Document Reader Using an Android Platform

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Abstract— Our purpose was to create an application that allows a user to jump to the correct section of an audio book by taking a picture of the page they are reading in a paper book. We used image processing algorithms such as the Hough transform to rotate pictures of the page, the Otsu's method is used to threshold and binarize the image and brick wall coding (BWC) to detect features on the page. Then We will used a k-nearest-neighbour algorithm to assign a score to a test page by comparing it with pages in our database. We returned the closest matching page to the user generated picture. We obtained 40% accuracy over a dataset of 20 pages. In future work we could improve our accuracy by using angles between features which are more invariant to the pictures the user takes.
Key words: Put your keywords here, keywords are separated by comma

I. INTRODUCTION

Every individual uses a mobile phone with an android operating system. There are a lot number of users who have to articles, newspapers or novels which takes a lot time to read. E-readers are portable, and audio books allow listeners to perform other tasks while following a story. We will focus on extracting features from images of a physical book's pages and convert them in to audio. So that the user must get an portable interface and can save his time. We are also gonna make it reasonable to audio conversions in any language and user can send it to his friend or family etc.

A. Related Work:

1) Text Extraction:
Text embedded in images and videos that provides important information. Text extraction algorithm used in morphological edge detection.

2) Open CV:
Open CV stands for Open source Computer Vision. Open CV is library of programming functions which has more than 2000 optimized algorithms and has been used for Android phone platform.

3) Optical Character Recognition:
OCR is used to translate scan images like handwritten ,type written or printed text into machine encoded text. OCR is recognizing text in variety of languages in binary image format.

4) Text Correction:
Text correction is performed after OCR text recoganation.OCR result is not always correct due to image imperfection.text correction algorithm have good performance in correcting this type of an error.

II. PRODUCT PERSPECTIVE

Today, avid readers can access their media in a variety of ways. E-readers are portable, and audio books allow listeners to perform other tasks while following a story; however, some persons prefer the physical experiences

associated with paper books. Within the single novel, all three formats can be advantageous. For example, a user may need to go for grocery shopping while in the midst of reading a paper book. If they switch to the audiobook format, they could continue enjoying the novel while driving a car. On day trips, a quick skim of a digital book in a cell phone might be preferable. We intend to do more literature research on document image retrieval, combine and improve them by keeping memory need small at the same time. Our goal is to discover the optimal tradeoff between processing speed and matching accuracy, and to create a demonstration of this concept on an Android-based phone. The phone would take a picture of any page of a book and automatically play back the relevant time stamp of its corresponding audiobook

A. Functionality:

Document Reader
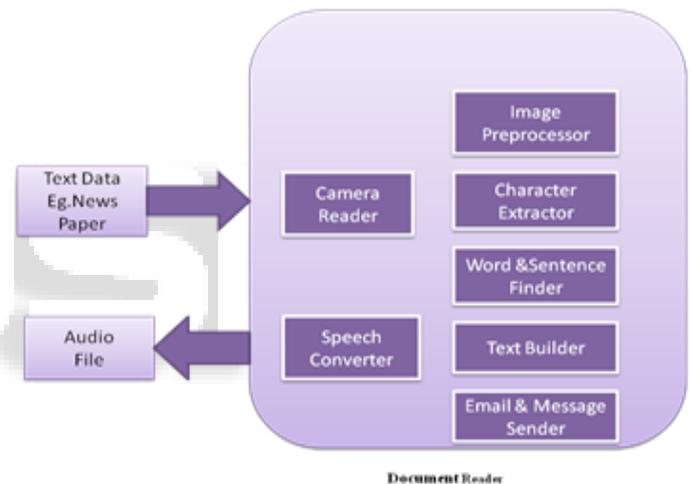
Here in our application we are going to focus on the act to make our application portable to be used by the people who are in a hurry or cannot read. Old age persons cannot read a lot of the times so they can use our application to convert the text into audio and listen to it whenever they want. The user is in no need to have a technical knowledge to use this application. o achieve this we are going to make available different languages in which the user wants to listen and the text will be provided by our application if he wants to send it to another person.

This is an offline (does not require internet connection to work) Optical Text Recognition application which can be used to convert text (English ONLY!!!!! for now) on a paper to editable digital text on your device. Extracted text can be listen in audio format In terms of image processing, our algorithm must extract the defined descriptor of taken image (word lengths or locations, neighbors or possible geometric features could be used). The same feature extraction algorithm should be applied to the all images in the database. Then it must map and evaluate these features via pairwise matching. Timestamp of the matched page must be accurately computed so that the

correct timestamp is selected with an acceptable error probability.

B. General Steps Used For Converting A Scanned Document To Text Are:

(1) Load training images
(2) Load the scanned image of the document to be converted to text
(3) Convert the scanned image to grayscale
(4) Filter the scanned image using a low-pass Finite Impulse Response (FIR) filter to remove dust
(5) Based on whitespace between the text lines, Break the document into lines of text
(6) Based on whitespace between the characters,break each line into characters; determine where spaces occur within the line,using the average character width
(7) Determine the most closely matching character from the training images and append that to the output text, for each character;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 convert into text then return to step 2

III. BENEFITS

Easy way of reading books for old age persons. Person capture the image of documents by using an android phone our application convert this image into an audio file. Person will listen this audio at any time.for e.g Reading new papers while traveling. No database is required.

IV. LIMITATION

Dependency on Phones Camera quality.Generated audio will does not have any emotion it's a robotic voice.

V. CONCLUSION

Hence we will design an Android based application for real-time text extraction, recognition and translation.

REFERENCE

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