

# Reading the Captured Image for Visually Impaired Person

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*Abstract*--The paper covers a reading device for blind or visually impaired persons for recognizing and reading text passages. It comprises an image capturing unit being configured to capture an image of an environment of a blind or visually impaired person and an image processing unit being configured to process the image data such that text is recognized and extracted from the image. The text is then converted into an audio message which can thus guide the blind in their daily lives.

## I. INTRODUCTION

In Germany there are about 150,000 blind persons and about 500,000 visually impaired persons. Worldwide there are about 160 millions blind or visually impaired persons.

Ordinary activities, such as shopping at supermarket or use of public transport, are often an insurmountable obstacle for these persons since most part of information relevant for such activities is available only in written form. However, until now most available reading systems do not support mobility and, therefore, have limited usefulness in everyday life. In few cases in which this has been done then such assistance systems require a considerable degree of assistance and handling of a user. In currently available reading devices the blind or visually impaired person has to put the object containing text into a scanner or has to move a capturing device such as a digital camera or a portable scanner across the object that contains the text to be read.

Thus the text or the message is then converted into an audio message which finally enables the blind to read without actually having sight.

## II. DESCRIPTION

It is extremely difficult for the blind to live in the world where 85% of the things are performed by the power of their vision. However it still more difficult for them to get educated as the very essence of learning lies in reading the text. Besides, in all of the daily activities they perform the most important thing is reading the text written on the products during shopping, brochures, banners, posters etc. their life would be certainly incomplete if they could identify the object using various object indentifying device but would be enable to identify the text written on the object identified. Thus, the paper includes the device enables to meet the required drawback in the object identification.

The device mentioned in the paper includes the use of various image capturing devices like camera present in any android phone, image to text converting software, text to audio conversion module using MIT app inventor. Unlike the already developed device, the software is very easy to handle and use. All that the user needs is to capture the image and then wait to see the effects .Thus the software can be installed on any android phone and the phone thus can be

used as reading image device for the blind. Hence, the software thus is viable for any layman or an ordinary person who has to do one thing- that's just to buy an android phone and download the software and enjoy the service of getting the text being read to him/her. The software can have its reach extended in educational, commercial, business and personal sectors of life making the visually much more independent than before.

## III. METHODOLOGY

The software involves the capturing of the image that contains the text, or any object from which the text has to be read using the camera present on the android phone. Once the image has been captured, the conversion of the image into the text proceeds. The conversion can be headed by "myimage convertor" software which is available freely and is already installed in the android phone. The text thus obtained is converted into the audio message using the features of MIT app inventor.

The application starts up automatically after the android operating system is booted up using the java snippets. The Android system initiates code in an Activity instance by invoking specific callback methods that correspond to specific stages of its lifecycle. When the user selects your app icon from the Home screen, the system calls the onCreate () method for the Activity that is declared to be the "launcher" (or "main") activity. This is the activity that serves as the main entry point to app's user interface. The activity to be used as main activity is defined in the Android manifest file, AndroidManifest.xml, which is at the root of your project directory. The main activity for your app must be declared in the manifest with an <intent-filter> that includes the MAIN action and LAUNCHER category. The application is featured in a manner that it can run in background while the user can get involved in any other features of his phone. To create a application to run in the background of other current activities, one needs to create a Service. The Service can run indefinitely (unbounded) or can run at the lifespan of the calling activity (bounded). To begin a service in the application a call to startService() which invokes the service onCreate() method and onStart() beginning running the service.

After a long press of the power button key for at least 5 seconds or more, the application is highlighted in the phone and is ready to be used. Once the application is highlighted, the user needs to provide the command for the commencement of the application by simply providing an audio message of "START" to the phone. Mobile applications enable users to access information and services from wherever they are, whenever they want, using a variety of mobile devices including Android, iPhone, and Windows phone. Speech technologies, including text-to-speech synthesis and automatic speech recognition integrated with

other forms of user input and output, enable easy-to-learn and easy-to-use applications that may also be hands-free. Android is an open platform, so your application can potentially make use of any speech recognition service on the device that's registered to receive a RecognizerIntent event. Google's servers currently support English, Mandarin Chinese, and Japanese. Also, depending on which side of the Atlantic you are on, American and British accents for English are both supported.



The command to then start on another application of "MY IMAGE CONVERTOR" is given to MIT. This can be performed using the feature of Activitystarter already available in MIT App inventor. The activity starter component lets you combine applications by having one application start up other applications. Activity Starter is mostly for advanced developers, but it's a key way to extend the App Inventor, because it means lets you take advantage of applications written by others, and created with other development frameworks. Before calling the Startactivity method, various properties of the Activity starter is set to suitable values.

The user now is ready to capture the image by camera of the phone. The image once captured is processed and converted to text with the help of myimage convertor software. The text is then converted to audio speech message audible to the user. MIT app inventor contains a block namely "TextToSpeech". The block contains the properties of country, language and result which is modified according to the requirements. Using these properties and making certain formulations in the blocks editor window, the function to convert the obtained text from the captured image into audio sound can be accomplished.



Hence the whole process is so simple that the image containing text is just needed to be captured using a single button click by the blind-person and the rest is performed by the software itself.

#### IV. UNIQUE FEATURES AND EXPECTED OUTCOME

The software can be implemented using a simple android phone and some freely available software; hence it is viable for a common ordinary blind person to use.

Besides the use of android rather than other complicated software and technologies make it very easy for the layman to understand the concept of the software and use it independently without seeking help from others.

The android phone is easy to handle and is portable device and hence can be carried whenever and wherever required. Rather than the previously available devices that are very clumsy and much larger in size to be carried to diverse places.

It aids the visually impaired person to gain information so they need not remain dependent on any one for gaining any information from any source.

#### REFERENCES

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