

Image Translator on Android using Image Processing for Tourism

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Abstract--Today, Android powers trillions of mobile devices across 180 countries all over the world. Android is known as one of the fast growing and largest platform present for mobile devices [1]. Android is capturing fancy of infinite users every day. It is very simple, user friendly and inexpensive. Thus we have chosen Android as the platform for our application. Our project goes by the name “Image Translator on Android using Image Processing (ITAIP).” Our application can be used while people are on the go. Users are allowed to click pictures of pages, banners, signboards, menus, etc. Using the inbuilt Optical Character Recognition (OCR) tool user can convert the text from the image captured into Unicode text format [2]. There is no networking delay since there is inbuilt OCR tool.

Keywords: optical character recognition, android, Unicode text, binarization, tesseract.

I. INTRODUCTION

The main aim of our application is to enable user to capture the pages, menus, banners and signboards, etc. The inbuilt OCR is used in order to convert the text in the captured image to Unicode text [2]. We, the developers have worked hard to make the application multilingual, so that the user can translate the Unicode text to the desired language present in the list of languages provided. This application allows user to search both recognized as well as translated text by using advanced features like copy, paste and search for other queries. This would prove greatly beneficial with respect to aspects like localization being a common phenomenon. Also android platform has increasingly become common due its features like low-priced, fully customizable, light-weight operating system and more.

II. PROPOSED SYSTEM

A. Camera Capture Component

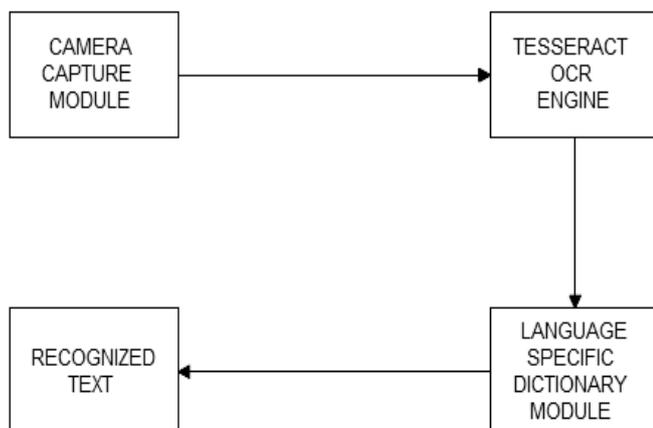


Fig. 1: Camera Capture Component

This module helps the user to make use of the camera of the smart phone device in which the application is installed. The user can auto focus the camera to the desired space on the camera screen. Also, by touching the camera corners on the screen user can capture only the required space of the image, mostly, the text region in the image, in order to cover as much text in the image as possible in one click. The captured image is in digital form. The image captured is then sent to the OCR engine module using Tesseract Android Tools.

B. OCR Engine Component

Today, Tesseract is one of the most accurate OCR engines present till date. Tesseract was originally developed for English, then over the time it has been re-evaluated to recognize international languages like French, German, Hindi, Catalan, etc. [4]. Implementing Hindi language using Tesseract requires in-depth information about Devnagari script in order to collect the character set.

This module, converts the digital image which is taken as input from the earlier module into the binarize form. The whole process is known as 'Binarization'. Later, the layout is scanned for the finding the Blobs. Finally the separated characters are recognized using the inbuilt fuzzy feature of matching, language specific training data of Unicode characters.

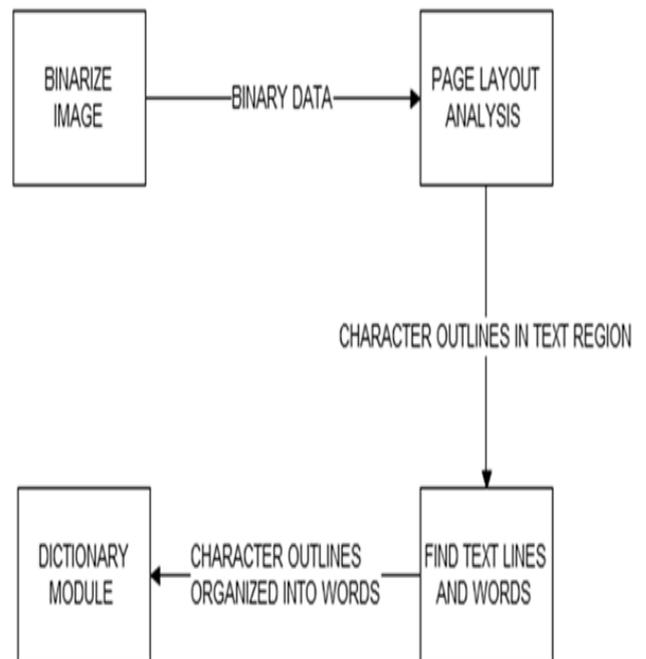


Fig. 2: OCR Engine Component

C. Language Specific Library Component

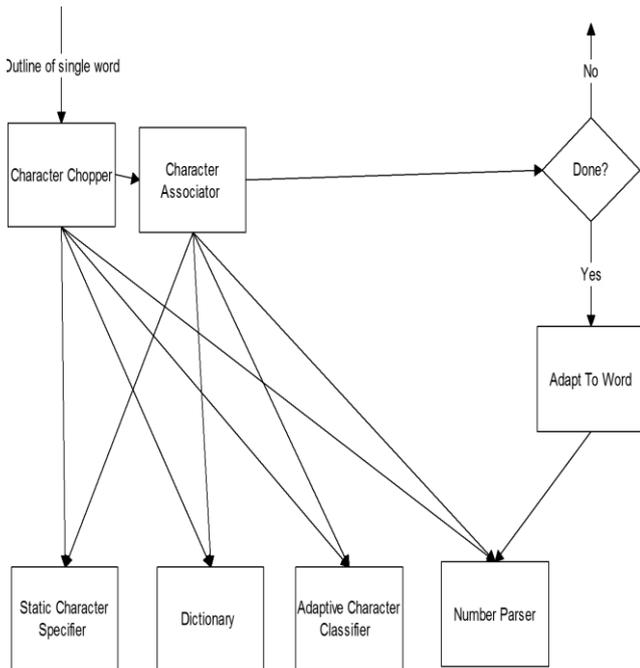


Fig. 3: Language Specific Dictionary Component

D. Unicode Text Component

The output which came from the OCR engine is displayed as Unicode text in a text box and the user is allowed to translate the text in the image into his desired language provided in the list. Moreover the user can use the advanced search feature to search the travel specific related queries like books, videos, songs, culture, images, places and hotels etc. related to recognized or translated text.

III. FEATURES

A. User Friendly UI

A key feature is that the Graphical User Interface is simple and easy to use. The user only needs to provide the system with the query image. Thus the interface as a whole provides a very user friendly environment.

B. Overcomes Networking Delay

It overcomes the existing problems with OCR technology i.e. limited memory and limited processing power challenge moreover also overcomes the problem of networking delay.

C. Direct Access to Camera and Gallery

If the image is already stored in the android gallery, the image can be directly accessed. If not, the application allows for capturing the image using the camera. Both Regional and International Language Included the application is provided with a drop down list from which the user selects the desired language of his choice. Thus the application is multi-lingual.

D. Copy/ Paste both Translated and Recognized Text

To Search For Any Tourist Place The application allows user to copy, paste and share the Translated Text as well as Recognized Text and thereby search for text related museums, songs, images, videos, hotels, restaurants, etc.

IV. SYSTEM REQUIREMENTS

A. Hardware

- 1) 256 Mb RAM and 80 GB HDD.
- 2) Intel 1.66 GHz Processor or above
- 3) GPRS Enabled Android Mobile Phone

B. Software

- 1) Windows XP or above
- 2) Android SDK

V. DESIGN DETAILS

A. Flow Chart

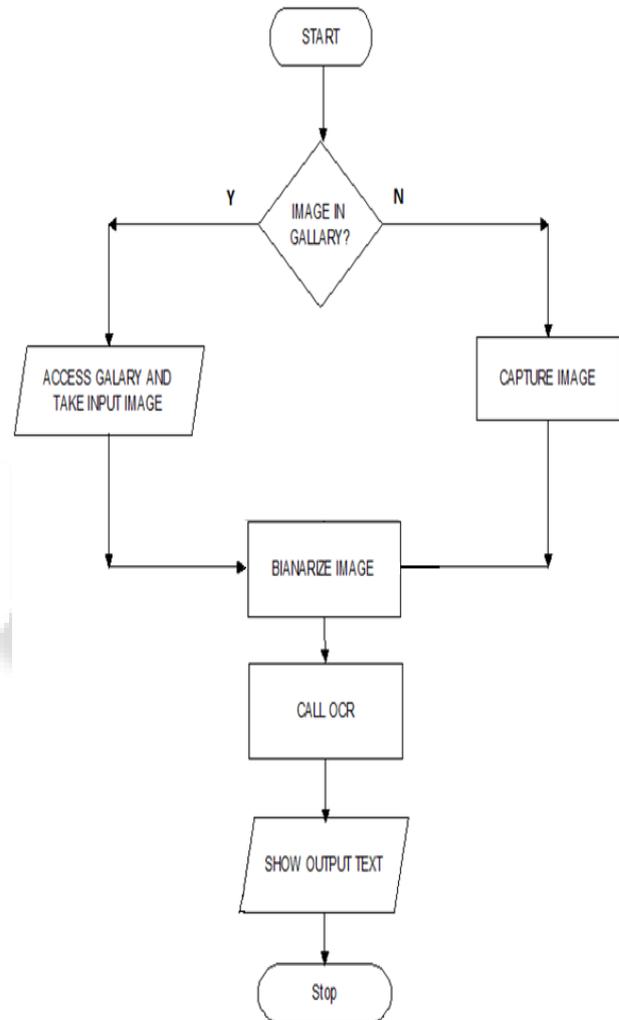


Fig. 4: Flow Chart

VI. CONCLUSION

Image Translator on Android using Image Processing is thus a very beneficial application for tourism in any county, especially in a developing country like India. Our application provides a robust, extremely fast and high quality performance due to improved noise tolerance feature, Auto focus behavior, continuous dynamic preview, and no remote computing overhead[5]. It is a simple and user friendly application that can be used by tourists while they are vacationing in some other country.

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