

Recognizing of Text and Product Label from Hand Held Entity Intended for Visionless Persons

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ABSTRACT

Our proposed work involves recognizing text and product label reading from portable entities intended for Visionless Persons using Raspberry Pi 3, ultrasonic sensor. Raspberry Pi 3 is the controller used in the proposed device. GPS is fixed in the system and it is used to find the exact location of the person in terms of longitude and latitude, this information is sent to the caretaker through e-mail. The caretaker can use the latitude and longitude to find the address on Google Maps. The camera is used to identify the obstacle or object ahead and the output is told to the blind user in speech form. The camera also identifies objects with words on them, using image processing these images are converted to text, and using Tesseract the text is converted to speech, thus giving the speech output to the blind about what is written on the object. RF-ID is used to find the stick using tags. The buzzer goes ON to identify the location of the stick. A threshold value for distance between the user and the stick is set, when the distance is less than the threshold value, the buzzer sound increases.

KEYWORDS: *Recognition of text and object for blind people*

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1. INTRODUCTION

Reading is important for today's society. Text is all over within the sort of printing reports, receipts, bank statements, eating house menus, product packages, directions on drugs bottles, and so forth. And whereas optical aids, video magnifiers, and screen readers will facilitate blind persons and people with less vision to access documents, few devices can offer higher access to common hand-held objects equivalent to product packages and objects written with text such as prescription. This paper presents a paradigm system of helpful text reading. There are 3 main components enclosed: scene capture, information processing, and audio output. The scene capture part collects scenes containing objects of interest within the sort of images or video. The data processing component is used for object-of-interest detection and text localization to obtain image regions containing text, and text recognition. The recognized text codes are informed by the audio output component to the blind user. A Bluetooth earpiece with a mini microphone is employed for speech output. The main contributions of this paper are a novel motion-based algorithm used to solve the aiming problem for blind users by simply shaking the object of interest for a brief; a novel algorithm of automatic text localization to obtain text regions from the complex background and multiple text patterns. A portable camera-based assistive framework to aid blind persons in reading text from hand-held objects.

2. LITERATURE SURVEY

A literature survey is that the study of already established systems associated with an assortment of knowledge that helps in doing new tasks. In [1], study on speech synthesis technology using image recognition technology (Optical Character Recognition) to develop a cost-effective user-friendly image-to-speech conversion system using MATLAB for blind person was discussed.

In [2], authors formulated the interaction between image segmentation and object recognition in the framework of Canny algorithm and the proposed system goes through various phases such as preprocessing, feature extraction, object recognition, edge detection, image segmentation and text-to-speech (TTS) conversion. In [3], review paper focused on well-known methods for better understanding *Text recognition in images*.

In [4], interaction between image segmentation (using different edge detection methods) and object recognition are discussed.

In [5], the proposed system provides indoor navigation by using Radio Frequency Identifier (RFID), outdoor navigation by using Global Positioning System (GPS) as well as obstacle detection by using ultrasonic sensor.

In [6], reviewing the approaches on Text extraction in video documents, as an important research field of content-based information indexing and retrieval, is proposed.

In [7], this paper proposed a portable camera-based assistive text reading framework to help blind persons to read text labels and product packaging from hand-held objects in their daily lives. The system framework consists of three functional components: First, scene capture-using a mini camera, the text which the user needs to read gets captured as an image and has to be sent to the image or data processing platform., second, data processing -where text will be filtered from the surrounding and will be recognized by optical character recognition (OCR) software, and finally, Speech output - A filtered text will be passed into this system to get an audio output.

In [8], an innovative, efficient and real-time cost beneficial technique that enables user to hear the contents of text images instead of reading through them as been introduced. Also described the design, implementation and experimental results of the device. This device consists of two modules, image processing module and voice processing module. The device was developed based on Raspberry Pi v2 with 900 MHz processor speed.

In [9], proposed the novel implementation of smart book reader with raspberry pi controller. The proposed system is under validated with both simulation and experimental verification it achieves the text document is converted with speech for the use of visually impaired people.

3. SYSTEM COMPONENTS DESCRIPTION

The Portable camera-based assistive text and product label reading from a handheld object for blind people These hardware components are discussed below:

➤ Raspberry pi

The Raspberry PI may be a tiny single-board pc developed within the Kingdom, it's small in size, low cost, and it works type of a standard laptop at an inexpensive server to handle web traffic. There are try of} models Raspberry Pi a pair of and Raspberry Pi 3

Advantages are as below A



Fig 1 Raspberry pi

1.2GHz 64-bit quad-core ARMv8 component 802.11n Wireless electronic network Bluetooth four.1 Bluetooth Low Energy (BLE) four USB ports forty GPIO pins Full HDMI port native space network port Combined 3.5mm audio jack and composite video Camera interface (CSI) show Interface (DSI) little Mount Rushmore State card slot Video Core IV 3D graphics core

➤ Ultrasonic Sensor

There is provided associate inaudible diagnostic system within which an ultrasonic probe is detachably connected

thereto, and ultrasonic waves are transmitted from the ultrasonic probe into the topic to get received signals through receiving the ultrasonic waves mirrored among the subject, thereby displaying for a designation a carrying info supported the received signals, associated is additionally provided an inaudible module as well as a process circuit for the received signals, the ultrasonic module being employed within the ultrasonic diagnostic system.



Fig 2 Ultrasonic sensor

➤ RFid

RFID is additionally a rate Identification.

An ADC (Automated information assortment technology that: uses radiofrequency waves to transfer data between a reader and a movable item to identify, reason track.Is quick and doesn't need physical sight or contact between the reader/scanner and therefore the labelled item. Operates victimization low-priced components. tries to produce distinctive identification and backend integration that enables for a large vary of applications.

Other ADC technologies: Bar codes, OCR.

4. BLOCK DIAGRAM

The below diagram being represents the block diagram of the project

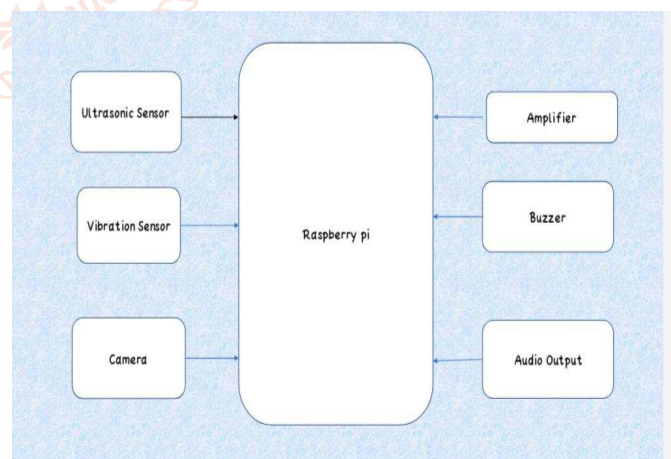


Fig 3 Block Diagram of the Proposed system

5. CIRCUIT DESIGN

The hardware components are connected and then the circuit had been designed. The input devices are Ultrasonic sensor, Vibration sensor, and camera are connected to the Raspberry pi and the output devices are Amplifier, Buzzer, and the audio output. The below diagram represents the circuit design

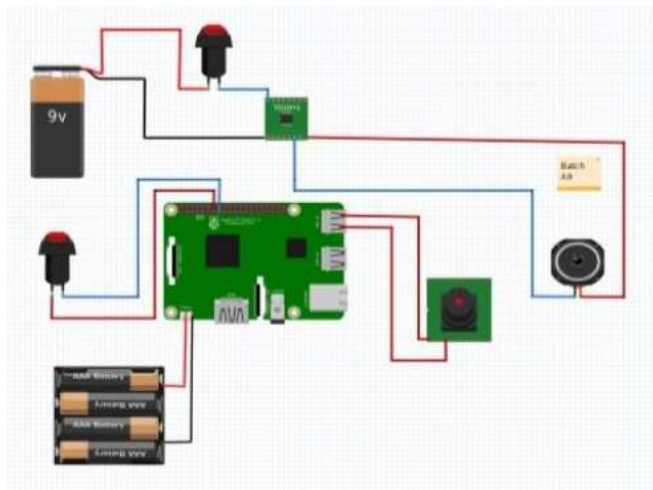


Fig 4. Circuit Design Model

6. OPTICAL CHARACTER RECOGNITION

Text recognition is performed by off-the-peg OCR before outputting informative words from the localized text regions. A text region labels the minimum rectangular space for the accommodation of characters within it, that the border of the text region contacts the sting boundary of the text. However, OCR generates higher performance if text regions are initial allotted correct margin areas and binarized to section text characters from the background. we tend to propose to use the guide matching algorithmic program for OCR. The output of the OCR is nothing however a document containing the merchandise label (its name) in matter form. The audio output part is to tell the blind user of recognizing text code within the style of speech or Audio.



Fig 5 Connectivity image



Fig 6 Connectivity images

HOW IT WORKS: The below picture represents the working Model.

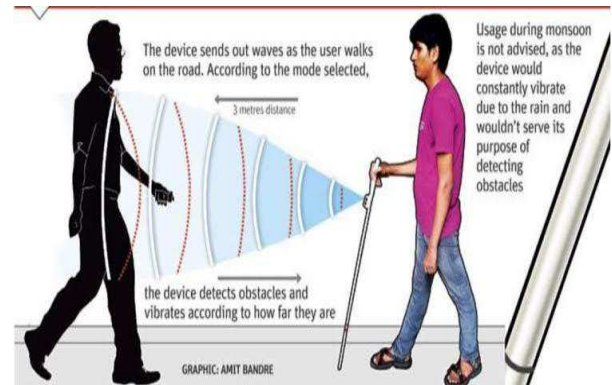


Fig 7 Representative model

7. RESULT & OUTPUT

Image camera captured the photo of Raspberry PI 3 in Pi camera, that feeds to the Raspberry PI model, OCR converts the image file into the machine code that recognizes by the computer and converted it into the text with the use of GTTS (Google text to speech converter) the text data is converted into the speech and output audio is audible by Bluetooth or speaker connected to it.

8. CONCLUSION

The planned system is supposed to help blind persons to scan the text label from hand-held objects in their daily life. thus therein believe living got to enhance and increase the social growth. The system captures the image of any hand-held object placed near the camera of Raspberry PI and with the use of OCR, GTTS final audio output are getting to be hearable to the blind persons.

9. REFERENCES

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