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Extracting Business Card Information into Contact List

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***Abstract*: Analysis of document images for information extraction has become very prominent in recent past. Wide variety of information, which has been conventionally stored on paper, is now being converted into electronic form for better storage and intelligent processing. This needs processing of documents using image analysis, processing methods. The objective of Document Image analysis is to recognize the text and graphics components in image of documents and to extract intended information from them. We are surrounded by text everywhere: window signs, commercial logos and phone numbers plastered on trucks, yers, take-away menus - and yet to capture and use all this information we essentially resort to typing these phone numbers and websites manually into a phone or computing device. We thought we should help change that, with the help of the mobile phone camera and OCR applications extracting the relevant textual information in these images. Basically, the problem can be seen as a twostep process:**

1. **Extract characters/words from the image**
2. **Classify the words as Name, Email, Phone No, etc.**

Our work was more focused on the first step - to reduce/minimize the time needed to perform the step given we want to make it usable for mobile computing devices. However, computing under handheld devices involves a number of challenges. Because of the non-contact nature of digital cameras attached to handheld devices, acquired images very often suffer from skew and perspective distortion. In addition to that, manual involvement in the capturing process, uneven and insufficient illumination, and unavailability of sophisticated focusing system yield poor quality images. Since we have to separate text from graphics/background, segmentation/binarization algorithms play a vital role in the process, we studied, analyzed and implemented existing standard algorithms.

***Keywords*: OCR, Open CV, Tesseract**

1. Introduction

Used for the detection and reading of documented text in images to help the reducing time and recognizing instant information when it required urgently. The overall algorithm has a success rate of 90% on the test set as the unread text is significantly small and distant from the camera. We have proposed a technique to extract text from typed documents, convert them into machine encoded text, create the text files and then process them. Our focus is on enhancing the capabilities of working period, by providing them a solution so that the information can be fed to them in the form of a signal form. This project can also be implemented for the automatic detection of road signs, warning signs, in other terms to improve the blind navigation on larger scale.

2. Literature review

Extracting business card information in a few time period or available data on it from the original card is still a working process through image processing. Generally, we essentially resort to typing these phone numbers and websites manually into a phone or computing device required more times but each system which is manual handles have its own assumption, advantages and disadvantages. We thought we should help change that, with the help of the mobile phone camera and OCR applications extracting the relevant textual Information in these images.

This paper (Anush Goel, Akash Sehrawat, Ankush Patil, Prashant Chougule, Supriya Khatavkar. International Research Journal of Engineering and Technology | June-2018.Vol-o5) presents the automatic document reader for visually impaired people, developed on Raspberry Pi. It uses the Optical character recognition technology for the identification of the printed characters using image sensing devices and computer programming. It converts images of typed, handwritten, or printed text into machine encoded text. In this research these images are converted into the audio output (Speech) through the use of OCR and Text-to-speech synthesis. The conversion of printed document into text files is done using Raspberry Pi which again uses Tesseract library and Python programming. The text files are processed by OpenCV library & python programming language.

In this paper (A F Mollah, S Basu, Nasipuri and D K Basu designed an optical character recognition system for camera based handheld devices, describe that Human communication today is mainly via speech and text. To access information in a text, a person needs to have vision. However, those who are deprived of vision can gather information using their hearing capability. The proposed method is a camera based assistive text reading to help blind person in reading the text present on the text labels, printed notes and products. This is carried out by using Raspberry pi, where portability is the main aim which is achieved by providing a battery backup and can be implemented as a future technology. The portability allows the

user to carry the device anywhere and can use any time.

This paper (Shaikh Mohammad Ismail. Name entity recognition in business card images. is emphasis on the importance of simulation techniques in the field of Digital Image Processing. Simulations are carried out for implementation of various basic Image enhancement techniques document image analysis refers to an algorithm technique that are applied to the images of document to obtain a computer readable description from a pixels of data. A well-known document analysis product is the optical character recognition software to recognizes character in a scanned document. The objectives of document image analysis are to recognize text and graphics components in image of document and extract intended information from them.

This paper (Nagraja L, Nagarjun R.S. Vision based text recognition using Raspberry Pi NCPSLA 2015) emphasis that the prototype system for recognition of text present in the image using raspberry pi. In this paper they emphasis the image of the text is captured using raspberry pi camera or an HD webcam with high resolution. The acquired image is then applied to the image pre-processing step for reduction of unwanted noise. To extract the text from image we use optical character recognition technique (OCR). Optical character recognition has become one of the most successful applications of technology in the field of pattern recognition and artificial intelligence. Character recognition or optical character recognition (OCR) [4] is the process of converting images of machine printed or handwritten text (numerals, letters, and symbols) into a computer format text.

3. Methodology

In this system, the printed text is to be placed under the camera view by the blind person to ensure the image of good quality and fewer distortions. Then an applicable blind-assistive system, a text localization algorithm might prefer higher recall by sacrificing some precision. When the application starts at first, it checks the availability of all the devices and also for the connection. The GUI displays the status of the image clicked from the camera and a status box for representing the image. The Raspberry Pi has integrated peripheral devices like USB, ADC, Bluetooth and Serial. Raspberry Pi 3B uses Linux based operating system named Raspbian. When capture button is clicked, this system captures the document image placed in front of the camera which is connected to ARM microcontroller through USB. After selecting the process button the captured document image undergoes Optical Character Recognition (OCR) Technology. OCR technology allows the conversion of scanned images of printed text or symbols into text or information that can be understood or edited using a computer program. In our system for OCR technology we are using TESSERACT library. Using Text-to-speech library the data will be converted to audio. Camera acts as main vision in detecting the image of the placed document, then image is processed internally and separates label from image by using open CV library and finally identifies the text which is pronounced through voice. Now the converted text into audio output is listened either by connecting headsets via 3.5mm audio jack or by connecting speakers via Bluetooth.

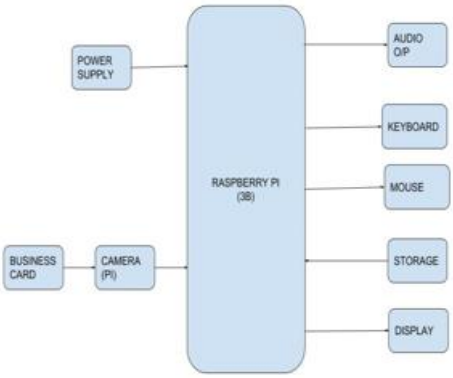


Fig. 1. Block diagram of proposed system

Power Supply Unit: It is the device that supplies electrical energy to the output loads. It gives a well regulated power supply of +5v with an output current compatibility of 100 mA.

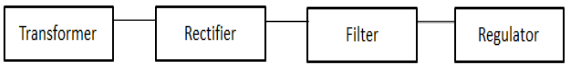


Fig. 2. Power supply unit

- *Camera:* Camera feeds its images in real time to a computer or computer network, often via USB, Ethernet or Wi-Fi.
- *HDMI to VGA Converter:* It used to connect the Raspberry Pi board to the Projectors, Monitors and TV.
- *Text extraction:* In this step the recognized text present in the image are extracted using OCR engines. In this project we use tesseract OCR engine which helps to extract the recognized text.
- *Optical character recognition:* Optical Character Recognition is a text recognition method that allows the written text or printed copies of the text to be rendered into editable soft copies or text files. OCR is used for the scanning of text from the images and converting that image into the editable text file. It is a common method of digitizing printed text so that they can be electronically edited, searched, stored more compactly, displayed online and used in machine processes such as cognitive computing, machine learning and translation, Text-to-speech etc. OCRs are of two types- For recognizing printed characters and for recognizing hand written text.
- *Performance analysis:* They indicates the pre-processed image which is given to tesseract OCR engine to extract the text in the image. However due to the less resolution of the webcam, the output obtained

is not 100% accurate. The accuracy can be improved by making use of a HD camera or mobile camera.

- *Output:* Output of system will be shown on monitor.

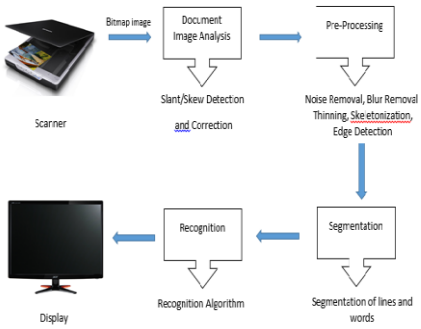
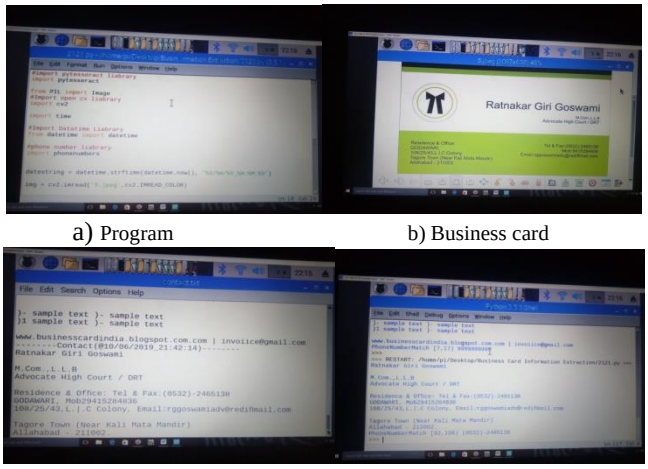


Fig. 3. OCR System

4. Result

Result of captured image from business card generated into text by using VNC Viewer. The result is shown on computer display.



a) Program b) Business card

c) Result in text format d) Result in shell

Fig. 4. Business card generated into text by using VNC Viewer

5. Conclusion

The analysis done from result of system, there will be extension of project for blind navigation system also. It gives an stored data for future use and available for further processing. Adjacent character grouping is performed to calculate candidates of text patches ready for text classification. This project helpful for Recently digitization systems which we use generally in our daily life and reducing manual efforts.

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