



A Survey on Cloud Based Reading Aid for Visually Impaired

Anjali Krishnan N, Lekshmi vijayan*, Priyanka P, Renya Reji, Minu Lalitha Madhavu
Computer Science and Engineering from Kerala University, India

Abstract: Visual impairment is a decreases ability to see because they do not have access to glasses or contact lenses. It is also known as vision impairment or vision loss. Visual impairment may cause many problems in normal daily life activities. There are different methods to solve this issue. One method is by using modern smartphone application. Another method is by using microcontroller.

Keywords: Visual Impairment, Smartphones Optical Character Recognition, Text To Speech.

1. INTRODUCTION

The visual impaired people have difficulties in reading the printed information. Reading aids with the capabilities of smart phone and microcontroller are less weight, cost effective and user friendly techniques. In the reading aid with microcontroller, on the bridge of the glasses a raspberry pi camera module is attached to capture images. The captured image is stored in RPi memory later send to the AABBY cloud for OCR. The received text applied to TTS to convert the text to audio file. The audio output through the ear phone connected to AV port in raspberry pi module.

In the reading aid with android application, the screen of android phone have button to capture the image and automatically upload the image to AABBY OCR cloud. The output text from the cloud is applied to TTS engine in the android phone. It converts the text to audio. These two techniques are user friendly method.

2. LITERATURE SURVEY

Robert Keefer and Nikolaos Bourbakis [2] have proposed a highly interactive method for processing digital images. This methodology supports the use of inexpensive hardware components, and as such requires enhanced document image processing techniques. Tyflos camera is used in method. Problem in tyflos is not process the shaken images.

Nagaraja L, Nagarjun R S, Nishanth M Anand, Nithin D, and Veena S Murthy [3] have proposed a system that ensures to read text present in the image for assisting blind persons. Pre-processing part ensures efficient foreground extraction, which possess the required text region to be analyzed. But the system fails to extract the foreground when they possess a complex background.

John Andersson, Sebastian Berlin, André Costa, Harald Berthelsen, Hanna Lindgren, Nikolaj Lindberg, Jonas Beskow, Jens Edlund, and Joakim Gustafson [4] have proposed a system make open source text-to-speech available through Wikimedia Foundation's server architecture that utilize the large and active Wikipedia user base to achieve continuously improving text-to-speech, improve existing and develop new crowd sourcing methods for text-to-speech and develop new and adapt current evaluation methods so that they are well suited for the

particular use case of reading Wikipedia articles out loud while at the same time capable of harnessing the huge user base made available by Wikipedia. Problem is continuous availability of internet is required which is not possible.

Roberto Netoa, and Nuno Fonseca [5] have proposed a system consisted of the construction of an application composed by several parts, integrating the system of image capture by the mobile device, which is used by an OCR framework for recognition of its text, which is then synthesized through a process of TTS. In this only English language is accepted.

Roy Shilkrot, Pattie Maes Jochen Huber, Suranga C. Nanayakkara and Connie K. Liu [6] have proposed finger worn device that assists the visually impaired with electively and efficiently reading paper-printed text. Finger Reader presents a new way for blind people to read printed text locally and sequentially. Problem in this finger reader is, it is not accurate.

Nagarathna and Sowjanya V M [7] have proposed a camera-based label reader to help blind persons to read names of labels on the products. Camera acts as main vision in capturing the video of the product then video captured is split into frames. From sequence of frames one frame is taken and processed internally to separate label from frame using text detection algorithm. The received label image is converted to text by using OCR (Optical Character Recognizer). Once the identified label name is converted to text and converted text is output to blind users in speech. In this, noise occurs during conversion and it is not accurate. Sathiapriya Ramiah, Tan Yu Liong and Manoj Jayabalan [8] have proposed an Android application to capture text, translate and voice it out has been designed and developed. Visually impaired users are able to access important message from a printed text through speech out feature. But it is not an efficient method.

Raguvaran. K and Mr. J. Thiyagarajan [9] have proposed an advanced system for process management via a credit card sized single board computer called raspberry pi based multi parameter monitoring hardware system designed using RS232 and microcontroller that measures and controls various global parameters. It is a complex method.

Ondrej Krejcar [10] has proposed mobile application for capturing digital photography and its subsequent processing

by OCR (Optical Character Recognition) technologies. This application only read the small text and it is also complicated method.

3. CONCLUSION

Mobile application and raspberry pi uses OCR cloud for character recognition which is effect method. These methods are accurate and high resolution camera capture clear pictures. Many languages are used in these techniques like French, English.

ACKNOWLEDGMENTS

We are grateful to our seminar guide Prof. Minu Lalitha Madhavu for her remarks, suggestions and for providing all the vital facilities like providing the Internet access and important books, which were essential. We are also thankful to all the staff members of the Department of Computer Science & Engineering of Sree Buddha College of Engineering, Alappuzha.

REFERENCES

- [1] Heba Saleous, Anza Shaikh, Ragini Gupta, Assim Sagahyoon American University of Sharjah, UAE "Read2Me: A Cloud- based Reading Aid for the Visually Impaired", IEEE 2016.
- [2] R. Keefer., & N. Bourbakis. 'Interaction with a Mobile Reader for the Visually Impaired'. 21st IEEE International Conference with Artificial Intelligence Tools. 18.03 (2009): 229-236 Web.
- [3] Nagaraja L, et al, "Vision based text recognition using raspberry PI",*National Conference on Power Systems & Industrial Automation(NCPSIA 2015)*.
- [4] "ArchLinux: Festival," 13 Oct 2015. [Online]. Available: <https://wiki.archlinux.org/index.php/Festival>. [Accessed 25 Oct 2015].
- [5] R.Neto. &N.Fonseca. 'Camera Reading for Blind People'. Volume 11 (2014) 1200-

1209.[Online].Available
at<http://www.sciencedirect.com/science/article/pii/S2212017314003624>

- [6] R.Shilkrot.,&P.Maes (2014,May.1). FingerReader: A wearable device to support text reading on the go.[Online]. Available:
<http://fluid.media.mit.edu/sites/default/files/paper317.pdf>
- [7] Nagarathna, Sowjanya V, M. "Product label readin system for visually challenged people", International journal of Computer Science and Information Technology Resreach, Vol 3, Issue 2, 2015.Computing Systems, Austin, TX, U.S.A., 2012, pp. 1577 – 1582.
- [8] "Tesseract-OCR," 2015. [Online]. Available: <https://code.google.com/p/tesseract-ocr/>. [Accessed 28 Oct 2015].
- [9] "Raspberry Pi," 05 Feb 2014. [Online]. Available: <https://www.raspberrypi.org/forums/viewtopic.php?f=38&t=68693> [Accessed 28 Oct 2015].
- [10] 'Smart Implementation of Text Recognition (OCR) for Smart Mobile Devices', The First International Conference on Intelligent Systems and Applications, pp. 19-24, 2012.

AUTHOR'S PROFILE

Anjali Krishnan N Pursuing B.Tech. degree in Computer Science and Engineering from Kerala University, India.

Lekshmi Vijayan Pursuing B.Tech. degree in Computer Science and Engineering from Kerala University, India.

Priyanka P Pursuing B.Tech. degree in Computer Science and Engineering from Kerala University, India.

Renya Reji Pursuing B.Tech. degree in Computer Science and Engineering from Kerala University, India.

Minu Lalitha Madhavu received B.Tech. degree in Computer Science and Engineering from Rajiv Gandhi Institute of Technology , MG University, India, received M.Tech. degree in Technology Management from Kerala University, India. Currently, she is Assistant Professor at Sree Buddha College of Engineering, Kerala University, India.