Language Translator Application using Image In Android

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Abstract: *This paper provides a new idea to the people when they want to transcript the other language text into their known language. Language Translator is an application that can be installed in user's mobiles like other mobile application. Using this they can transcript their unknown language text into their known language text format. User has to take a photo image of the unknown language text and they have to give this image as an input for the software and the software will give the output as their known text. Tesseract is an open source Optical character recognition (OCR) technology used to extract the text from the image and Google API is used for translation of language. This application software is very useful in the emergency situation (If the user moves to the different states).*

I.   INTRODUCTION

Text extraction from image is one of the complicated areas in digital image processing. It is a complex process to detect and recognize the text from image. It's possible of computer software only can provide extracted text from image using most complicated algorithm. So it can't be use anywhere in this existing environment. Here different types of language translators are available such as voice based translator, keyboard based translator etc. But those translators are not easy to use.

The purpose of this work is to demonstrate that a tight dynamical connection may be made between text and interactive visualization imagery. The Android device camera can prove this type of extraction and also we can easily to implement algorithm using java language. Millions of mobile users in this world and they always have mobile in their hand, so simply they can capture the image to extract the text.

A. OPTICAL CHARACTER RECOGNITION

Image translation is a term related to machine translation services for mobile devices (mobile translation). Image translation refers to an additional service provided by mobile translation applications where the user can take a photo of some printed text (menu list, road sign, document etc.), apply optical character recognition (OCR) technology to it to extract any text contained in the image, and then have this text translated into a language of their choice.

Optical character recognition (OCR) is the mechanical or electronic conversion of images of typewritten or printed text into machine-encoded text. OCR has a high degree of recognition accuracy for most fonts are now common. Some systems are capable of reproducing formatted output that closely approximates the original page including images, columns, and other non-textual components.

Many valuable paper documents are usually scanned and kept as images for backup. Extracting text from the images is quite helpful and thus a need for some tool for this extraction is always there. To achieve this the Image Translator application will be very useful.

B. LANGUAGE TRANSLATOR

After extracting the words from image by using the OCR (Optical Character recognition) Engine, those words are translated into known language to do this the GOOGLE TRANSLATE API service is used. This is a paid service. It provides many libraries for translation. The first thing to remember is that translation is the transfer of meaning from one language to another. It is not the transfer of words from language to language. You must translate the meaning of what is being said, rather than do it word-for-word. This is because languages are not just different words. Different languages also have different grammar, different word orders, sometimes even words for which other languages do not have any equivalents.

For this case the Google API translation service will be very useful that provides instant translations between dozens of different languages. It can translate words, sentences and web pages between any combinations of our supported languages. With Google Translate, the information can be made universally accessible and useful, regardless of the language in which it's written.

It can make intelligent guesses as to what an appropriate translation should be. This process of seeking patterns in large amounts of text is called "statistical machine translation". Since the translations are generated by machines, not all translation will be perfect. The more human-translated documents that Google Translate can analyze in a specific language, the better the translation quality will be. This is why translation accuracy will sometimes vary across languages.
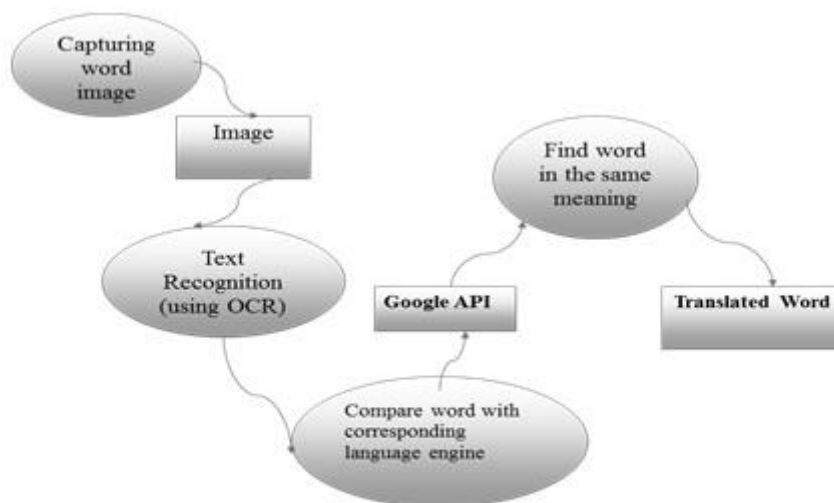

Figure 1: Language Translator application process

II. PROPOSED WORK

A. TESSERACT ENGINE INTEGRATION

Optical character recognition (OCR) is the mechanical or electronic translation of scanned images of handwritten, typewritten, or printed text, to machine encoded text. The open source OCR API called Tesseract is used as a basis for Image Recognition. Tesseract is considered the most accurate free OCR engine in existence. Google has benefitted extensively from Tesseract in their Google books project, which has attempted to digitize the world's libraries.

Tesseract works with independently developed Page Layout Analysis Technology. Hence Tesseract accepts input image as a binary image. Tesseract can handle both, the traditionalBlack on White text and also inverse-White on Black text. Outlines of component are stored on connected Component Analysis. Nesting of outlines is done which gathers the outlines together to form a Blob. Such Blobs are organized into text lines. Text lines are analyzed for fixed pitch and proportional text. Then the lines are broken into words by analysis according to the character spacing.

Fixed pitch is chopped in character cells and proportional text is broken into words by definite spaces and fuzzy spaces. Tesseract performs activity to recognize words. This recognition activity is mainly consists of two passes. The first pass tries to recognize the words. Then satisfactory word is passed to Adaptive Classifier as training data, which recognizes the text more accurately. During second pass, the words which were not recognized well in first pass are recognized again through run over the page.

Line Finding Algorithm : Lines of text are found by analyze the image space adjacent to potential characters. This algorithm does a Y projection of the binary image and finds locations having a pixel count less than a specific threshold. These areas are potential lines, and are further analyzed to confirm.

Baseline Fitting Algorithm : Finds baselines for each of the lines from the picture. After each line of text is found, Tesseract examines the lines of text to find approximate text height across the line. This process is the first step in determining how to recognize characters.

Fixed Pitch Detection : The other half of setting up character detection is finding the approximate character width. This allows for the correct incremental extraction of characters as Tesseract walks down a line.

Word Recognition : After finding all of the possible character "blobs" in the document, Tesseract does word recognition word by word, on a line by line basis. Words are then passed through a contextual and syntactical analyzer which ensures accurate recognition

B. TRANSLATE USING GOOGLE API

Google Translate API gives free translation service that provides instant translations between dozens of different languages. It can translate words, sentences and web pages between any combinations of our supported languages. With Google Translate, the information can be made universally accessible and useful, regardless of the language in which it's written.

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III. IMPLEMENTATION

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language. Android applications are developed using Java and can be ported rather easily to the new platform. If you have not yet downloaded Java or are unsure about which version you need, I detail the installation of the development environment. Other features of Android include an accelerated 3-D graphics engine (based on hardware support), database support owner by SQLite, and an integrated web browser. Android Market filters the applications that are visible to users, so that users can see and download only those applications that are compatible with their devices. One of the ways Market filters applications is by feature compatibility.

Figure 2 capturing the word

Figure 3 Translated word

IV. FUTURE ENHANCEMENT

In future the language translator application can be enhanced by including many features such as voice based input method, handwritten method, keyboard based input method. It will achieve translate between 90 languages. It will provide translation while travelling without internet connection. Particularly useful features will include instant language recognition, batch processing of file folders full of documents, text-to-speech capability to help you learn correct pronunciation and an integrated spell-checker.

V. CONCLUSION

Language translator using image application offers a variety of languages to choose from and provides good support and a user-friendly interface. To achieve this, the user needs to take a picture from our phone camera and translate it directly to any language. The

application will recognize the text from your picture and translate it automatically. User can use this application in restaurants, airports, train stations, buses, etc. This application supports the variety of languages. It provides very accurate guesses.

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