Survey on Visually Impaired Assistance using Android Mobile (OCR)

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ABSTRACT: Blindness makes life rather difficult for people who suffer from this health problem, but the use of technology can help in someday-to-day tasks.To get information from a text, a person required to have visibility. However those who are deprived of vision can gather information using their hearing capability. In this paper, we reviewed methodologies and techniques to read data from textual parts and navigation to the blind persons.In which method is a camera based assistive text reading to help blind person in reading the text present on the text labels, printed directions or notes converted into speech. These methodologies make us of an Optical character Recognition (OCR) motor on the cloud and utilize neighborhood assets for the Text-to-Speech (TTS) transformation. Models are effectively generated and tested with good outcomes.

KEYWORDS: Optical character Recognition (OCR), Text-to-Speech (TTS),   Visual Inability, Smartphone, Text Extraction

I. INTRODUCTION

In Existing System investigators have tried to simplicity the load on blind people by proposing numerousmethods that converts manuscript to audible sounds. Tyflos is a pair of spectacles that had cameras binded to the side, earphones, and a microphone. Voice inputs can be used to guide the user and direct the platform. Some instructions include "move paper closer," "move paper up," "move newspaper up, right" from the device to the user, and "rewind paragraph," "forward paragraph," and "volume up" from the user to the device. However, the voice user inputs might not function seamlessly in a noisy atmosphere, interpretation it restricted to indoor use. Finger Reader is a wearable band with a camera on the forward-facing.The world of print data such as the media, books, sign boards, and menus remain mostly out of reach to visually impaired persons, in anstrength to seek an response to this determined problem, an assistive expertise based solution, referred in this project.We propose Mobile phones are one of the most usually used electronic gadgets today. Here, we propose to develop aintegrated and friendly application using cloud based OCR policy and the built in Android TTS for producing an audible result of the text file.According to a global survey report on visual deficiency around the world by WHO in 2010, there were expected over 285 million visually impaired people in the world. Of the 285 million, 13.7% are blind and 86.3% ie. 246 m people have low vision. And on a further note, 21.9% of the world's visually impaired are from India, whereas 26.5% are from China.[1] Given a look at the statistics, it is clear there is a population that can be served to fulfil a need. Most of the impaired are found to be in emerging nations, over a wide range of ages. These individuals are hindered from a normal life and wages. A innovative step towards accessibility and portability would make life easier and, furthermore, a lot more interesting. There have been many aids developed with this goal in mind, like the smart stick[2] with transducers and lasers fitted on a white cane to identify hindrances and obstacles, and there will furthermore be many more developments in the days to come. But here is our take on the problem. This is a solution for improving the mobility of visually impaired persons. Albeit the consequent goal is to improve the lives of the blind, for practical purposes, this system will gratify low vision individuals more than it would for the total blind. This is a system where the visually impaired user can achieve better mobility despite his/her

impairment with little to no help from another person. Mobility is described by Emerson Foulke as The ability to travel safely, comfortably, gracefully, and independently, referred to hereafter by the single term mobility, is a factor of importance in the life of a blind individual. [3] The term blindness is qualitative, and it describes the clinical condition where the individual has total vision loss: that is no light perception. It could also describe certain individuals who have very low to negligible vision. Moreover, the term visual impairment is also a qualitative term used to describe loss of vision that is a consequence to various diseases that affect parts of the eye at an organ level. Low vision is a description of lesser degree of vision.

II. LITERATURE REVIEW

Nagaraja L Nagarjun R. S describedCommunication in the main way to pass the information through the speech. Blind Peoples gets information through hearing. And mainly to get textual information persons need to have visibility.To read textual part this paper author proposed text reading by using camera. It involves text extraction from the images and converts it into speech. All functionalities are performed by using raspberry pi with battery support [2].

Nagarathna, Sowjanya V M presented label reading system for blind peoples by using camera. They performed operations on the video. From taken video all splits into frames. These frames are used to extract textual part through text detection methodologies. After recognizing by using Optical Character Reading text is read from images. After reading it is converted into speech [3].

Roberto Netoa, Nuno Fonseca studied camera based data reading for blind peoples. Studied the problems blind people have to face. Presented mobile application based text reading. The main aim was to convert visual part into speech to help to guide visually impaired peoples. To read textual part from images OCR methodologies are used and to Text ToSpeech for human voice output [4].

Roy Shilkrot Pattie Maeset.al proposed finger reading a wearable device to read text.Introduced methodology to read line text block of skimming text. Interested by a user required study that displays the help in using incessant multimodal feedback for text scanning. It is instigated in a novel tracking-based process that excerpts text from a close-up camera vision and a finger-wearable method [6].

Rajalaskhmi P., Deepanraj S et.al proposed visual assistance for blind peoples. To read data from the images Optical Character recognition algorithms are used with Hierarchical Optimization. The steps are followed to extract the text first in the pre-processing to overcome the noise from the image. And then characters are recognized by analysing the text by identifying and grouping it. They are given as input to get voice output. Also presented currency notes identification by extracting important feature and matched with dataset [7].

Megan Elmore and Margaret Martonosi studied OCR based technology and difficulties in segmentation and classification. Proposed image processing based methodologies auto detect and reduce noise from images and text detection with accuracy in detection by using OCR. To get accuracy author proposed novel approach foreground and background detection through morphological operations with feature extraction and classification techniques [9].

HebaSaleous, Anza Shaikh presented cloud based aid which can recognize the text and speaks out through mike.Discussed design and implantation techniques which contained OCR based textual part recognition and text to speech conversion techniques on the cloud. This all carried out by using micro-controller with cloud. This system is tested with best results [10].

III. PROPOSED SYSTEM

We have reviewed various papers all presents methodologies and techniques which will be helpful to the blind peoples. We studied to read text from the vision based images or picture or from the videos best techniques is OCR (Optical Character Recognition) which used extract text from images.
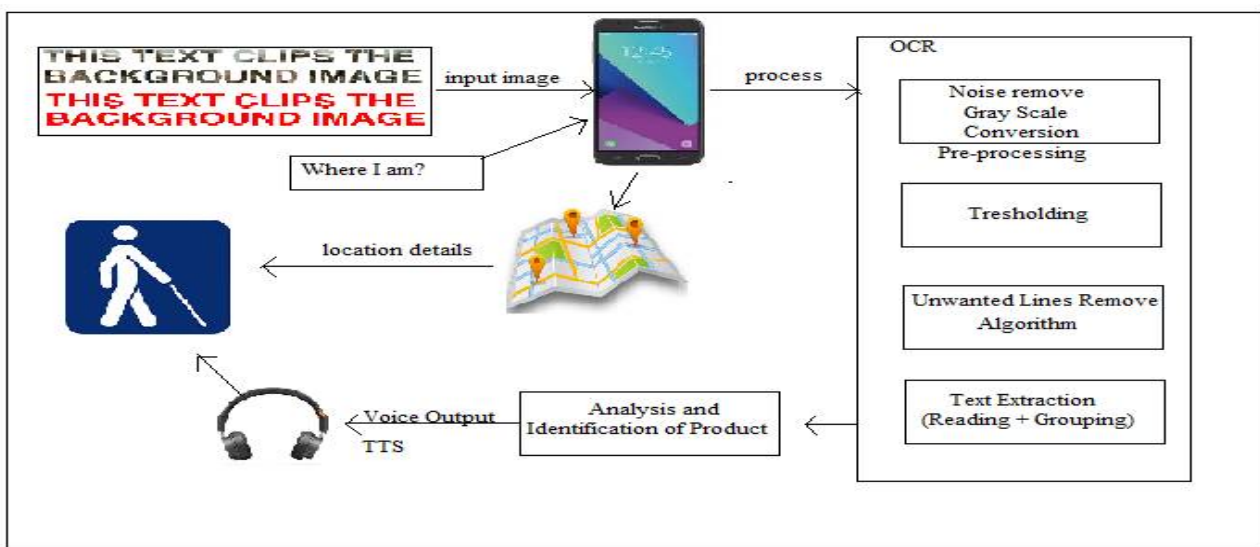

Fig .1. Block Diagram of the Proposed System

In the OCR first stage is the pre-processing of the images to remove/ overcome noise and then apply segmentation and supervised classification to extract features and recognize the character or group of character and finally outputs in computer read text form. We used Text to speech methodology to give output to user through headphone. We have used micro-controller convert text to speech.

Additionally we can present where I am feature to get current location details of the user based on latitude and longitude with the help of GPS and Maps. So user can know his current location and able to decide to walk.

1. **The OCR Process:**

Step 1 – Loading the image file: In order for OCR to be real, it must backing a wide array of file formats, comprising PDF, BMP, TIFF, JPEG, and PNG files. Once the file is loaded, the software can initiate to work. These files can be scanned pamphlets, photos, or even read-only files. Irrespective of the unique format, OCR software will convert these files into effortlesslyreachable& editable data.

Step 2 – Improving image quality and orientation: Depend on the technique in which the image file was created, there are a number ofmatters that may rise. More frequently than not, an image file will be slanted or contain "noise" (a/k/a varying illumination or colour). In this stage of OCR, the software will work to de-skew, eliminate any "noise", and increase the complete quality of the images. This is a serious step – as blurry or skewed images are not understood properly.

Step 3 – Removing lines: Lines can prove to be calamitous when understanding characters. In order tocontinue as accurate as possible – lines are identified and removed. This allows for better acknowledgmentexcellence when converting tables, underlined words, etc. Much like the importance of image quality, the removal of lines will guarantee that characters are predictable accurately.

Step 4 – Analysing the page: During this stage of Optical Character Recognition, the layout of the original file is noted and handled. This includes the discovery of text positions, white space, and the ordering of important text areas or sections.

Step 5 – Detecting words and lines of text: This is the start stage of actual character recognition. The software begins to classify individual words and entire lines of data. This is a serious pre-process for properly identifying characters as it sets the stage for the analysis and correction of fragmented or complex characters.

Step 6 – Analysing and fixing of "broken" or "merged" characters: Depending on the quality of the original file, there are often errors in which characters are broken or blurred together. The OCR software must now break down and resolve these errors in order to properly interpret the appropriate characters.

Step 7 – Recognizing characters: This is the main function of Optical Character Recognition. Now that the unique file has been processed, cleaned, and fixed – the OCR technology can begin to read and decode characters. Each image of every character is transformed into a character code. If the algorithm is unsure of a character – the software will produce multiple character codes and choose the proper character later on.

Step 8 – Saving the file: After the file has been fully understood, it can be saved to your wanted file format. While there is much more to OCR software, these 8 steps make up the primary processes involved in Optical Character Recognition.

2. Current Location Detection:

This is the feature where user can fetch the current location details. In the app one option is where I am after selecting that user current location details will be fetch from the google map by using latitude and longitude of mobile location. After getting details speaks out through headphones and then user can navigates based on that.

IV. CONCLUSION AND FUTURE WORK

We have discussed about the summary and procedure of a methodologies that add to the ability of the visually-impaired peoples to share with us access to printed message. We have studied various methodologies and techniques the is used to read text from the images by using OCR based techniques using android device. With this Text to Speech methodology studied to get voice output of this read data using sound device.

The techniques make use of the cloud as aapplied and viable asset for character recognition. Framework is less demanding to consume. However, the correctness of the mobile in the translation efforts is better, mainly due to the high determination camera worked in the gadget. In future promotes this work, we imagine this will improve its accuracy. We expect more work will be sent in this basic terrain of assistive novelty, and undertaking that future multipurpose devices will have simple to use and worked in component as examining helps for the visually impaired, comparative, to the portable based arrangement displayed here

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