

Androeye: For Visually Impaired People

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Abstract - Disability of visual text reading has a huge impact on the quality of life for visually disabled people. Visual impairment is now increasing rapidly, especially in these days when information is communicated a lot by text messages rather than voice.

In this idea, we are developing an application which converts an image to text and then gives the output in the form of audio. The basic framework of the system is that it will first capture an image, and then extract the region of interest from the image which consists of text which will get converted from text to speech and the output will be delivered in the audio form which removes the background noise.

The basic framework of this system is that it captures an image, extracts only the region of interest (i.e. region of the image that contains text) and converts that text to speech, text and removes the background noise.

Key Words: Image to Speech, Optical Character Recognition, Text to Speech, Visually Impaired

1. INTRODUCTION

As reading books, newspapers or any other means of communication is a major part of our daily routine which also plays a vital role in real world, our application will help to reduce the dependence of visually impaired people on others for any kind of communication. The visually impaired people face a lot of difficulties in every aspect. Our application will assist the visually impaired by reading out any kind of text, signs, symbols from the image. A major problem faced by visually impaired people is they are unable to find the route, direction which they intend to go and the other problem is that they are unable to recognize the currency. So we have introduced a geo- location module to detect the user's current location by longitude and latitude co-ordinates and for currency detection we have a local database to solve this problem. And we have implemented a unique system for barcode scanner for medicines which will give general information on what the medicine is all about.

1.1 AIM AND OBJECTIVE

The main aim of this idea is to provide a system which is cost effective as well as user assistance or user friendly. Our system also enables visually impaired people to become independent which they no longer need any kind of

assistance to recognize different printed text and currency. The existing systems for text recognition are moreover limited in some aspects for specific shapes or color or may be of a high cost. Helping the visually impaired people in reading out the information about the products which is blinded in the barcode.

2. LITERATURE SURVEY

In [1] T. Rubesh Kumar et al proposed reading is obviously essential in today's society.

Printed text is everywhere in the form of reports, receipts, bank statements. There are already a few systems that have some promise for portable use, but they cannot handle product labeling. But a big limitation is that it is very hard for blind users to find the position of the bar code and to correctly point the bar code reader at the bar code. T. Rubesh Kumar, C. Purnima have proposed a camera-based assistive text reading framework to help blind persons read text labels and product packaging from hand-held objects in their daily lives. Main contributions embodied in this prototype system are: 1) A novel motion-based algorithm to solve the aiming problem for blind users by their simply shaking the object of interest for a brief period. 2) A novel algorithm of automatic text localization to extract text regions from complex background and multiple text patterns; and 3) A portable camera-based assistive framework to aid blind persons reading text from hand-held objects.

In [2] Anusha Bhargava et al proposed majority of the visually impaired use Braille for reading documents and books which are difficult to make available. This gives rise to the need for the development of devices that could bring relief to the agonizing tasks that the visually impaired has to go through says Anusha Bhargava, Karthik V. Nath, Pritish Sachdeva and Monil Samel. This idea aims to study the image recognition technology with speech synthesis and to develop a cost effective, user friendly image to speech conversion system. The Idea has a small inbuilt camera that scans the text printed on a paper, converts it as audio format using a synthesized voice for reading out the scanned text quickly translating books, documents and other materials for daily living, especially away from home or office. Not only does this save time and energy, but also makes life better for the visually impaired as it increases their independency.

3. PROPOSED SYSTEM

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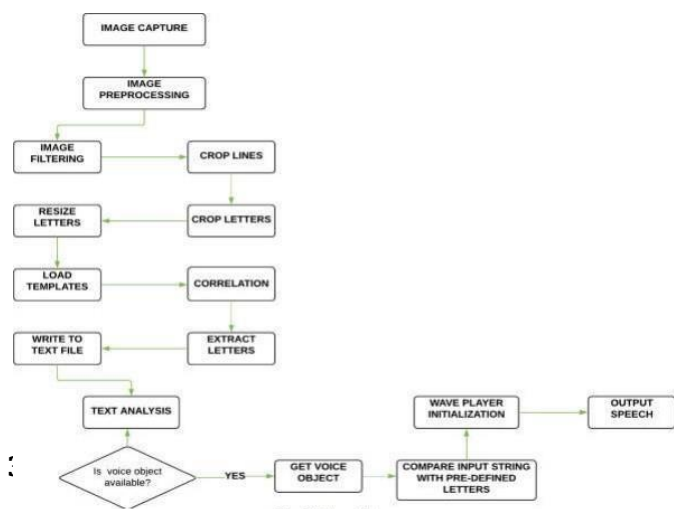


Fig -1: Flowchart

4. IMPLEMENTATION

4.1. METHODOLOGY

1. When user enters voice command, TTS will convert that voice into text format and performs specific action.
2. Geolocation helps user to understand its location and also this application help impaired people to listen to the location using Text to Speech conversion system.
3. The Barcode module is to provide barcode usage which can use scanner to read information given in barcode.
4. Currency Detection Module to help visually impaired people to identify the various currency and inform the user with an audio output.

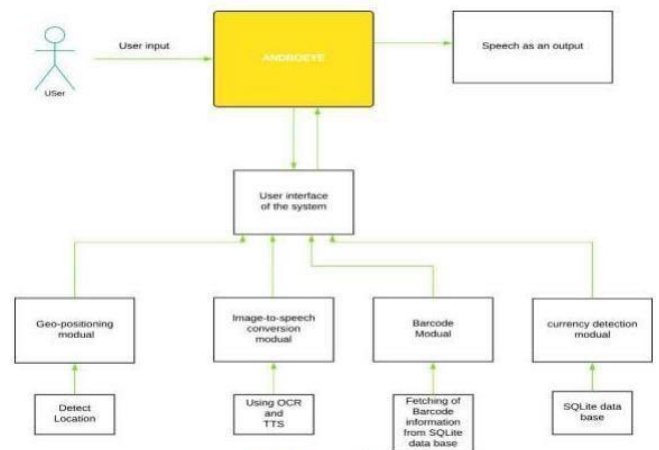


Fig-2: Block Diagram

4.2. SNAPSHOTS

A) Image To Speech:-

The process of extraction of text in the image is done using OCR. In this process the user first tries to capture the image of which it has some text written in it. Our application uses camera module which will detect the image after detecting it will generate the text written in that image and the output of the text will be given to the user in the form of speech.



Fig-4.2.A: After Capturing Image , it shows output in audio format

B) Geo-Location Module:-

The Geo location module is based as a new way introduced in many arrears for integrating navigation-assistance system for blind people. It is a new way of guidance which has being developed by using smartphone in our application which detects the location based on the latitude and longitude which helps to detect the exact location of the user.

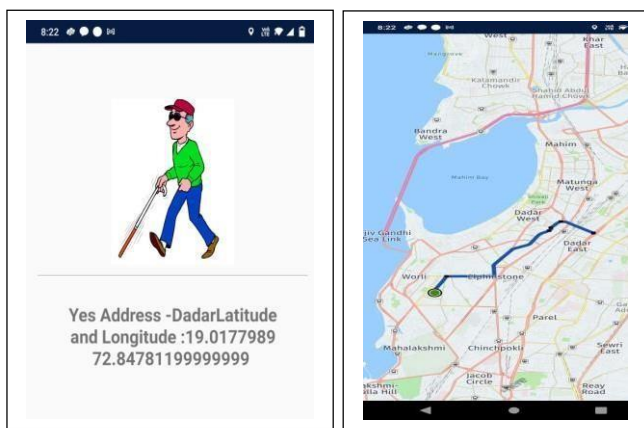


Fig-4.2.B: After telling Location its show latitude & Longitude of the location & Its take to the map

C)Currency Detection Module:-

In currency detection module we have implemented an android application with very simple user interface which is supported by audio feedback that would help the user to adjust the camera as soon it places the currency in front of the camera. And it would automatically click a picture as soon as it detects all the edges in the camera preview. Then by using some image processing techniques (color detection, size estimation and pattern recognition).



Fig-4.2.C: After Scanning any currency notes, the output will be in the audio format

D)Barcode Module:-

In our application we have used barcode module which uses scanner to read the information given in the barcode. We are using barcode scanning for the information on the medicines on what type of medicines it is for what purpose the medicine is used for. What can be the side effects of the

medicines and what is the price of the medicine and some basic about the medicine.



Fig-4.2.D: After Scanning any product barcode , it gives information about the product in the audio format

E)Front-End Technicalities:-

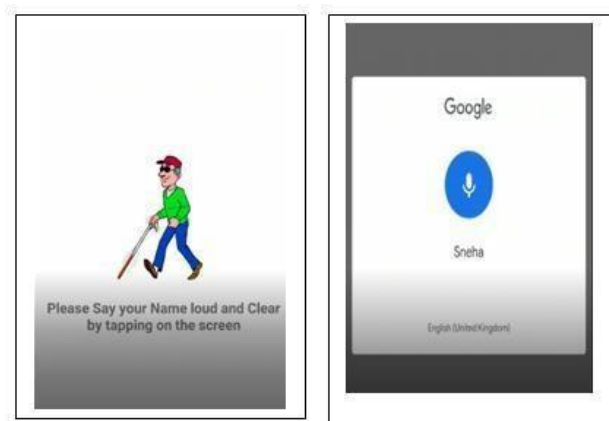


Fig-4.2.1.E: Login Page & After telling name it will get saved in the database



6) REFERENCES

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Fig-4.2.2.E: Shows which module user wants to prefer

F) Back-End Technicalities:-

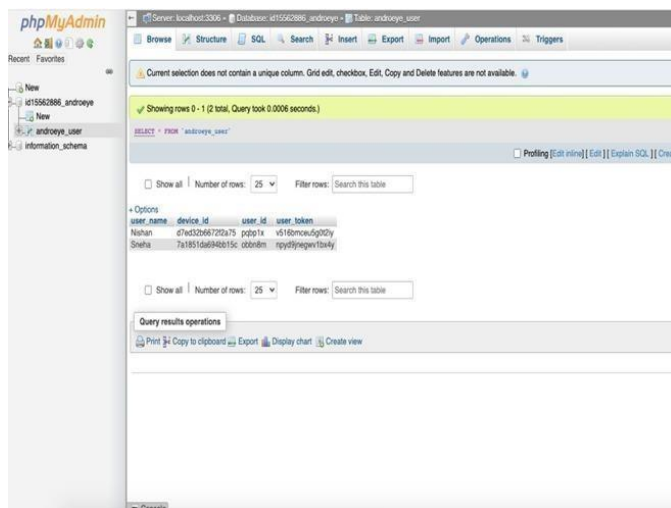


Fig- 4.2.F: Database

5) CONCLUSIONS

The application developed is user friendly, cost effective and applicable in real time. This is an approach for image to speech conversion using optical character recognition and text to speech technology. People with speech loss or totally dumb person can utilize this application to turn typed words into vocalization.

Future scope of this idea are handwriting detection, regional language support, locations of nearby places, foreign currency detection. People with poor vision or visual dyslexia or totally blindness can use this application for reading the books.