

IMAGE TEXT CONVERSION FROM REGIONAL LANGUAGE TO SPEECH/TEXT IN LOCAL LANGUAGE

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Abstract: The drivers who drive in other states are unable to recognize the languages on the sign board. So this project helps them to understand the signs in different language and also they will be able to listen it through speaker. This paper describes the working of two module image processing module and voice processing module. This is done majorly using Raspberry Pi using the technology OCR (optical character recognition) technique. This system is constituted by raspberry Pi, camera, speaker, audio playback module. So the system will help in decreasing the accidents causes due to wrong sign recognition.

Keywords: Raspberry pi model B+, Tesseract OCR, camera module, recording and playback module,switch.

1. Introduction:

In today's world life is too important and one cannot loose it simply in accidents. The accident rates in today's world are increasing day by day. The last data says that 78% accidents were because of driver's fault. There are many faults of drivers and one of them is that they are unable to read the signs and instructions written on boards when they drove into other states. Though the instruction are for them only but they are not able to make it.

So keeping this thing in mind we have proposed a system which will help them to understand the sign boards written in regional language. This system translates the regional language into local language using raspberry pi, camera, audio playback module. The two main modules are image processing and sound processing are used. Proofs are sent to the corresponding author only. Thus, it would not just help the driver to drive smoothly but also allow him to be attentive. As many times we observe, in hurry we often neglect sign boards but with this project the display on the screen will make us aware of the important message. It can even use audio to make the driver aware more effectively thereby make the travel reliable.

In this way, it serves to be a small step towards mankind safety and accessibility.

2. Tesseract OCR:

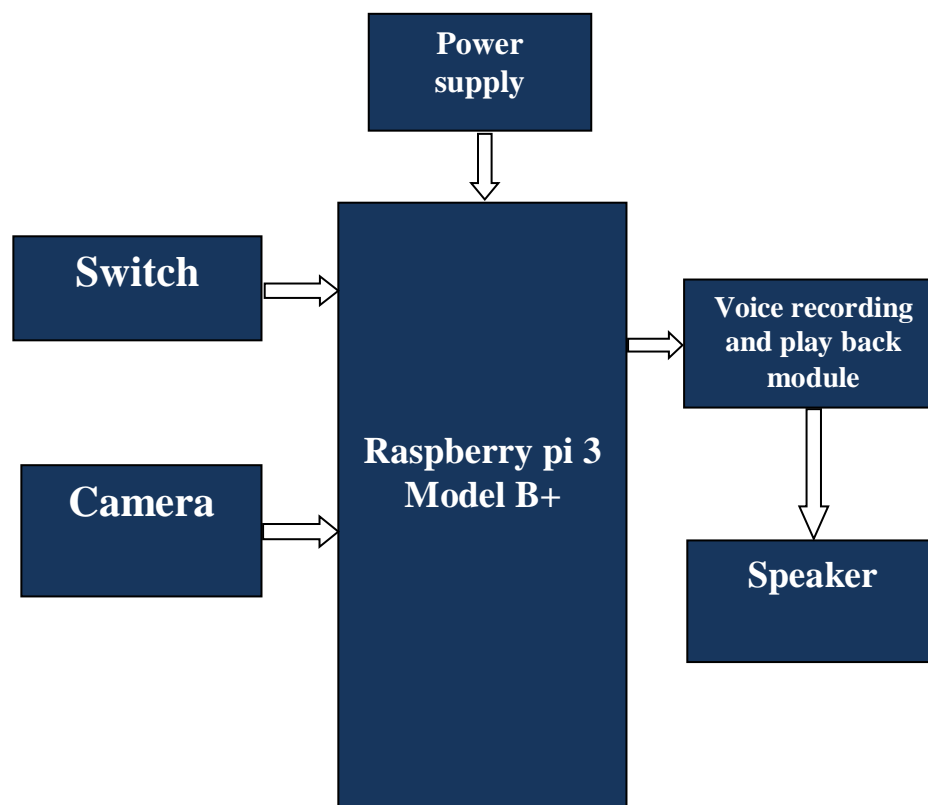
Optical Character Recognition is the text recognition system that allows hard copies of written or printed text to be rendered into editable, soft copy versions. It is the translation of optically scanned bitmaps of printed or written text into digitally editable data files. There are different types of OCR tools such as gOCR, ocrad, ocrfeeder, ocropus, tesseract-OCR and cuneiform. But the most compatible one for raspberry pi is tesseract OCR. Tesseract is free OCR engine for various operating source. It is one of the most accurate OCR engine currently available. It can understand the English language as well. The tesseract OCR is library provided by the Linux community which is open source. The tesseract OCR which is a command base tool takes image with the text as a input. Tesseract command takes two argument first one is the image file name that contains text and second one is output text file in which, extracted text is stored. The image which get saved is in .jpeg or .PNG format and the captured image is then get converted to the .txt format and saved with the same name as an image. Tesseract gives accurate result to grey scale image over colored image. It provides result with 100% accuracy.

3. Proposed system:

This proposed system will convert the image text into text as well as into speech. The text will get displayed on LCD and the audio will be get hear on speaker. There will camera on the top of the vehicals which will capture the image. This captured image by the camera is given to raspberry pi for processing. Raspberry pi will satisfactory convert the image into text and text into speech. For this project we have given preference to three language i.e English and Gujarati. This preferred language will get converted into Marathi

4. Method:

A. Block Diagram:



B. Description:

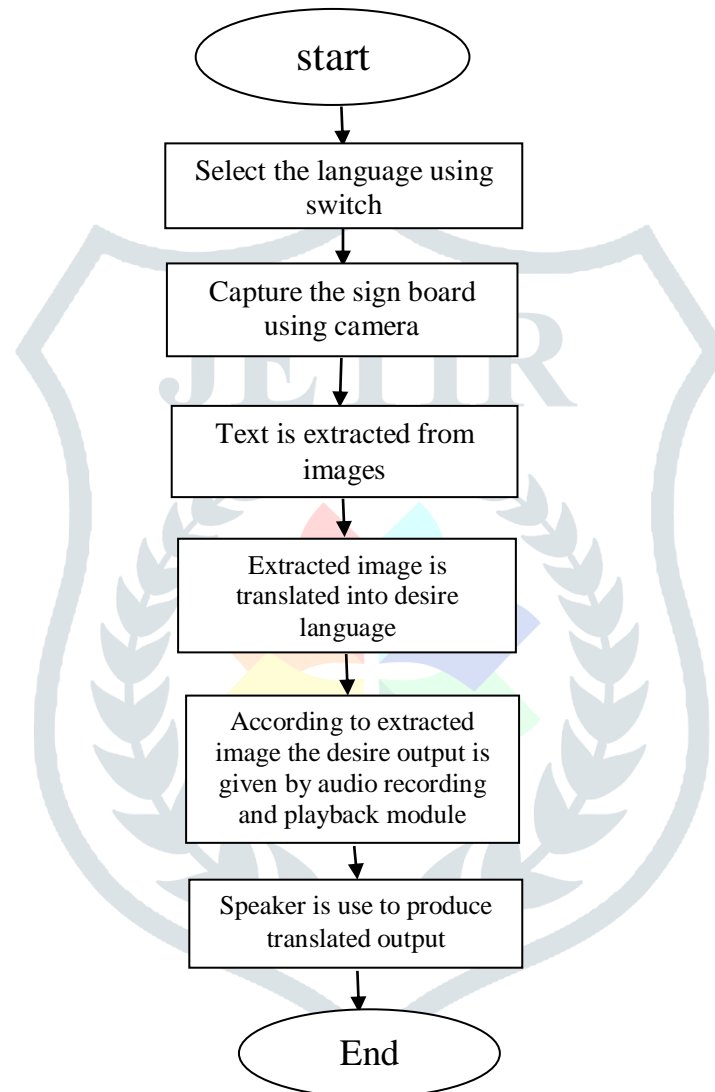
1. Design Overview:

1. **Power supply:** 5v Dc via micro USB or 5V DC via GPIO is used.
2. **Switch:** It is use to select the language I.e English and gujarati. According to language the camera will capture the image.
3. **Camera:** 45Mp camera is use to caputre the image. The captured image is forwarded to prosseser for further processing. It is places at the front side of the car
4. **Audio recording and playback module:** For recording the instructions and to play it later when the image gets capture audio recording and playback module is used. Audio recording and playback module uses aPR33A3 ic. We can record instructions in our own voices. The aPR33A series are powerful audio processor along with high performance audio analog-to-digital converters (ADCs) and digital-to-analog converters (DACs). user can record and playback the message averagely for 1, 2, 4 or 8 voice message(s) by switch, It is suitable in simple interface or need to limit the length of single message, e.g. toys, leave messages system, answering machine etc.
5. **Speaker:** The purpose of speaker is to produce audio output that can hear by the user.
6. **Raspberry pi:** The Raspberry Pi 3 Model B+ is the latest product in the Raspberry Pi 3 range, boasting a 64-bit quad core processor running at 1.4GHz. It uses Broadcom BCM2837B0, Cortex-A53. All the captured images are given to raspberry pi.

5. Methodology:

The important component of this project is raspberry pi. Raspberry pi 3 (model B+) is used. The switch is use to select the language. If the switch is on right side it will select Gujarati language and if it will on left side it will English language. The camera will capture the sign board. On the captured image Tesseract OCR will get apply by raspberry pi. Tesseract OCR will first scan the image then it will separate text and non-text data from the image, then many methods such as words and line finding, words recognition, static character classifier, Linguistic Analysis are used. The tesseract OCR extracted image is compared with the image already saved in database. If the image gets match. The audio recording and playback module will give output accordingly. In audio recording and playback module already audio of instruction has been recorded. The output of the module is given to speaker. The speaker will produce audio output for the user.

6. Flowchart



7. Advantages:

1. It will remove the regional language barriers.
2. Using raspberry pi data implementation and record keeping will convenient.
3. Useful to the person having eye sight problem.
4. It will ensure the safe and reliable journey.
5. It will reduce the number of accidents.
6. Maximum 8 audios can be recorded time.

8. **Conclusion:** Road accidents are major problem in the society. This system is design to save the lives by preventing accidents due to negligence of sign boards. This system gives small contribution for preventing the accidents. According to the survey 78% of accidents were due to driver's fault. This system helps to understand the language of other states, so that the drivers can drive conveniently in other states. This system provide maximum efficiency and it is user friendly and reliable. By this project we expect that we can reduce the road accidents.

9. Reference:

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