Survey Paper: Image Reader For Blind Person

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Abstract - *Visual impairment and illiterate, or have a learning disability is one of the biggest drawback for humanity, especially in this day and age when information and people is interconnected a lot by text messages (electronic and paper based) rather than talking [4]. There is a need for a convenient text reader that is reasonable and readily available to the blind community [2]. This work In this research these images are converted into audio output. It is mainly used in the field of research in Character recognition, Artificial intelligence and computer vision. In this research, as the recognition process is done using OCR and opencv library.it recognizes character using watershed algorithm and python programming. this paper describes the design, implementation and experimental results of the device. This device consists of three modules, image processing for object count, cropping of image and reading an image.*

***Key Words**: OpenCV, TTS, OCR based book reader, Watershed, algorithm, python programming, computer vision*

1. INTRODUCTION

Near-sighted participants and illiterate people report several difficulties for understanding printed text or captured text using current technology, including problems with alignment, focus, precision, mobility and efficiency [2]. We present software that supports the visually impaired which effectively and efficiently reads printed and captured text of specific font. The proposed project uses the watershed algorithm that can be used by people to read Text document. The project is on implementing image font .The design is inspired by earliest studies with visually impaired people, and it is moderate and portable, which enables a more efficiency. In this project we have developed a code to read text using command prompt for challenged and illiterate. The proposed fully included system has a camera which captures the image or you feed the printed text or image reading or object counting process. The faded image internally work with software module i.e. OCR and opencv libraries. The techniques involved in segmenting the image, and merging contiguous regions based on their altitudinal distribution of colour/intensity. In order to recognize important regions, or text part of image. If the specified size contains all the important regions, we simply crop the source image, to do the character recognition, image cropping and object counting. Most of the access technology tools built for people with blindness and limited vision and illiterate . a watershed algorithm convert our image into gray scale . The watershed transformation treats the image it operates upon like a topographic map, the brightness of each point denote the its height, and finds the lines that run along the at most or top of ridges. Optical character recognition (OCR) is convert our image i.e. captured images of printed text into unicode. This project is also useful for visually impaired people who cannot read Text document illiterate, or have a learning disability. Optical Character recognition is used to identify texts that have been created with non-computerized system. OCR makes it possible to apply techniques such as machine translation, text-to- speech and text mining to the capture page. The final standard text document is served to the output devices. The output device can be a headset connected to the speaker which can speak out the text document a loud. Extra hardware is not required for accepting output. In our implementation we also set the volume speed, sound and rate of sound, so external headset and speaker is not necessary. The anticipated system has been totally developed for working in CLI environments. The anticipated system has been totally developed in Python using PyCharm/PyDev IDE and PDB as an Debugger. Meanwhile Computer Vision libraries were used for providing out of the box capabilities to the system. NumPy, SciPy, Speech Recogniser, OCR, PyTesseract, and other technologies and libraries are used.

Features:

1.Interactive Command & Control Panel – The person will able to interact with system using the interactive voice based control panel providing commands for executing various operations available through the system.

2. Image to Speech - Using the app one can able to read an image using OCR technology and convert it to speech using opencv libraries available in core STL.

3.Image Counting – Using image processing and morphological operation along with computer vision libraries we will able to detect the total number of objects in an image and provide so that based on heuristic user will able to recognize the components in an image.

4. Automatic Bounding Region Cropping and Re-Scaling of Text Regions using computer vision.

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2. LITERATURE SURVEY

Table no:1

Sr. No.	Title	Technology used	Result
1	Text to Speech Conversion Using OCR Technique in Raspberry Pi[1]	Raspberry Pi, OCR	A performance that is high enough and a readability tolerance of less than 2%, with the average time processing. This portable device does not require internet connection. This portable device does not require internet connection.
2	Image to speech conversion for visually impaired[2]	Raspberry Pi, OCR, TTS	It gives good quality input to the OCR using pi camera
3	Vision based Text Recognition using Raspberry Pi[3]	Raspberry Pi, OTSU thresholding, OCR	Due to the less resolution of the webcam, the output obtained is not 100% accurate. The system fails to extract the foreground when they possess a complex background.
4	camera based label reader for blind people [4]	OCR, label reader	This method can effectively separate the objects of interest from complex background. OCR is used to perform word recognition.
5	Text to Speech for the Visually Impaired[5]	TTS & OCR MODI algorithm	It captures the text and gives good quality of audio.
6	Camera based label reader for blind people[6]	Raspberry Pi& TTS & OCR, ADA Boost algorithm	We have used the ADA boost algorithm in Raspberry PI Model for the conversion so that the blind can easily understand and read the data

This paper presented their project for text detection and converts into audio format. Testing of device was done on raspberry pi platform. The R-pi is initially connected to the internet through VLAN. The software is installed using command lines. The first setup is to download the installation script, second command is to convert it to executable form and the last command starts the script which does the rest of the installation work [1].The paper says they proposed a device to help people with visual impairment. In this project, we developed a device that converts an image's text to audio format. This implementation required hardware. The basic framework is this implemented system that captures an image, extracts only the region of interest (i.e. region of the image that contains text) and converts that text to audio. It is developed using a Raspberry Pi and a Raspberry Pi camera [2]. This project presents a sample system for recognition of text present in the image using raspberry pi. The system agenda consists of five well-designed components: Image acquisition, Image pre- processing, Text extraction, Text to speech conversion and Speech output [3]. This paper proposed a system using Raspberry Pi Model for perusing the images from stereotypical forms – such as street signs,

hospital signs, and bus numbers –as well as more variable forms such as shop signs, house numbers, and billboards.

Here we are using AdaBoost Algorithm for treating the visual information and converting into audio speech [4]. The proposed system helps visually impaired, illiterate, or have a learning disability to read product the project aims to implement a reading aid that is small, lightweight, efficient, cost effective and of course user-pleasant the Raspberry Pi-based system can be equipped with a high- resolution webcam the microcontroller-built system is easier to use when compared to the mobile one. However, the accuracy of the mobile in the conversion efforts is better, mainly due to the high-resolution camera built in the device. Developing technology and in future expansions of this project, the R-Pi based system can be provided with a good and high-resolution camera contrasted with the one used in this project, and we anticipate, this will improve its inevitability. We predict more work will be produced in this critical area of assistive technology, and project that future transportable gadgets will have easy to use and built in mechanism as reading assistances for the blind, similar, to the mobile-based solution presented here. Users should capture image and then system read out the text from image. It will be more

applicable for persons those are going through visual surgery. It can be suitable for road side text recognition so that visually impaired person can travel alone [5]. this paper proposed a system using Raspberry Pi Model for scanning the images from stereotypical forms – such as street signs, hospital signs, and bus numbers –as well as more variable forms such as shop signs, house numbers, and billboards. Here they are using AdaBoost Algorithm for processing the visual information and converting into audio with default sound.[6]

3. CONCLUSIONS

We have successfully implemented conversion of text image into audio format. We also developed technique for object detection in an image and cropping of textual part of image using OpenCV libraries. Our algorithm successfully processes the image and reads it out clearly with set volume. And also detect the object and crop the text part of image. This is an efficient as well as helpful device for the visually impaired, illiterate, or have a learning disability people. We have applied our algorithm on many images and found that it successfully does its conversion.

4. FUTURE SCOPE

It can be used in blind schools and colleges. This can also be used as application of artificial intelligence.it is helpful for illiterate people. We also can make mobile application of same topic

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