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Survey Paper on OCR for Travelling Applications

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ABSTRACT: Now a day's use of smartphones are increasing. Very frequently a new smartphone is launched. Android is one of the rapidly growing operating system in the smartphone market and as it is open sourced, many applications are developed for Android. Our project is based on developing an application for android which will help users (tourist) to translate the words written on the sign boards (i.e. Posters) into their own parent language. So they can understand the meaning of the words written as the user may or may not understand the language written on the board. Our application makes use of OCR (optical Character Recognition) engine to recognise the text and finally translator will transform the text into user desired language. This application is useful for native Tourists and Travellers who possess Android Smart phones. It provides translation facility so that Tourists can translate the Native Language text into their own language.

KEYWORDS:Android, Tesseract-OCR, Translator, API (Application Programming Interface)of hops

I. INTRODUCTION

Communication is every important in day to day life. Without communication a person cannot understand what another person has to say. India is very big country. Different people live in different areas of the country and thus the national or local language of the different regions also differs. Many people travel from one region to another to do their jobs or some just travel for having fun in holidays. But as people travel from one region to another it becomes difficult for them to understand the meaning of the words written on the sign boards while travelling as they are written in different language. It is not possible for every person to learn all the languages while travelling to another region. Thus need to understand meaning of the words written on the sign boards arises. Thus technology comes to rescue by helping people to understand the meaning of the words written in different languages into their own language by translating them on the go.

Smartphones are in great demand today. Android is an operating System (OS) for smartphones. Demand for Android is increasing as it is the most user friendly OS among other OS available in the market (For e.g. Windows, iOS etc.) and as it is open source developers can use already developed API (Application programming interface) of other programmers in their application because of which developing an application becomes easy for Android. In our System we are using Tess-erect OCR engine and Translator packages which are both open source and freely available for everyone to download. Tesserect Engine is most popular open source words recognizer. It was developed by HP but later in 2006 Google acquired it and released its complete open source code. Translator packages are the packages which will translate the recognized words into another language. Some of the popular are Bing translator, Google translator etc.

As mentioned earlier, there are many people who visit to different countries. It not possible for every person to learn the local language of each region. Thus if, while travelling, a tourist (i.e. user) sees any sign board and cannot understand the words written on it he is not able to understand the meaning of the written words. By using our application any person can translate the written words quickly without anyone's help. He just has to point his Android smartphone towards the sign board. The Tess-erect engine will identify the words and the translator will translate it in another language which user can select. Thus people, while travelling, will understand the meaning of the words although they are written in another language. This application is very helpful for Tourists and Travelers who possess Android Smart phones. The motivation of a real time text translation mobile application is to help tourists (or other people) navigate in different environment very easily. This application enables the users to get text the translated text as ease as a button click. The camera captures the text and returns the translated result in real time.

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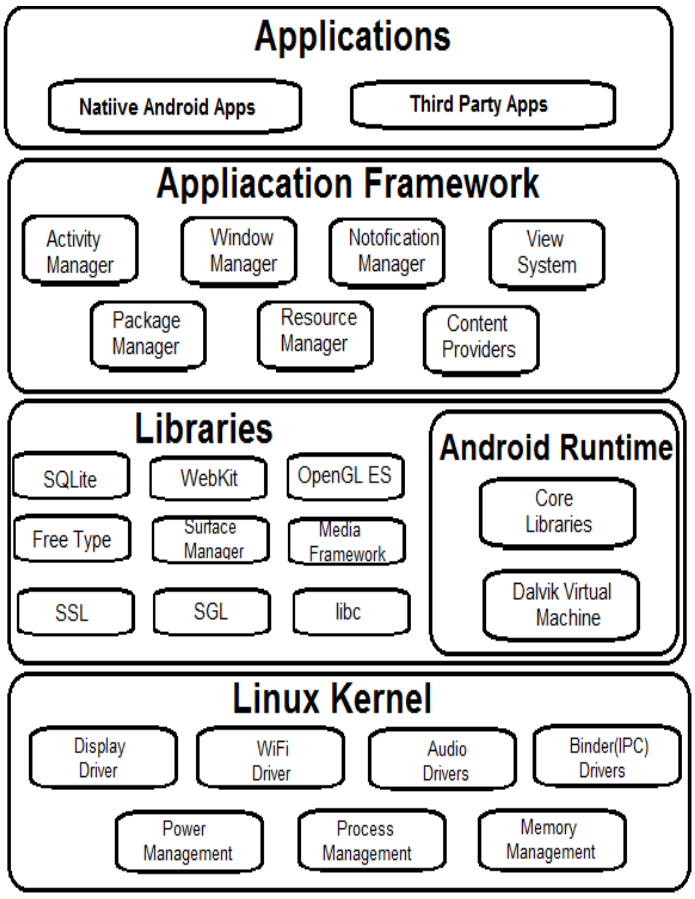
II. RELATED WORK

A. EXISTING SYSTEM

1. Android:

Android is a mobile operating system based on Linux Kernel. Android is generally made for smart phones and tablet computers which are touch screen mobile devices. Android is developed by Google. It was revealed to public in 2007 along with the founding of Open Handset Alliance which is consortium of different hardware, software and tele communication companies like Blackberry, Samsung, Google, HTC, Motorola, LG, Sony, Micromax etc. Many developers see Android as priority target platform compare to Apple's ios on 37%. According to recent survey in September 2015, Android had 1.4 billion monthly active devices. The Android Architecture layer are as follows



Android has a very popular app store, Google play store. There are different types of apps in Google play. Android is an open source. Different versions of Android are Cupcake, Donut, Éclair, Froyo, Gingerbread, Honeycomb, Ice Cream Sandwich, Jelly Bean, KitKat, Lollipop, Marshmallow, Nougat.

B. TESSERACT OCR ENGINE:

Tesseract is an open-source OCR engine that was developed at Hewlett Packard labs in Bristol, England, Greeley, and Colorado between 1984 and 1994. The code is written in C and C++. It was declared open sourced in 2005 by Hewlett Packard. This is accessible for different operating system like Linux, Windows and Mac OS. Initial version can access only English Language text. The next version Tesseract v2 can access six Western language text. In July 2015, V3.04 was released and it supported 39 different languages. However Tesseract output of recognizing words is poor if the input image is of low quality.

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C. ARCHITECTURE:

Tesseract OCR works in step by step manner as per the block diagram shown in fig. 1. First step is Adaptive Thresholding which converts the image into binary images. Next step is connected component analysis, which is used to extract character outlines. This method is very useful because it does the OCR of image with white text and black background. Tesseract was probably first to provide this kind of processing [6]. Then after, the outlines are converted into Blobs. Blobs are organized into text lines, and the lines and regions are analyzed for some fixed area or equivalent text size. Text is divided into words using definite spaces and fuzzy spaces. Recognition of text is then started as two-pass process as shown in fig 1. In the first pass, an attempt is made to recognize each word from the text. Each word passed satisfactory is passed to an adaptive classifier as training data. The adaptive classifier tries to recognize text in more accurate manner. As adaptive classifier has received some training data it has learn something new so final phase is used to resolve various issues and to extract text from images [6].

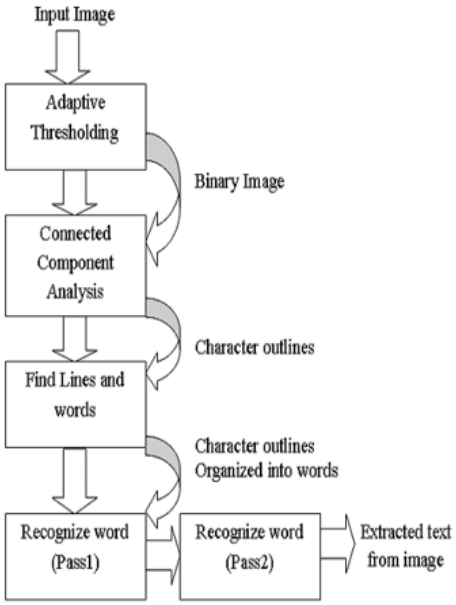

Fig. 1. Architecture of Tesseract OCR

D. TESSERACT ANDROID TOOLS:

The Tesseract Android tools is used for assemble the tesseract and Leetonia libraries. Tesseract tools are used for Android. It is used to frame the tesseract OCR library. This tool is provided by Google. This tool is used to create an OCR app.

E. ANDROID SDK:

Android SDK is the application development environment for Android. It allows to create and test Android-applications that uses the mobile device camera, accelerometer, compass, and GPS data. It supports work with multimedia content (audio, video, image), SQLite, an integrated browser on engine Web Kit, the virtual machine Dalvik, GSM telephony etc. Android developers have the opportunity to test the developing applications by using the built-in emulator. Android SDK ADT Bundle includes:

Plug-in Eclipse + ADT.
Tools of Android SDK.
Tools of platform for Android.
The latest platform Android.
The image of the Android OS
For emulator.

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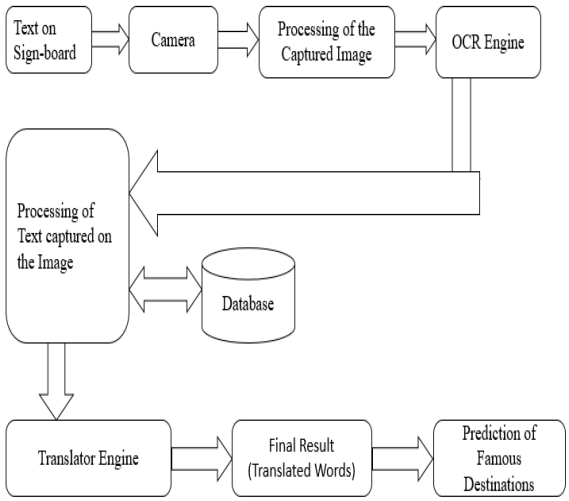
III. PROPOSED SYSTEM

The proposed system enables users to easily capture the text written on signboards, banners in English language and convert it Hindi language. In this system we are going to use Optical Character Recognition (OCR) to recognize the words which are captured by the user and then translator will translate the captured words into other language.

Proposed System Architecture:



As shown in the figure, the first step is to capture text from signboard or banner through camera. The actual captured data is nothing but the image, in that image the texts are present. So, pre-processing on that image is required and that exact job is done here. After that the texts which are present on the image is get into the detectable format and send to the OCR engine. In the OCR engine the actual words are recognized and extracted, then the post processing is done using the dictionary. The words are stored in the database and sent to the translator engine. There is Google translator API is used to translate the English language word into Hindi language. And then the translated word is given to the user as an output.

Google Translate API:

Google Translate API tool uses the simple programming interface which translates arbitrary string into any another language. Translate API is highly responsive, so websites and applications can integrate with Translate API for fast, dynamic translation of source text from the source language to a target language(e.g., English to Hindi). Language detection is also available in cases where the source language is unknown. Translate API can seamlessly scale with almost any volume. Translate API provides high quality translation that push the boundary of machine translation.

Data Mining:

The actual meaning of the mining is nothing but “to discover” or “to find”. Data Mining means finding or discovering the valuable information or data from huge amount of data or large databases. We are going to implement this exact concept in this application. The use of this concept in this application will play very vital role, because using this concept (with permission of the user) we can get help users by showing some famous places in the same area.

IV. CONCLUSION

This paper presented a board survey on how tesserect OCR will be used to capture words and recognize them. It also explains how language translator will translate the captured words into another language which will not only help users to read them but also help them to understand the meaning of the words. The application is fast, user-friendly and will help all the users to easily translate the words written on boards on the go.

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