHENOUNI, LIPI, ENS FES, MOROCCO, Mounim El YACOUBI, EPH, TELECOM SUDPARIS PARIS, FRANCE, "Skew detection and correction based on Hough Transform and Harris Corners". 978-1-5090-6681-0/17/$31.00 ©2017 IEEE

[9] Cui Xiaoxiao, Fang Hua, Yang Guoqing, Zhou Hao, "A New Method of Digital Number Recognition forSubstation Inspection Robot" 978-1-5090-3228-0/16/$31.00 ©2016 IEEE.

[10] Monika Lusa, "Recognition of Multiple Traffic Signs using Keypoints Feature Detectors" 2016 international Conference and Exposition on Electrical and Power Engineering (EPE 2016), 20-22 October, Iasi, Romania.

[11] Hojin Cho Myungchul Sung Bongjin Jun Stradvision, Inc. Canny Text Detector: "Fast and Robust Scene Text Localization Algorithm" 2016 IEEE Conference on Computer Vision and Pattern Recognition.

[12] Govardanam, Vignesh Babu T,Sri Hari Kavin N, "Automated Read-Write kit for Blind using Hidden Markov Model and Optical Character Recognition". 978-1-4673-9223-5/15/$31.00 c 2015 IEEE

 