# Android Application For Visually Impaired

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***Abstract*—: The basic idea is that anyone who have this specific application in their mobile can use their mobile independently by just speech recognition. They can also take a snapshot of the things which they want to know and the texts in that snapshot will be converted into speech/voice and will be presented to the user using it. Furthermore, the user can even send or receive SMS without handling the device itself. The user has to speak the thing which he/she wants to send and just say the name to whom it has to be sent. Similarly if any SMS has been received, the application will read out the message along with the person from whom it has been received. Thus the proposed application uses Tesseract and Optical Character Recognition (OCR) for overcoming the above difficulties which helps the visually challenged people a lot in their day to day needs**

***Index Terms*— optical character recognition (ocr), tesseract**

## 1. Introduction

To assist the blind people the following invention relates to the technology that is been developed. Thus this acts as an alternative for their eyes. World Health Organization conducted a survey and states that 285 million people are visually impaired. Out of these 246 million have low vision and 39 million are blind. And 82% of people who are blind is been stated to be aged above 50.The problems faced by the visually impaired are that they cannot read an article, newspaper, books without anyone's help. This can be a difficulty to develop their knowledge from what's happening in the world. To overcome this kind of issues still there is no any kind of solution but with our android application this can be easily solved. Like Printout text, the same way the message or notification received by the blind people's android smartphone cannot be read by them, till now no one came with any kind of solution to this problem but our launcher gives the complete support to the user to hear all the notification received in his/her mobile.

## Related Works

Four authors Kuei-ChunLiu, Ching-Hung Wu, Shau-Yin Tseng and Yin-TeTsai published an assistive system for impaired people in IEEE on 26-28 Oct. 2015. It has likewise been intended for outwardly debilitated individuals who need assistive devices for working advanced gadgets with the goal that they could get and apply computerized data while learning, living and working. The per user, which changes advanced data to content and after that to voice by TTS(text-to-discourse), is broadly used to help outwardly impeded persons to work gadgets.

This paper concentrated on planning and actualizing an assistive framework for outwardly debilitated persons while utilizing Android PDAs. The framework, Voice Helper incorporates open sources furthermore improves numerous elements of them. Voice Helper incorporates the message per user, content document per user, OCR per user, voice dialer and outwardly debilitated dialer to encourage day by day exercises for outwardly disabled persons. The working environment of voice partner is coordinated and confirmed by outwardly impeded persons. Internet access required.

Text Fairy is a current android application in Google play store by the creator Renard Wellnitz and among the a lot of OCR application including Office Lens application (which Integrates into OneNote and One Drive).With this convenient application, the client can Convert an image To content, rectify the perspective of a picture, Edit removed content, duplicate content to clipboard, use content in Other applications and proselyte the filtered page to PDF.

This application can examine message from pictures on your gadget or output content from photographs taken immediately by the camera. Be that as it may, this application just changes over picture to content which is no utilization for outwardly debilitated individuals as opposed to basic individuals who utilizes scanner. The best part is the OCR of Text Fairy is truly precise and top that off with the way that Text Fairy is Free (of cost and advertisements) and additionally open source and you will be having the making for one of the best OCR applications on the Google Play Store. The primary inconveniences of content pixie is that pictures must be sharp with great lighting, the application can't read penmanship and content must be dark on a white foundation without Indian dialects.

### 2.2 Proposed system

The targeted people of our application are facing problems like reading a text printed in books, newspapers, etc. due to the absence of vision. So they are always dependent on someone to read something which is in need to know by them. In Day-To-Day Life everyone needs to operate a smartphone by themselves but in this case they can't use their phone even though talkback option available in phones for them to use only in an emergency case rather than an entertainment one. So this also requires

anyone's help to use it. In an emergency situation, they can't send a message or read out a message received by them. So on the whole these targeted people are fit to use only the basic phones with an user friendly mind rather than to struggle with smartphone but our application makes even smartphone user friendly to them.

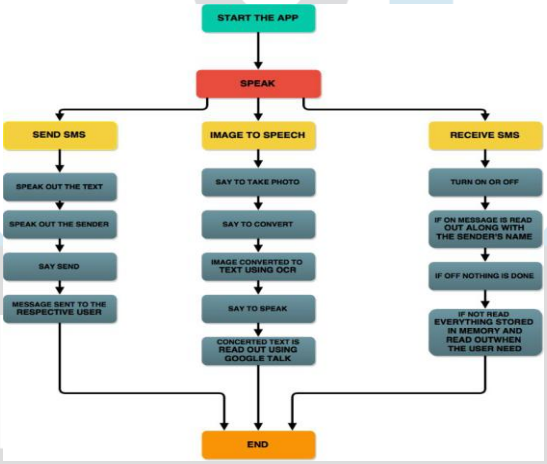
**System Architecture**

The system architecture of the application starts with launching the application initially. Once the application is launched the user will be prompted to speak the one which he has to choose. The speaker speaks the word of his choice and will be fed into the device. The device then checks the appropriate code to that has already defined with the one the user has spoken. If both the codes are same then the device moves on to the respective module.

If the module is 'SEND SMS' then again the user will be prompted to speak out the text that he wish to send as a message. The device recognizes it and save it. Once the user is done with the message he/she will further read out the sender's name which is in their respective contacts. Once everything is done the user will say send and hence the message will be delivered accordingly.

If the choice is 'RECEIVE SMS' then the user has two options either ON or OFF. If the user chooses on, then the SMS whatever the user receives will be read out then and there along with the sender's name or number. If it is off then the sms received will be stored in a queue format in the device itself and once when the user needs will be read out as it is been saved in the queue.

If the choice of the user is 'IMAGE TO SPEECH' then the user will click the image of his/her need through the device's inbuilt camera. This image will be saved in the device temporally and when the user prompts to send the image it will be uploaded to the server directly through the url that will be predefined already. The server receives the image, identifies the text present in it and converts it further into text. These text will be saved in a word file as soon as it is been converted. When the user wants those text to be read, the server sends the word file to the device, then the device access the text in the word file one by one and further converts it into speech.




. **4. Module description**

***Image to Speech***

The very first module of this application is conversion of a captured image by the device's default camera into Text format by the Tesseract which is an optical character recognition engine for various operating systems and it is also considered one of the most accurate open source OCR engines currently available in online. Then the converted text is further converted into an image by using that Tesseract OCR. The main advantage of this application is that the blind people can use this module by speech recognition which makes them to be independent of no-one around them to help to use it.

***Text to Speech***

The second module of this application helps the reader to listen to the message received by him in his smartphones with the sender's name, time and content. User first has to turn on the option, so whenever a message is received by the user, it will automatically read out along with the sender's name as it is already turned on. If off all the messages will be stored and whenever the user wants it will read out according to the queue it is saved. This module also can be managed by the speech recognition itself so the user doesn't need anyone to help to use this module.

***Speech to Text***

The third module of this application works on the process of sending a message to anyone in an emergency case by the user through speech recognition which basically used by Google talk. Whenever the user is in need to send a message to a person in an emergency case, then user can just read out the message to be sent. To fill up the recipient name also the user can just read the name to which it has to be sent and finally when the user says send by which the message will be sent automatically without any further verification.

***Launcher***

The Final Application which includes all of the above modules in it. Whenever this application is installed in the device, a new launcher will be activated in the device which can be fully operated by the speech recognition. User can switch over to different apps by saying "left", "right", "down" and "up". User speaks out the app name to be opened and it will be opened. Any new notifications from Whatsapp, Facebook messenger, messages and any other similar things thereafter will be read out by the application automatically.


**Screenshot of Application**

The above Screenshot describes about the IMAGE TO SPEECH module which has three steps to get the output, those are Take Photo, Send to Server and Text To Speech which has describe in Figure 4.1. All the process can be done through speech recognition and there is no need of having the phone in hand to use it anymore once our application is been installed in that particular android device. This Captured Images also gets saved in device in folder named "OCR" and for future purpose too.

## 5. Conclusion

Thus, the proposed application helps the visually challenged, especially those who are partially blind, a lot by providing a means of easy way of accessing everything without anyone's help. Hope the difficulties faced by them will be significantly minimized by many more similar and bigger applications and concepts in the future.The future work of this application is to detect all kinds of languages with more accuracy of the words pronounced by the user which depends on the language known to the user. The reading application is been good cause for the visually challenged people to know their message by listening. The reading application can detect all languages in future; however text to speech engines for many languages are not available. This will be implemented with the development of text to speech engines. The speech to text provides a good feedback for the user as it is so easy for them to send a message. Proper alignment is essential while holding the device for better results. The future work also includes audio books concept which will be a good business model in the business perspective.

## 6. Future Work

The future work of this application is to detect all kinds of languages with more accuracy of the words pronounced by the user which depends on the language known to the user. The reading application is been good cause for the visually challenged people to know their message by listening. The reading application can detect all languages in future; however text to speech engines for many languages are not available. This will be implemented with the development of text to speech engines. The speech to text provides a good feedback for the user as it is so easy for them to send a message. Proper alignment is essential while holding the device for better results. The future work also includes audio books concept which will be a good business model in the business perspective.

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