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Kannada Character Recognition by optically in Android Mobile

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Abstract-We focuses on an application that performs kannada OCR (Optical Character Recognition) in handheld devices. The objectives is to make use of the visual skills of the built in camera of Android devices to citation characters from Kannada sign boards, newspapers etc., and by with the help of same platform to instigate the OCR technology with the benefit of kohonen's algorithm. Character in the image are initially thinned after the image is taken and processed. Small distortion are eliminated and the image is processed.. The captured image is then converted into a grayscale image, which is segmented and the result is showed along with a vocal output. These characters are recognized, the English synonym of it along with the kannada word and the voice output.

I. INTRODUCTION

In day-to-day life we faces lot of situations where we are unable to read or understand handwritten texts in other languages. Plastic cards which are read through an automated system has gained importance in numerous fields. These can be focused by optical character recognition software. This will be useful mainly when it is extended to different regional languages. Android also gives a platform where one can easily install applications and use them effortlessly. Most of the Android supporting devices also contain a built in camera, which are capable of taking good dependable quality pictures. This paper aims to make use of the android platform to develop an application for recognizing kannada characters by taking pictures of them through built in camera with a relatively good and dependable efficiency.

II. LITERATURE SURVEY

a. ANDROID OPERATING SYSTEM Android is an example of operating system for mobile gadgets such as smart phones and tablet computers. Android is the most widely used mobile operating systems. Open Handset Alliance led by Google had developed this. Android applications are written in the Java programming language. The Android application being established by java has its main objective to recognize the Kannada characters pictured, with a dependable efficiency and in a reasonable amount of time.

b. *OPTICAL CHARACTER*
RECOGNITION:
The abbreviated form of this is OCR. This technology is used to recognize the text, which is present in an image and converting it into machine encoded text format that the computer can recognize. The text recognition is done character by character using complex algorithms involving automated learning with the help of neural networks such as Kohonen Network.

c. *KOHONEN NETWORK*
This Kohonen network is one of the neural network algorithms that deals with the training of the machine by unsupervised learning. The feed forward back propagation neural network is different from the Kohonen neural network. The way it is trained and how it recall the pattern are different for Kohonen neural. This network neither uses any sort of triggering function nor use any sort of a bias weight. Kohonen neural network does not consist of the output of several neurons. Out of which only single neurons is preferred as a "WINNER" that would be presented by a Kohonen network. Thus output from the Kohonen network is the "winner" neuron .Groups in the data that is presented to the Kohonen network is represented by the "WINNING" neuron.

d. *PROBLEM STATEMENT*
Many persons are facing difficulties in their daily life regarding languages. Our country is diversified with various regions and with various respective regional languages. It an individual can't learn and remember most of all the languages. This will going to lead to confusions while reading boards, hoardings, cards etc. So an application for reading documents or cards and converting it to the user understandable language will be very use full and necessary.

III. METHODOLOGY

To solve this real time problem, we are implementing an android application which uses optical character recognition techniques that converts the image of set of characters written in Kannada language to the respective English synonym. For this purpose we are making use of Android platform as it is open source and popular among common people. User has to take the image of the Kannada character from the built in camera from their mobile as the primary input. The image is being processed and characters are extracted which are then converted into English

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synonym. In this paper we are concentrating on towards converting Kannada characters into English.

SERVICES

In this section we are dealing with the services that are offered by our application. The .apk file of the application needs to be installed on the android device of the user mobile. After the application is launched, the user can go to the option to take a snap which activates the camera and the user can take any picture containing Kannada characters preferably of standard font and color. The image is processed to make the image distortion free, clearer by changing the contrast and increasing the resolution. The processed image is used by the character recognizer to individually distinguish the characters and identify them. The recognized characters are displayed in the result as English characters along with a voice output. If it is not able to recognize the word than error message is displayed.

UTILITIES

For the novice users this application is very much beneficial for reading or understanding Kannada language. This application helps to know the synonym of Kannada words and along with voice output is also given which will be helpful even for the blinds to hear and understand the words.

DATA FLOW DIAGRAM

Level 1

Fig: 1.1 LEVEL 1 Diagram

Level 1, as shown in Fig 1.1, mainly explains the entities involved in. The image is sent as an input to the character recognition module along with the appropriate commands to the application.
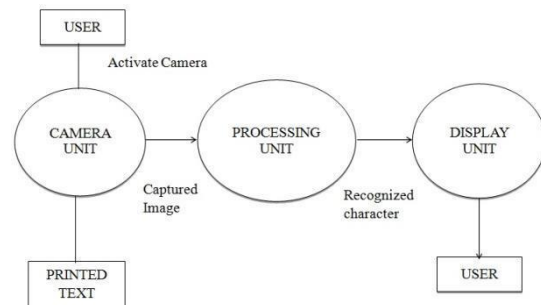
Level 2

Fig 1.2: LEVEL 2 Diagram

Level 2 explains the Kannada OCR system process from level 1. The image captured from the camera is processed and tried to map to the characters predefined within the application .Recognizes characters are displayed if the characters are recognized correctly. Error message is displayed if characters are not mapped correctly. The level 2 diagram is shown in fig 1.3.

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RESULT ACTIVITY

The structural chart contains the result activity as the lower most subsystem. Result activity is used when image is processed and the output of the character recognizer is to be displayed.

Purpose

The main purpose of the module is to display the recognized characters or to display an error message when the characters are not able to recognize.

FUNCTIONALITY

The following flow diagram shows the functioning of The Result Activity.
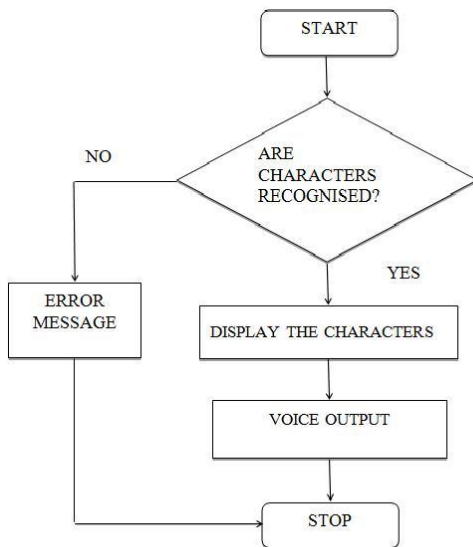
Fig : 1.3 Result Activity module

The result activity module waits until the image to be processed and it checks for the output of character recognizer and either displays the output consisting of characters recognized or an error message. This is shown in fig 2.4

Input

The input is taken from the character recognizer as the recognized characters.

Output

Displays the recognized characters and also display the corresponding meaning in English along with the voice output.

IV. RESULTS

This chapter covers the snapshots showing results of our paper. It also includes the snapshots of outputs for various inputs. The output varies with respect to different inputs. The snapshots are often self-explanatory as shown below,

SNAP SHOTS

This page includes the various snapshots of the user interface provided in our paper.

Fig 2.1: Application Home Screen

The snapshot shown in figure 2.1 is the application's home screen. It is displayed at the time when the user launches the application.

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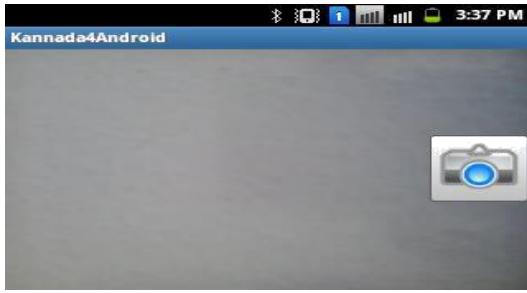**NCETAIT - 2017 Conference Proceedings**

Fig 2.2: Camera Interface

The snapshot is the camera interface which will be open when the user clicks on 'Go
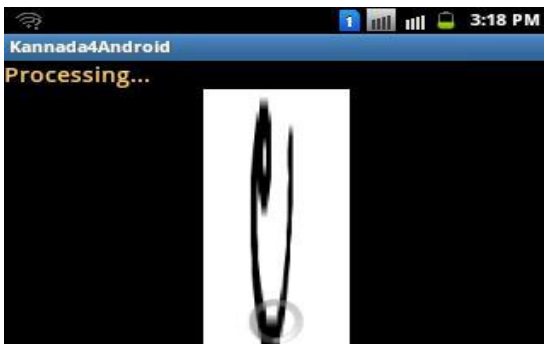
Ahead. Take a Snap' button in the home screen.

Fig 2.3: Processing Interface

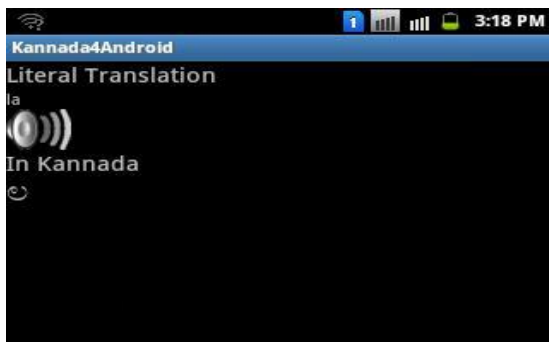When user clicks the camera logo of previous screen, the screen shown in figure 2.3 is displayed. It the Processing Interface.

Fig 2.4: Result Interface

The above shown figure is the result screen to which the application is redirected after the processing is completed.

OUTPUT FOR DIFFERENT SAMPLE DATA

This chapter includes the snapshots of various outputs obtained for different input data.

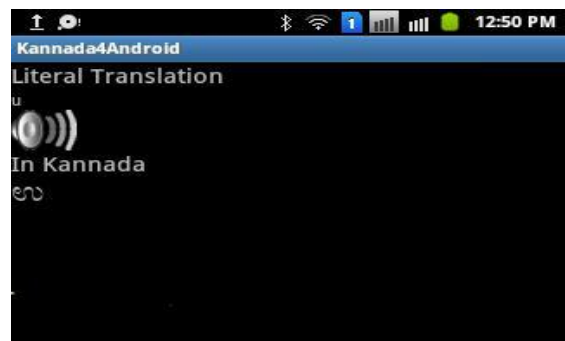Fig 2.4: Processing screen for Kannada character

Fig 2.5: Result screen for the character in the figure

The above Figures and show the result activity of one Kannada character.
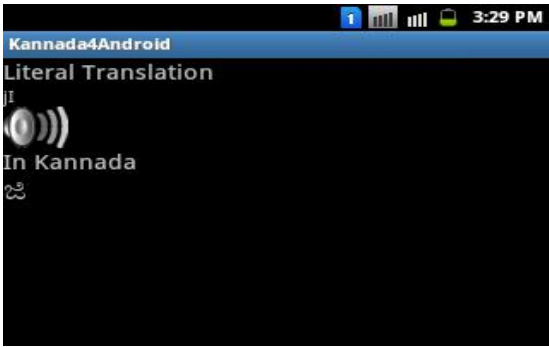

Fig 2.6: Processing Interface

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Fig 2.7 : The above snapshots figure and are the results obtained for the different Kannada character taken as input.
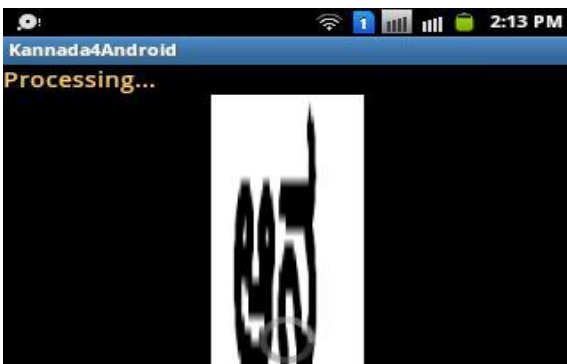

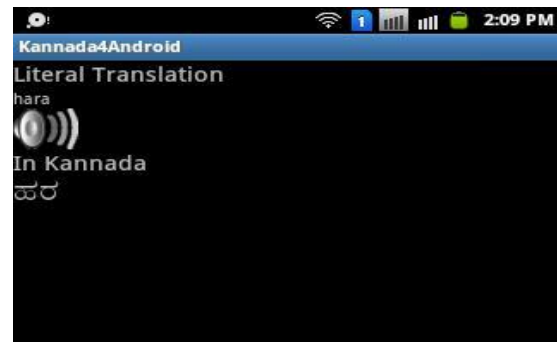
Fig 2.8: Processing Interface

Fig 2.9: Result Interface

The above two snapshots in figure 2.8 and 2.9 are the result activity of a Kannada word.

Fig 2.10: Processing Interface

Fig 2.11: Result Interface

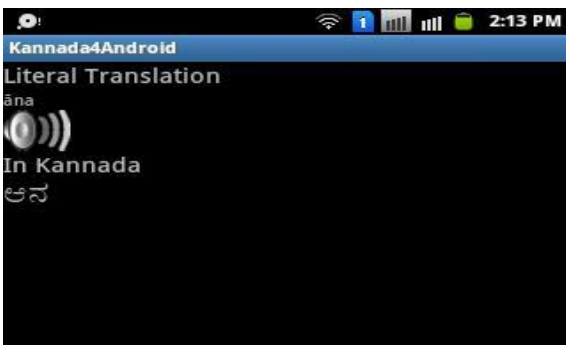The above shown figures 2.10 and 2.11 are the snapshots for some other inputs.

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