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TEXT EXTRACTION FROM TEXT BASED IMAGE WITH OPTICAL CHARACTER RECOGNITION USING ANDROID

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Abstract

In today's world the smartphones are everywhere and everyone uses smartphones for their day to day life. The smartphones have beendeveloped for various purposes like capturing images, record videos, surf the internet and etc. With advancement of technology, it ispossible to apply some techniques to perform text detection and translation. In this system, we have tried to integrate the TesseractOCR engine and the Google Vision library and develop an application on android platform that allows user to capture the imagesusing camera and extract the text from it. This application recognizes the text that is captured by a mobile phone camera and displaysback the recognized text on to the screen. To develop this application we have used the Optical Character Recognition, OCR engine,and we develop our own open source Android application. This application has come up with the solutions for the problems of retyping any hard copy of any documents, scanning the documents in the scanner then use the computer oriented software to recognizethe text in the file, or guessing the text and typing it. It aims to develop a piece of software that runs on smartphones and can be usedto identify and recognize text of any text based image using the phone's camera. In case of a finding, In order to achieve fast processing times, the project has to deal with the low computing power of smartphones.

Index Terms: OCR, Google Vision Library, Smartphones, Tesseract

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1. INTRODUCTION

Real world contains too many significant message and useful information but unfortunately most of them are written in different official language depends on the host country. Sometimes a signboard or any other notice could carry an important message or even danger. If the message is unreachable to mankind with different language background, it might cause important information to be missed out. Besides that, it is inconvenient for a travellers to carry on their tasks in a foreign country if they don't understand the language used in that country. They need to carry a pocket dictionary or use online translation service in order to understand the message. However, a pocket dictionary might not be helpful if the users want to translate a language that does not group by alphabets. It is also meant the same way in another study that users are unable to write the text of what they see. This issue might cause a communication breakdown for mankind from a different language background as they are unable to understand the language even though the pocket dictionary and online translation service provided.

Now a days, with the more and more use of digital image capturing devices such as digital cameras, smartphones, tablets etc., content-based image analysis and processing have been receiving immense interest and popularity in past few years.

From all the content present in an image text information has arisen wide interest because it is very easy to understand by both computer application and human beings and it finds wide applications such as mobile based text extraction, license plate recognition etc. With the advancement of the digital technology, the more and more databases are stored in devices. The databases usually contain images and videos in addition to the textual information. The textual information is very useful because it describes the image or video and can be used to fully understand images and videos. In this project we taking any natural scene image and extracting text present in the image. After that we can search that text in web browser or in dictionary without closing application. To carry out this task we have three modules those are Image pre-processing, Character recognition, Searching.

1.1 Literature Review

Getting inspiration from well-known iphone apps DerekMa,Qiuhau Lin, Tong Zhang developed a text extraction & translation application based on android platform, which was able to recognized the text that was been captured through mobile camera, translate the text in appropriate Chines language and return the result back

on to the screen of the mobile phone. Their algorithm has a correct recognition rate that is greater than 85% on character level. This application was developed to help the tourist so they easily navigate even
in a foreign environment. Several methods that can be used for extracting text from images such as document images, scene images etc.Particularly using the differentmobile applications that were designed to read text, recognize text or recognize objects in a picture and inform the user about the result of the request. This project is mainly related to image processing in order To extract text from images. In this chapter investigates image processing, and presents applications that can read text from an image. Have a look at systems that recognize objects in an image. Presents systems recognizing objects with extended functionalities, followed by which describes the tools needed and used to create the applications presented previously; and the last section, before we conclude, defense a plan of action.

1.2 Problems in current systems

All of us know this type of the technology is already present in the market on the other platform. So why we have developed this type of the application in the android platform. The reason behind this was the increasing use of the android phones .Android users are increasing day by day. So it was necessary to implement such type of the system in the android platform.

2. SYSTEM DESIGN

The main question arises in this type of application is that how it does the text extraction like thing with using only the processor & the Camera? Then the answer to this question is the simple and faster executing Tesseract tool. Tesseract tool is the one api which is able to detect the text from a captured image & to allow the application to successfully extract the text from this type of image. It takes text image as input and then applying pre-processing methods on it to remove noise from image by converting color image to gray, binarization
which helps to efficient and accurate text identification from image which is input to OCR(Optical Character Recognition),within pre-processing if some part text data will loss them by thinning and scaling is performed by connectivity algorithm. Then we get connected text character from image. Then text recognition is done. The proposed framework is divided into three stages. Here applied text detection and text recognition to the image and recognize. The text detection uses to quickly extract text region in images with a very less false positive rate. To provide the recognition for accurate result we proposed system to test the text image is segmented, assuming a different number of classes in the image each time. It is a demanding problem to automatically localize objects and text Region of Interest from captured images with cluttered backgrounds, because text in natural scene images is most likely surrounded by various surroundings outlier noise and text characters usually appear in different fonts and colors.

2.1 Text Detection

The text detection stage search for to detect the occurrence of content in a camera captured images. Because of different font, highlights, different cluttered background image alteration and demeaning correct and quick text detection in scene images is still difficult task. The approach uses a character descriptor to fragment text from an image. Initially content is detected in multi size images using edge based system, morphological Function and projection report of the image.
It is a demanding problem to automatically text Region of Interest from captured images with cluttered backgrounds, because text in natural scene images is most likely surrounded by various surroundings outlier noise and text characters usually appear in different fonts and colors.

2.2 ALGORITHM

1) Load template images or camera captured images.
2) Load the scanned image of the document to be converted to text.
3) Convert the scanned image to gray scale.
4) Filter the scanned image using a low
Impulse Response (FIR) filter to remove dust.
5) Break the document into lines of text, based on whitespace between the text lines.

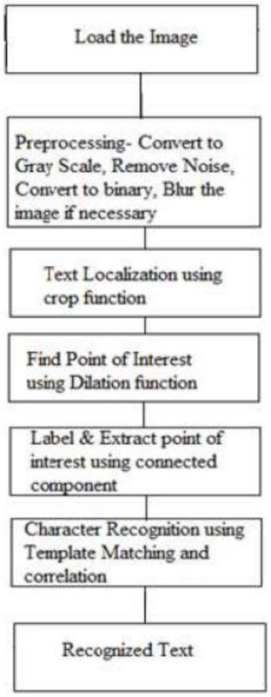

Fig-1: Data flow diagram

6) Break each line into characters, based on whitespace between the characters; using the average character width, determine where spaces occur within the line.
7) For each character, determine the most closely matching character from the training images and append that to the output text; for each space, append a space character to the output text.
8) Output the accumulated text.
9) If there are any more scanned images to be converted to text, return to step 2.

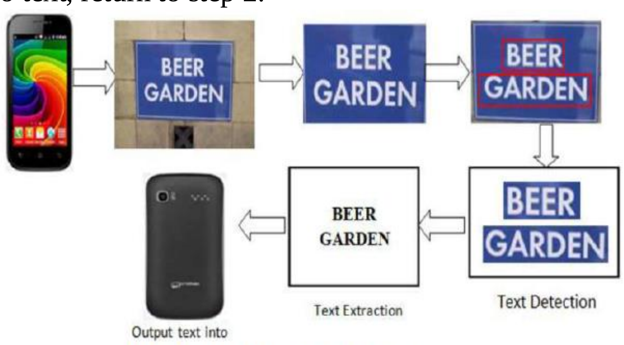

Fig-2: Working of the System

3. CONCLUSION

We have presented a method of text extraction from detected
text regions, which is compatible with android mobile applications. This system reads the text information in the
objects and extracts text from the image. It detects text area
from natural scene image and extracts text information from
the detected text regions. In image text detection, analysis of
color decomposition and horizontal alignment is performed to
search for image regions of text strings. It is a very good technology to work on.

4. SCREENSHOTS

Fig-3:Screenshot1

Fig-4:Screenshot2

Fig-5:Screenshot3

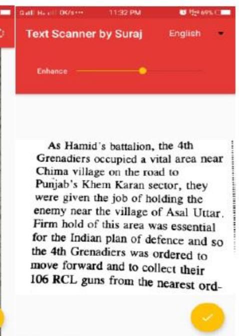

Fig-6:Screenshot4

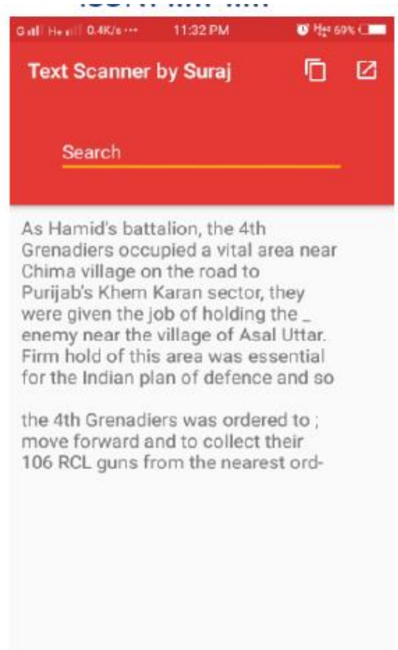

Fig-7:Screenshot5

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