I-ZONE RECOGNIZER

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Abstract —**This system is based on an android application that converts a captured image to text and also provides a speech output. Currently there are many android applications available for language translation wherein the user has to type the text he wants to interpret. These applications mainly support international languages like Spanish, French, Arabic, etc. Hence they are not of use to speakers of Indian languages like Hindi, Malayalam, Kannada,etc.Thus we have devised an android application that aids the comprehension of the Indian vernacular to help guide the local people. Firstly, the user of this application will have to take a photograph of the text that he wants to interpret. The application then extracts the characters from the image captured and translates it to English. This will then be converted to a speech output as well.**

Keywords— android application, local languages, text to speech synthesis, translation

I. INTRODUCTION

India is a country where many languages are spoken. People travelling to different places in India find it difficult to communicate with local residents as they do not know their local language. They are unable to interpret the words written on sign boards, hoarders or banners and they are easily misled without knowing the local areas. So there is a need to develop text information extraction systems that can identify and recognize text that is contained in the images and then convert it into speech.

The project was selected keeping in mind the need to develop an android app which will extract the text from images in cases where the user cannot manually enter the characters. After the text extraction, the characters are translated to the user understandable language (English). Then the text is converted to speech. The user will have faster access to the unknown language and will be able to understand it. Thus this project intends to help people to identify local places.[1]

II. LITERATURE OVERVIEW

A combination of text recognition system and text to speech convertor is used in this paper. Printed text in the form of an image in certain languages is converted to English text and finally to speech. It requires mobile phones using android as the operating system. In addition to this, it makes use of optical character recognition and Tesseract to enable the process of converting image to text and text to speech using an android based application. The application can help its users to take a picture of any text image written in Indian languages, then retrieve it in order to translate it to English in a few minutes.
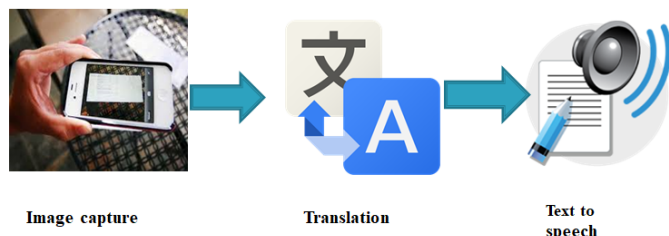

| Image capture | Translation | Text to speech |

Fig:1 Overview

III. PROBLEM DEFINITION

Several language translator android applications are available these days where the user has to input the required text by typing it. But most of these applications process international languages and not the local Indian languages. On the other hand, additional problems arise if the user is unfamiliar with the written script. It may seem to be a daunting task when you consider travelling to places where the language is alien to you.

1V. PROPOSED WORK

This system works in a series of stages. Firstly, the user has to hold his/her phone to a piece of text in another language and watch the screen as the text changes to English language. It uses the android device's camera for image capture. It is an effective system for detection and also provides a platform where the detected text is automatically translated to English. It enables the users to read the local languages. Finally the output in the form of voice, is obtained

The user will have to interact with an android based mobile phone interface while using the software system. He will have to navigate to the text recognition utility from the phone's home screen.

An effective text recognition system which works on a set of local languages will be developed for mobile devices which make use of an android application. In addition to the process of avoiding the overhead of communication, this fully automated system provides faster access and makes interpretation easier.

It caters to a wide variety of applications like transportation, tourism etc. The users are provided with a multisensory reading experience that combines both visual and auditory output.
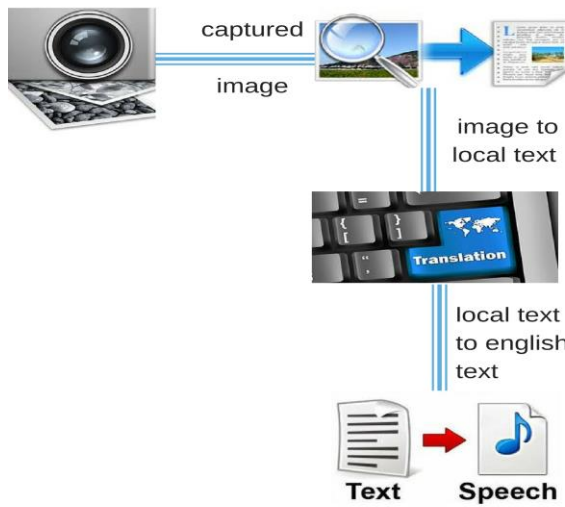

Fig:2 Flow Diagram

The interface of the application includes four parts which are:

A. Camera application

B. Image to text conversion

C. Language translation

D. Text to speech conversion

A. **Camera application**

The first phase of the project begins with an android based camera application. The use of camera is crucial for our application in order to capture the image of sign boards .It can be implemented with the help of android studio. The camera captures the image of place names in any local language like Hindi, Malayalam etc. The user should press the button to take the picture from the mobile's camera. After the standard resolution image capture, the textual regions within the image are identified. The camera will remain solely focused on the textual region of the picture ignoring the scene's background. Text recognition will be done by clicking the 'recognize text' button. [15].The recognized text from the image will be displayed in the text bar.

B. **Image to text conversion**

This phase performs the task of converting the un-modifiable document images into a flexible text format. It accepts the raw scanned image of signboards and produces the desired text in the local language in which it is written. This system uses a combination of tesseract and openCV and OCR engine for various operating systems. The captured image is then processed and the first step in the processing is localization of the textual regions in the image. The image must be sharp and it must contain textual regions and the background of the image must be homogeneous.[9]

C. **Language Translation**

The translation of the input text from a local language to English is performed in this stage. It can translate multiple forms of text in different local languages like Hindi, Tamil, Kannada etc. The place names identified in local languages are converted to English text. It is highly improbable for the people to know the numerous local languages. So the system provides an effective platform for them to read the corresponding place names in English.[4]

D. **Text to speech conversion**

The conversion of English text to its corresponding speech is performed in this phase.[3] It reads the digital text aloud. At the same time it provides a multisensory reading experience that combines seeing with hearing. It makes use of freets.jar library. The android application reads a piece of text and converts it into speech. So it is not required for the users to constantly look at their screen for the translated text to appear.[2]
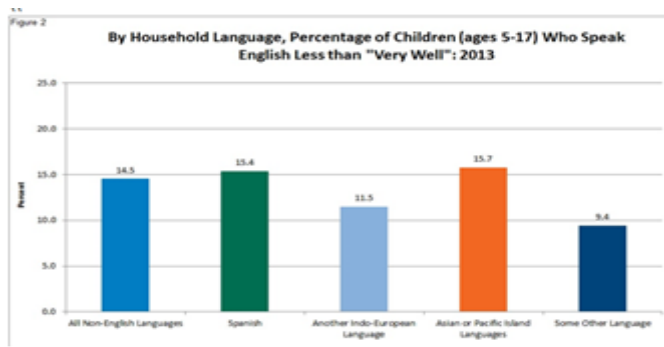
Fig.3 graph of children speaking English

V.ANALYSIS

To analyse our requirements, we have used a usecase diagram that will show the possible overview of this paper:

Table 1: Comparison of existing and proposed system'

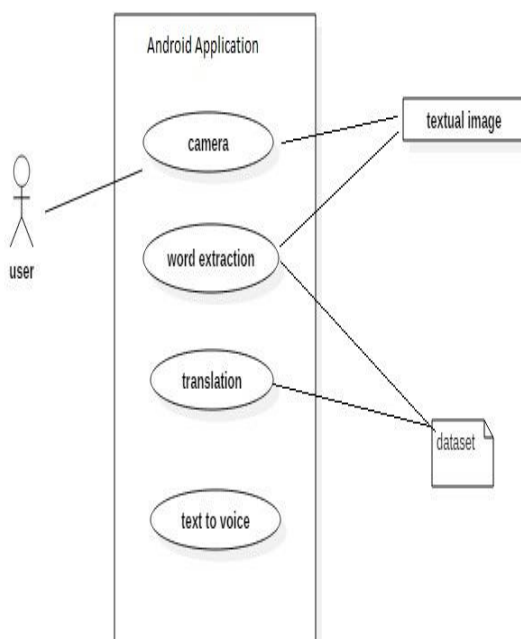| Existing System	Proposed System
Process international languages	**Process local languages**
Problem with users of unknown language	**Easy for people with unknown languages**
User has to type text	**User does not need to type text**

Fig: 4 Usecase diagram

VI .TESTING AND RESULTS

This paper is an Android based device application that fulfils the requirements set by the user. These are some snapshots of the application with their description.
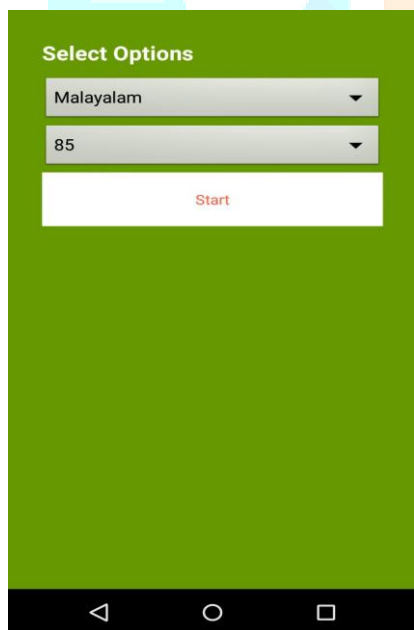

Fig: 5.Android App
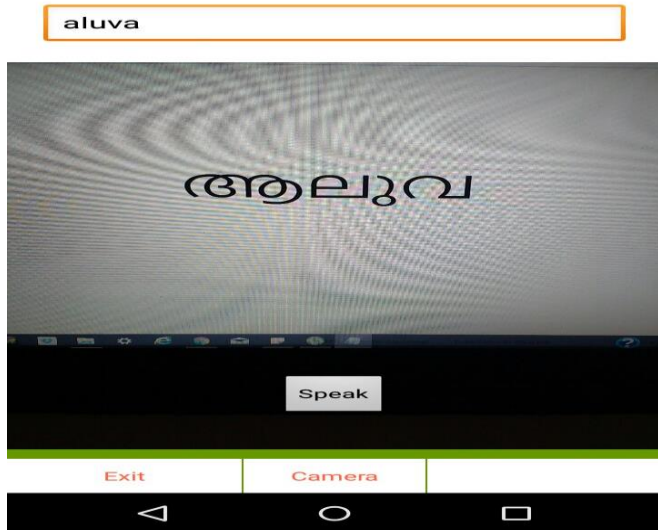

Fig: 6 Selecting Language

Fig: 7.Capturing image to text and text to speech

VIII   CONCLUSIONS

Traveling to another state without knowing its respective language is generally difficult for people. The main advantage of this paper is that it enables the people to read local languages. At the same time, it eliminates communication and language difficulties. This is a stand-alone and network independent application and hence is very useful for people without any mobile phone internet access. Finally, it is a user friendly application which requires very little input from the user and is fairly automated with multisensory outputs.

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