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Text to Speech Conversion using Raspberry - PI

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Abstract:- The TTS (Text To Speech) this technology is basically used for conversion of text file into voice or in audio form. This TTS technology proposed to help the blind peoples. According to world health organization there are 91% peoples are blind. So there is necessary to help the blind peoples. For that purpose Text To Speech conversion using raspberry-pi proposed in this paper. It includes camera to capture image as a input text, which is then pass to TTS unit. TTS unit installed in raspberry-pi and the output of TTS is amplified by using audio amplifier and then it given to the speaker.

I. INTRODUCTION

This paper has represented the innovative idea as well as low cost technique that is used to hear the contents of the text image without reading them. It combines the concept of optical character recognition (OCR) and Text to speech synthesizer (TTS) in raspberry pi. This system used to help the blind people to interact with computer effectively through vocal interface. Text extraction from colour image is very difficult task for computer the text to speech conversion system is read the English alphabets and numbers that are in the image using the OCR technique and convert it into the voice format. This paper presents the design implementation and experimental result of the device. This device consist of two parts, image processing module and voice processing module. The optical character recognition (OCR) is the process that converts the scan or printed text images into the text format for the further processing. This paper has presented the simple approach for text extraction and its conversion into speech. The testing of devices was done on raspberry pi module. Text to speech (TTS) system produces the more natural voice that can be closely matched with human voice. The example of the speech synthesis are the voice enabled e-mail and messaging. The first step of speech synthesis is for the uses to speak a world in microphones and then that speech is converted into the digital format by using analog to digital converter and stored in memory.

II. BLOCK DIAGRAM

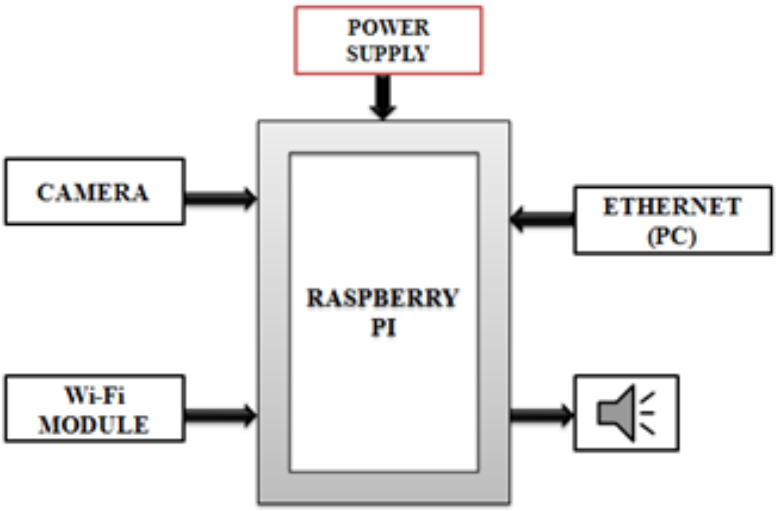

Fig 1:- Block Diagram

III. WORKING

It can contain the following components: it is the controlling peripherals.

- Power supply – It is an electrical device that can supplies the electrical power.5v supply is used in that.
- Ethernet – It is used to access the e-dictionary website.
- camera –This is used for capture the image
- raspbeery pi –This project has been built around Raspberry pi B+ processor board.
- speaker –It is used to listen the text on the image.

There are contain two concepts;

- *OCR(Optical Character Recognition)*

OCR is main element.It can convert the scanning image into editable text.OCR is implemented in this project to recognize characters which are then read out by the systems through a speaker.

➢ *TTS(Text to speech)*

It is method that scans and reads english alphabet and numbers. Webcam focused on text and it taking a picture.there are some delay is required.after the delay,it taking the picture and the processed by raspberry- pi

So that the steps for character recognition.

- Webcam capture the image then image can read.
- Pre-processing is done in 2nd step.colour image is converted into gray scale and gray scale is converted into the binary image.
- Character is extract and resize the image.
- Load templates that can be matched.
- Remove the background
- Edge detection is done in last step of character recognition,in that open the text file and write the file.so that the output is stored in text format.

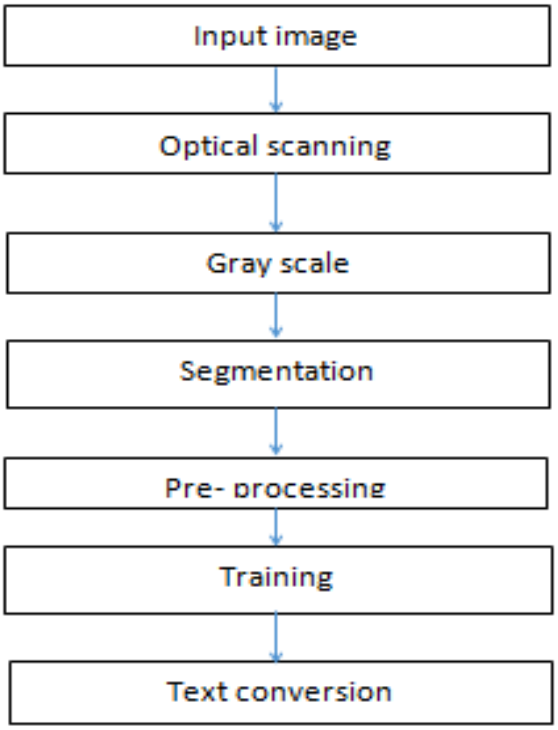

Fig 2

Above process is done in the image processing remaining process are done in voice processing.the image is convert into the text and text is converted into the speech.

Following steps are required

- In that espeak library is used.
- So that first we check the espeak library is available in computer or not.if the espeak library is not available then we can get the error.
- Comparing the input string with espeak string
- Extract the voice
- Initialize the wave player for convert the text into speech.
- Finally we can get the output.

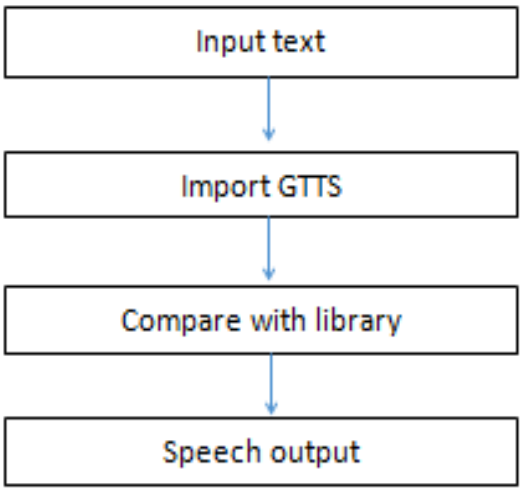

Fig 3

Python software is installed in raspberry pi.this software is used to convert the image file to text file ny extract the text.

IV. LITERATURE REVIEW

➢ [1] reading is important in today's life. Printed text is everywhere in the form of receipts, bank documents, reports, books. There are many systems done text to speech conversion, but they can't handle product labeling. But big limitation is use of this is difficult for blind people. This paper proposed camera based text reading to help blind peoples to read the product label. Main prototype of this system are 1) Novel based algorithm to solve aiming problem. 2) Novel algorithm of automatic text localization to remove the background of the text image. 3) Camera based framework used for bined people to read text.

➢ [2] Chaw su thu et.al proposed text to speech conversion. This paper considers computer based system that can read any text,whether it was introduced in the computer by scan and submitted to an OCR system .There are many sysytems which convert text into speech.The OCR system is used for the character recognition.The recognize character save in notepad file as text.Then this text file directly give to the computer as a input.Then speech through that using MATLAB.But this system can not detect small letters.

➢ [3] Proposed that this project introduced smart device that useful for visually impaired peoples.This project uses the technology of camera based device that can be useful for blind people to read documents.The work is implementing capturing image technique in an embedded system.In this system has a camera as an input device to detect the printed text for recognization and that scanned text is process by a software OCR

V. RESULT

- Detect text on the image and convert it into audio file.
- It can convert both capital as well as small letters.

VI. CONCLUSION

Text to speech can convert the text on image into sound. For this conversion does not require internet connection. It is very easy to use, so the blind person can independently use this device.

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