Portable Camera-Based Assistive Textan product Label Reading from Hand-Held objects for Blind Persons

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Abstract

A camera-based assistive text reading framework to help blind persons to read the text labels and product packaging from hand-held objects in their day to day life. To separate the object from jumbled background or preceding neighbouring objects in the camera vision, we initially propose an efficient and effective motion based method to define a district of interest (ROI) in the video by ask the consumer to tremble the object. This scheme extracts moving object region by a mixture-of-Gaussians-based background subtraction technique. In the extract ROI, text localization and recognition are conduct to obtain text details. To mechanically spotlight the text regions from the object ROI, we suggest a novel text localization algorithm by knowledge grade description of stroke orientations and distributions of edge pixels in an Ad a boost model.

Keyword: *gradient; localization algorithm; ROI.*

1. INTRODUCTION

The detected and the documented text in images are helping the blind and visually impaired people. The overall algorithm has a success rate of 90% 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 using digital image analysis (DIA) to convert the text into audio output. Our focus is on enhancing the capabilities of blind people by providing them a solution so that the information can be fed to them in the form of a speech signal. 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. EXISTING WORK

The Optical character recognition (OCR) implemented to recognize characters which are then read out by the system through a speaker[1]. Within this way raspberry pi based reader helps a unsighted person to read a paper without the help of any human reader or without the help of perceptible writing system. Existing method are:

- Local Binary Pattern Technique in Mat lab analysis[2]
- Smart Reading System For Visually Impaired People[3]
- Standalone RFID Readers
- Mat lab based camera Implementation [4]

Visually impair people description of numerous difficulties with accessing the printed text using existing technology as well as problems with arrangement focus accuracy, mobility and efficiency. We present a smart device that assists the visually impaired person which effectively and efficiently reads papers print text. The proposed project uses the methodology of the camera based assistive device that can be used people to read text document.

3. PROPOSED WORK:

The portable universal general purpose Camera based images which are used to detect Object and through Open CV techniques for Label detection from the captured image finally the voice output for each alphabet. The proposed system is to assist blind persons to read text from Challenging pattern and background for the purpose of reading document. The Main objective of our system is to identify the text in the documents to help the blind people for the purpose of reading without consuming much space.

4. BLOCK DIAGRAM

The entire system is prohibited by Arm11 processor and this processor is implementing on Raspberry Pi board. The system consists of Raspberry pi, camera, SD card and personal computer. Those all components are connected by USB adaptors. Raspberry pi be the key element in handing out module. The Image is captured using camera image to be taken. The text recognition - using text recognition algorithm text to be monitored. Finally Speech production the text content is changed into speech output. The raspberry pi camera takes a picture of the page and the OCR engine converts the text image file of book into text file .The converted text file is produced in speak voice command while speaks it aloud through speakers connected in the Raspberry pi.

4.1 HARDWARE IMPLEMENTION:

Raspberry pi is the low cost, credit card sized computer that plugs into computer monitor or TV and uses standard keyboard and mouse. There are two models of it raspberry pi 2 and raspberry pi 3. These two are bit similar with few advance features on pi3 compared to the raspberry pi 2 it has:

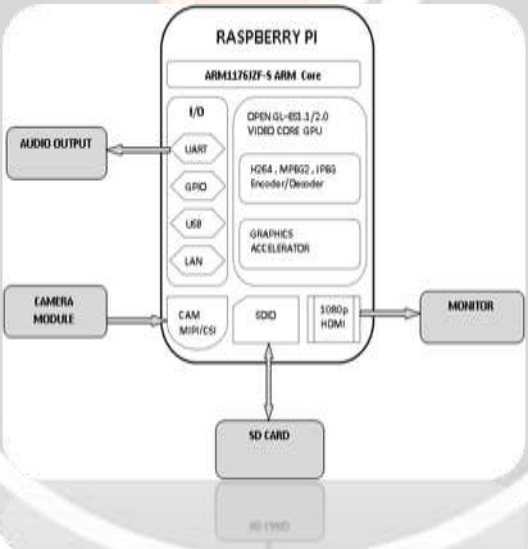

Figure 1 Block Diagram of Proposed Method

4.2 SOFTWARE IMPLEMENTATION

Python is an interpreter, object-oriented, high-level programming language with active semantics. Its sophisticated build in data structures, mutual with dynamic typing and dynamic binding, make it very striking for Rapid Application Development, as well as for use as a scripting or glue language to attach existing components together Python's simple, uncomplicated to learn language rules emphasize readability and therefore reduces the cost of program maintenance. Python chains modules and packages, which encourage agenda modularity and code reuse. The Python interpreter and the wide-ranging standard library are available in source or binary form devoid of change for all major platform, and can be liberally distributed. Often, programmers fall in feel affection for with Python because of the increased efficiency it provides. Since there is no collection step, the edit-test-debug cycle is extremely fast.

5. HARDWARE PROTOTYPE

A novel tracking-based algorithm that extract text from a look up camera view and a finger-wearable device. This scheme extracts poignant object region by a mixture-of-Gaussians-based background subtraction technique. In the extracted ROI, text localization and recognition are conduct to attain text details. To over and over again focus the text regions from the object ROI, we offer a novel text localization algorithm by learning ascent features of stroke orientations and distributions of edge pixels in an add a boost model.

Figure 2 Hardware Implementation of the proposed System

6.CONCLUSION

In this paper, we have represented an epitome system to scan written text and hand held objects for helping the blind individuals. To extract text regions from advanced backgrounds, we have projected a completed unique text localization formula supported models of stroke orientation and edge distributions. The corresponding feature maps estimate the worldwide structural feature of text at each component. Block patterns projected feature maps of a picture patch into a feature vector. Adjacent character grouping is performed to calculate candidates of text patches ready for text classification. Associate degree Ad boost learning model is utilized to localize text in camera-based pictures. OCR is employed to perform word recognition on the localized text regions and rework into audio output for blind users. During this analysis, the camera acts as input for the paper. Because the Raspberry Pi board is high-powered the camera starts streaming. The streaming knowledge is going to be displayed on the screen victimization GUI application.

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