INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

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   RESULTS & DISCUSSION

   FINDINGS

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

A TEXT READING SYSTEM FOR THE VISUALLY DISABLED

ARAVIND.S
STUDENT
COLLEGE OF ENGINEERING
CHENGANNUR

ROSHNA.E
STUDENT
COLLEGE OF ENGINEERING
CHENGANNUR

ABSTRACT

There are about 45 million blind people and 135 million visually impaired people worldwide. Disability of visual text reading has a huge impact on the quality of life for visually disabled people. Although there have been several devices designed for helping visually disabled to see objects using an alternating sense such as sound and touch, the development of text reading device is still at an early stage. Existing systems for text recognition are typically limited either by explicitly relying on specific shapes or color masks or by requiring user assistance or may be of high cost. Therefore we need a low cost system that will be able to automatically locate and read the text aloud to visually impaired persons. The proposed system continuously captures images, locates textual characters and extracts contents within, and converts it into speech and reads it aloud to the user. The system consists of a wearable camera, a computing device and a headphone. The framework has two main parts: image to text conversion and text to voice conversion.

KEYWORDS
text reading system, visually disabled people.

1. INTRODUCTION

Reading challenges can affect people who are visually impaired, those with learning disabilities or low literacy skills, as well as those who have difficulty in holding books or documents. These individuals may benefit from the use of various reading technologies and strategies. One solution is to use a reading system that uses optical character recognition technology to make an electronic copy of a document and then use text to speech technology to read the information to the user.

There are three essential elements for text reading technology. They are scanning, recognition and reading text. Initially a printed document is scanned by a camera. OCR then converts images into recognized characters. And then speaks out the recognized text. Optical Character Recognition (OCR) converts the pixel representation of a letter obtained by scanning a text or a document into its equivalent character representation. OCR has been in development for almost 80 years. Modern version of OCR appeared in the middle of 1940's, with the development of digital computers. Since then several character recognition systems has been proposed. First patent for an OCR machine was filed by a German named Gustav Tauschek in 1929. There are varieties of software based solutions available for OCR. However there is little work done in the area of hardware implementation of OCR. A text-to-speech system converts normal language text into speech. Text to speech conversion systems have an enormous range of applications. Their first real use was in reading systems for the blind, where a system would read some text from a book and convert it into speech.
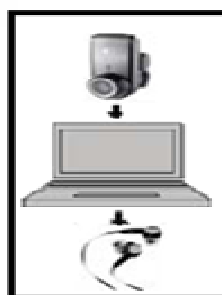
Automatic text recognition from images has recently received a growing interest because of its use in image retrieval, video indexing, mobile robotics, and intelligent transport systems, to name but a few key applications. In particular, methods have been developed to read the text encountered in natural scenes, with the aim to assist the visually impaired persons [1] or to detect the text within road signs from natural scene video. However, the authors generally admit that current results are not enough for practical use. Other approaches of interest include a camera-equipped cell phone based way finding system as well as a wearable camera system that automatically finds and track text regions in surrounding scenes [2]. A lot of related research work is now focusing on multi-purpose reading assistants.

Character recognition for visually disabled is one of the most difficult tasks. Some robots with character recognition capability have been proposed earlier. A text capturing robot equipped with an active camera has been presented by Makoto Tanaka and Hideaki Goto [3]. Their robot can find and track multiple text regions. Text region recognition can be done using a camera. But in robot application the camera movement is constrained by simple and steady robot movements. A portable camera can be used which can be moved freely. So a robust text tracking method is needed to develop a text capturing device.

First successful prototype of reading machine was developed at Haskin Laboratories in 1970's. These large prototypes sent the output from a fixed font OCR to the input of speech synthesis algorithms developed at Haskin Laboratories. First commercial reading machine for the visually impaired was marketed by Ray Kurzweil. Available text reading systems for visually impaired persons are Cicero text reader, i-scan, Kurzweil 1000; Open Book, Ovation, Scan N Talk, VERA etc. All these systems are highly expensive and cost more than rupees 2 lakhs. By the end of 2009 Intel announced a Linux-based text reading device with optical character recognition and text-to speech technology. But the cost of the system is nearly rupees eighty thousand. Another text reader has also been introduced in 2010, Optelec Clear Reader+ Advanced, a reading assistant to scan, view, magnify, save and/or listen to any printed text in one portable solution. The cost of the system is above one lakh rupees. These two latest text reading systems for visually disabled are of high cost [7] [8].

In this paper a text reading device with optical character recognition and text to speech technology designed for visually impaired is presented. The device is equipped with a camera for a snapshot of the text which is then made audible to the user using a headphone. The rest of this paper is organized as follows. Section 2 presents an overview of the text reading system, in terms of requirements, architecture, and implementation. Section 3 concludes the paper with comments on current and future work, followed by an abridged list of major references.
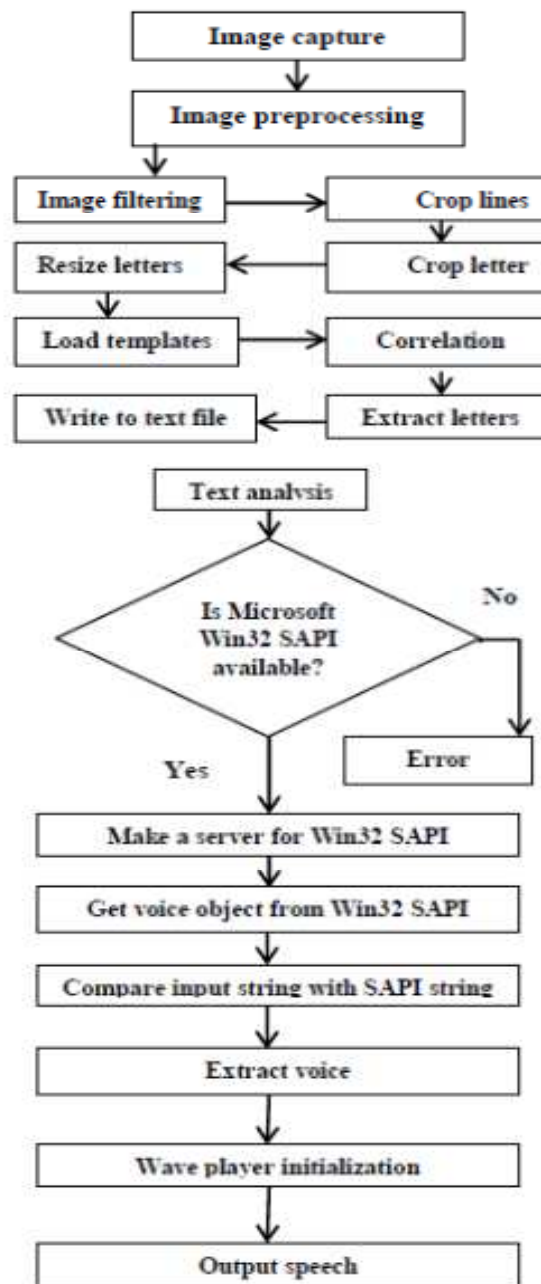
FIG.1. SYSTEM SETUP

2. DESIGN AND IMPLEMENTATION
2.1. SYSTEM ARCHITECTURE
The system consists of a portable camera, a computing device and a headphone similar to that shown in Fig 1. Images can be captured using the camera. For better results we can use a camera with zooming and auto focus capability. System then attempts to detect text regions in the image and then retains text areas discarding the others. Then image filtering is done which comprises of cropping the text regions detected. Next, character recognition consists of converting the processed text image into characters. And finally the selected text is converted into a speech stream, which is then spoken to the user [4].

FIG.2. PROCESS FLOWCHART

2.2. SYSTEM DESIGN
Operational stages of the system can be summarized as: 1) Image capture 2) Image preprocessing 3) Image filtering 4) Character recognition 5) Text to speech conversion [4]. Process flowchart is shown in Fig.2.
Image captured by camera is stored in a file in a specified format. Application software used is MATLAB. After image capture we have to perform image preprocessing, which comprises of image format conversions, thresholding etc. Then perform image filtering. Image filtering comprises of cropping the image. Then character recognition. Character recognition comprises of cropping each line, cropping each letter, performing correlation and writing to a text file [5]. Before character recognition create a file containing the model templates of all alphabets, numbers and special characters. First crop each line and then crop every letter of each line of the text document. After cropping each letter perform correlation of cropped letter with already stored model of template. As a result of correlation we get the model template which is most similar to the cropped letter. The process is repeated for entire cropped letters [6]. After performing correlation of all cropped letters write the recognized letters to a text file and then convert this text to speech. Microsoft Win 32 SAPI library has been used to build speech enabled applications, which retrieve the voice and audio output information available for computer. This library allows selecting the voice and audio device one would like to use.

FIG.3. TEXT READING SYSTEM

2.3. SYSTEM IMPLEMENTATION

The current system prototype as shown in Fig.3 consists of a 30-megapixel Tech-Com web camera, interfaced via USB 2.0 to a Lenovo laptop computer with 2.16GHz Intel Pentium Dual Core CPU and a headphone. Actual deployment systems ought to use a smaller notebook. Captured images have a resolution of 640x480. Since this system is for visually disabled persons a holder is used to keep the text documents in position.

3. RESULTS AND CONCLUSION

Image into text and then that text into speech is converted using MATLAB. For image to text conversion firstly image is converted into gray image then black and white image and then it is converted into text by MATLAB. Microsoft Win 32 SAPI library has been used to produce speech. By this approach we can read text from a document and generate synthesized speech through a computer's speakers. The program has the flexibility to be modified. This approach can be used in part as well. If we want only image to text conversion then it can be possible and if we want only text to speech conversion then it is possible easily. People with poor vision or visual dyslexia or totally blindness can use this approach for reading the documents and books easily. People with speech loss or totally dumb person can utilize this approach to turn typed words into vocalization. Since the system uses portable camera it can also be used by visually disabled persons for navigating within new or unfamiliar environments by locating signs and reading their content out loud. System can also be used to make information browsing for people who do not have the ability to read or write. The system integrates both proven algorithms and novel techniques for image processing text detection; character recognition and speech synthesis and good results have been achieved. Future work will need to address image processing issues such as blurred pictures or dim lighting as well as with various types of fonts.

4. REFERENCES

1. Text detection from natural scene images: towards a system for visually impaired persons, N.Ezaki, M.Balacu and L.Schomaker, 17th international conference on pattern recognition, 2004.
2. Text-tracking wearable camera system for visually-impaired people, M. Tanaka and H. Goto,19th Int. Conf. on Pattern Recognition, Tampa, Florida, 2008.
3. Autonomous text capturing robot using improved DCT feature and text tracking, M.Tanaka and H.Goto 9th ICDAR2007 volume ll, pages 1178-1182, 2007
4. A sign reading system for visually impaired, M.Younes, Basma, Michel and Ghassan, 2011 IEEE GCC Conference and Exhibition, February 2011.
5. A complete Bangla OCR system for printed characters, Md Mahbub Alam and Dr.M.Abul Kashim, ISSN 2218-5224(online), volume 01, issue 01.
6. Digital Image Processing Using Matlab , R C Gonzalez, R E Woods & Steven L Eddins, Prentice Hall,2002.

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7. http:/ / www.linuxdevices.com
8. http:/ / www.optelec.com

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