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Androeye: For Visually Impaired People

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Abstract - *In this project, 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 some region of 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 backgroundnoise*

Key Words: *Image to Speech, Optical Character Recognition, Text to Speech, Currency Detection, Barcode Scanner.*

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I. INTRODUCTION

As reading of books, newspaper, 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 aspects. Our application will assists the visually impaired by reading out any kind of text, signs, symbols from the image. A major problem faced by visually impaired peop le is they are unable to find the route directionwhich they intend to go and the other problem is to unable to recognize the currency. So we have introduced an geo- location module to detect the user current location by longitude and altitude 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 medicines is all about.

1.2 AIM AND OBJECTIVE

The main aim of this project is to provide a system which is cost effective as well as user assistance or userfriendly. 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 more over 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 binded in the barcode.

1.3 LITERARTURE SURVEY

In [1] they had proposed about the printed text is everywhere in the form of reports, receipts, bank a statements. But there are few limitations is that it is very hard for blind users to find the position of the barcode and to correctly point the barcode.

In [2] proposed a prototype design which detects the signboards, processes the image of the board taken through a camera using optical character recognition technique and coverts it into voice signal that is delivered to the user. The final part of the paper includes the conclusion and future development of theproject.

In [3] proposed that this project presents a smart device that assists the visually impaired which effectively and efficiently reads paper-printed text. The proposed project uses the methodology of a camera based assistive device that can be used by people to read text document. The recognition process is done using OCR in which character code is processed in text file using device which is recognizes character using tesseract algorithm.

In [4] proposed that the method is a camera based assistive text reading to help blind person in reading the text present on text labels, printed notes and products. The proposed project involves text extraction form imageand converting

1.4 ABOUTPROJECT

Our application helps to reduce the dependence of visually impaired people on others for communication. Visually impaired people are unable to recognize currency by themselves. So we introduced an application which consist of a local database to avoid the problem. We have a geo-location based module system in our application to detect the user location by using longitude and latitude. Also tried to provide a unique solution by Using barcode scanner system for giving information about the medicines he is using. We have also implemented a image to speech module which first captures an image using camera module then by OCR it generates the text written in that image and the output of the text is given to the user in the form of speech. Here are some features if ourproject

1.4.1 OCR Engine: Optical character recognition is a electronic conversion in pattern recognition, artificial intelligence and computer vision. OCR is a process of conversion handwritten text or printed text into a digital form.

1.4.2 TTS Software: TTS is a text to speech software it is process of converting text to speech by a application is called speech synthesis. A TTS is mainly composed of two parts front end and back end. The front end converts the text to a symbol and then backend converts that phonetic in the form of speech. We have used Festival TTS which is the most widely used opensource TTS.

1.4.3 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 detectsall the edges in the camera preview. Then by using some image processing techniques (color detection, size estimation and pattern recognition)

1.4.4 Geo-location Module: The Geo location based module is a new way introduced in many ways 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.

1.4.5 Barcode Module: In our application we have used bar code 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 details about the medicines.

1.4.6 Image to Speech: The process of extraction of text in the image is done using OCR. In this process the user first tires 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 ofspeech.

II. SCOPE OF RESEARCH

For any project to be successful, it is necessary that it will, satisfy all the requirements of the user. The user must feel comfortable with the system when he/she is using it. To achieve this, the system describes the scope of the project which should be accomplished within the deadline. If it achieves all the requirements, then system will be considered as successful. Scope for any project can be local orglobal.

2.1 LOCALSCOPE

The proposed system Androeye is based on visually impaired people to reduce the dependence of visually impaired people on others for communication. Our application is user friendly, cost effective and applicable in real-time. By this approach we can read text from document, web page or e-book and can generate synthesized speech through mobile phone's speaker. People who do not had the ability to read or write can also use this application. It has set all policies of single corresponding to each and every alphabet its pronunciation methodology, the way it is used in grammar and dictionary. This application can also be used in parts- if we want only text conversion, it is possible and if we want only text to speech conversion, it is also possible. People with speech loss or totally dumb can utilize this to type words and convert into speech. People with poor vision or visual dyslexia or totally blindness can use this for reading documents and books.

2.2 GLOBALSCOPE

The global scope of system will deal with newer modules and tasks to be integrated and implemented in nearby future of project development and maintenance cycles.

As there are limited facility available for visually impaired people, Androeye provides perfect solution to such problem. Android application is trending technology in the market and as our technology advances, it can only expect to see more come out of this system to benefit impaired people and to expand towards otherpeoples.

III. SYSTEMOVERVIEW

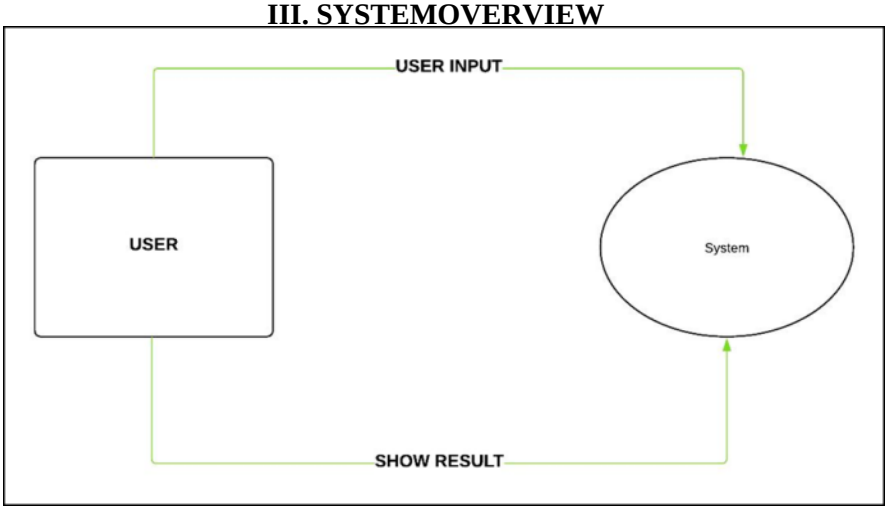

Figure 1: DFD 0

DFD Level 0 shows the interaction between the user and Android Application.

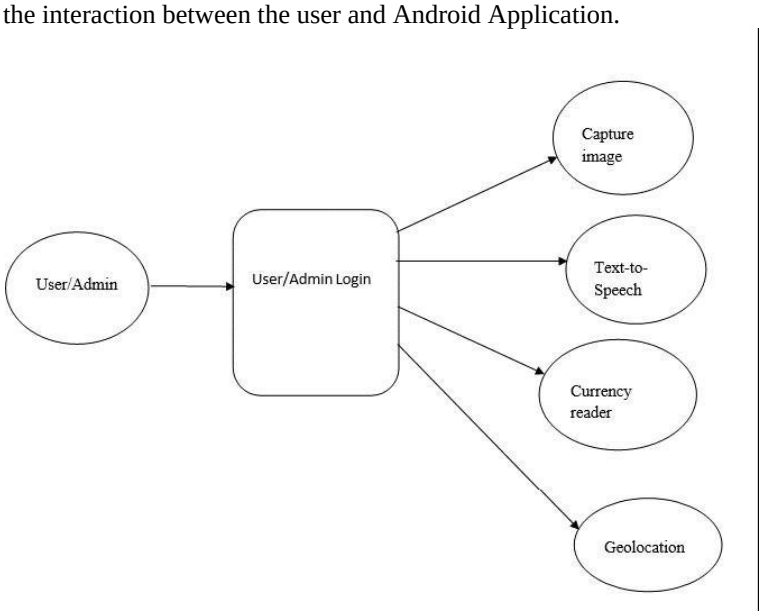

Figure 2: DFD 1

DFD Level 1 shows the admin login and the function of admin. User can be viewed and converted the image files into text files, also view uploaded images and converted images.

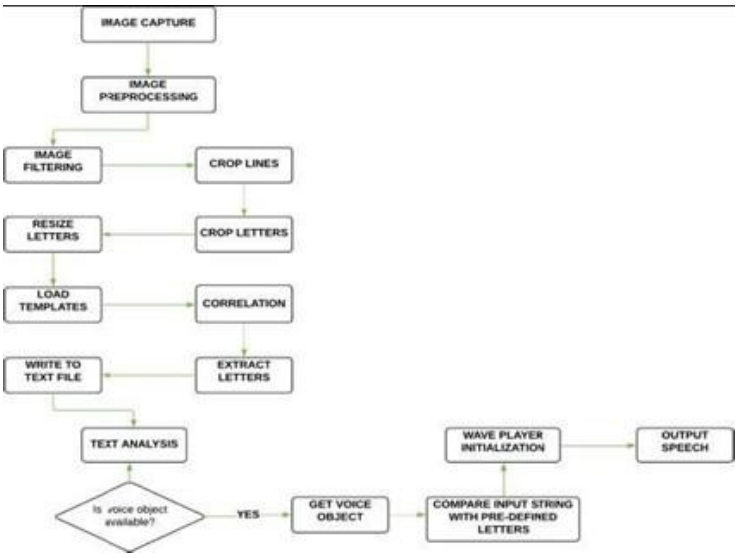

Figure 3: Flow Chart Diagram

IV. 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.

V. CONCLUSION

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 project 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.

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