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SEE AND SPEAK USING RASPBERRY PI

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Abstract -This task proposes a machinethat is used for changing the enterphotograph of textual content into the corresponding speech the use of Raspberry-pi. The quickest and powerfulmanner of communique is language. OCR technique for spottingancientfiles, bothrevealed or handwritten with noinformation of the font, is presented. Optical Character Recognition is assisting us to extracting textual content from photograph. Text is determined everywhere. But thosecannot be examiningwith the aid of using visually impaired individual .it turn out to be a remarkable barrier for the visually impaired individual to examine and apprehend the idea of the files.

This barrier may beremovedwith the aid of usingmaking use of the idea of OCR i.e., extracting textual content from the picsthe use ofphotograph processing. Imagine a systemwhich can see and talk and is completelytransportable. It is surprising, right? This transportabletoolmay be used in lots ofpackages in robotics, automation, interesttasks and greater. For example, you couldattention your webcam to a textual content, along with English alphabets, on a signboard, accompaniedwith the aid of usingurgent a pushbutton transferrelated to Raspy. It will seize the textual content and convert it to speech and examine it out aloud to you. When you lose interest of studying books, simplyclick onaimage of the textbook web page and make it examine the equal aloud to you.

***Key Words*:**Image extraction, OCR Technique, tesseract, textual content to speech conversion.

1.INTRODUCTION

The college students in facultysense very lazy to peer and talk out the sentences which might be written in book. There are conditionsin whichhuman beingssense lazy to memorize the sentences howevermustsense lazy to peer the book. What if there a machinewhich can see the alphabets after whichtalk it out? Yes, it's milesviablethruthe usage of see and talkthe use of raspberry pi machine. This might beone of thethrillingpackages that you possibly canpaintings on and put in forcein actual time global with remarkable easeand with nodifficulty. Reliability in thissoftwaremay begreater with remarkable ease.

This machine captures the textual contentthruthe usage of webcam. This webcam is connected to the raspberry pi thru which the clever stick can talk out the textual contentthis is captured thruthe usage of webcam with no difficulty. This might beone of thepackages that the very last12 monthscollege students can put in force in actual time globalwith no difficulty. This machinemay be used any time because thepersonwantsnow no longerconvey the books with him all of the time with ease. Only the seize of the textual content is sufficientwith the intention to memorize the precisestrains of textual content.

2.METHODOLOGY

Text-to-speech conversion toolincludes5foremost modules.

A. Image Processing Module Using Optical Character Recognition OCR is vitalapproachon this module.

OCR or Optical Character Recognition is a generation that roboticallyapprehend the man or womanthru the optical mechanism, this generation imitates the cap potential of the human senses of sight, in which the digital digicamwill become a substitute for eye and photograph processing is executedwithinside thelaptop engine instead for the human brain. Tesseract OCR is a sort of OCR engine with matrix matching. The choice of Tesseract engine is due to its flexibility and extensibility of machines and the reality that many groups are energetic researchers to increase this OCR engine and additionallydue to the fact Tesseract OCR can help many languages.

B. Tesseract OCR Implementation

The extraction of the textual contentwithinside thephotograph is executedthe use of optical man or womanreputation (OCR). OCR is aarea of studies in samplereputation, synthetic intelligence and laptop vision. The enterphotograph captured with the aid of using the MIPI digital digicam has alength of

five MPI (2592 X 1944 pixels). Based at thespecs of the Tesseract OCRengine, the minimalman or womanlength that may beexamine is 20 pixels uppercase letters. Tesseract OCR accuracy will lower with the font length of 14pt.

C. Software Design Strategies

Software Design Software strategies the enterphotograph and transformed into textual contentlayout. The photograph is taken with the aid of using the personthru GPIO pin (26) and (19) this isrelated to the button, the use of interrupt function. Furthermore, the image is taken with the aid of usingthe use of raspy neverthelesssoftware with sharpness mode to sharpen the photograph. The ensuingphotograph has a.jpg layout with a decision of 2592 x 1944 pixels.

D.OS Installation and digital digicam Interfacing with Raspbian.

OS Installation and digital digicam Interfacing with Raspbian loaded onto the SD card we'reequipped for the primary boot of the Raspberry insert the SD card into the Raspy and join the HDMI video display units keyboard and mouse and finally plug it into the energy supply. Then Raspy boot displayin yourreveal and similarly settings may beexecuted for keyboard setting. The Raspberry Pi digital digicam module length is 25mm square, 5MP sensor an awful lot are figuring out English alphabets. Before feeding the photograph to the OCR, it's milestransformed to a binary photograph to boomthe popularity accuracy. The output of OCR is the textual content, that issaved in a document (speech.txt)

E. voice processing module

In this module textual content is transformed to speech. The output of OCR is the textual content, that issaved in a document (speech.txt). Here, Raspbian software program is used to transform the textual content to speech. Google textual content to speech is an open-supplytextual content to speech (gTTS) machine, that isto be hadin lots of languages. In this task, English TTS machine is used for studying the textual content. seizemanipulate unit left4930140Image processing (OCR) Voice Processing Image processing (OCR) Voice Processing photograph.

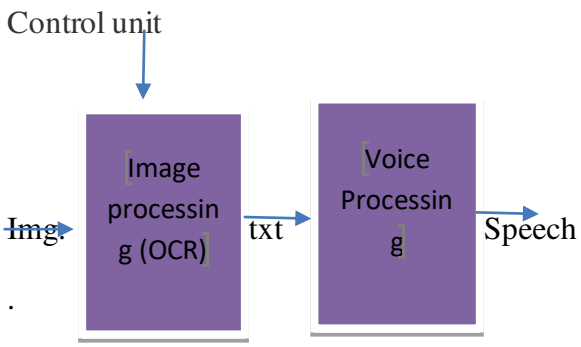

Fig A. Text-to-speech converter

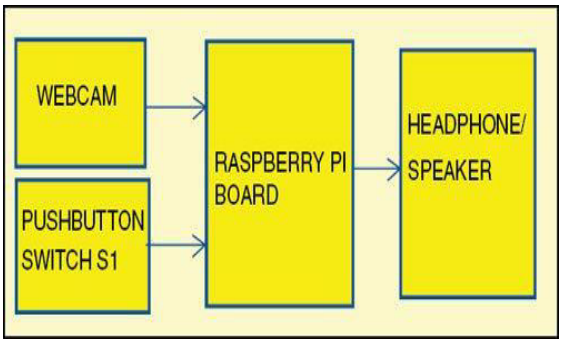

Fig B. Block diagram of project

IMPLEMENTATION

The trying outbecomeexecutedthe use of Raspberry Pi platform with the subsequentspecs:

- Raspberry Pi 3b+ 2 900 MHz Quad Code ARM Cortex-A7.
- PI 5MP Camera Module.
- Bootable SanDisk Ultra 16GB microSD Card.

Steps Followed:

1.Import and Initialization: Import subprocess, time and RPi.GPIO and initialize GPIO pin 26 &19 as in & out.

2.Main Program:

The foremostsoftwareoffersaveragewaft of software is executed as in flowchart discern.

3.Algorithm:

1.start.

2.Import libraries, Import GPIO pin and time.

3.Set GPIO pin If button pressed.

4. Delay of 10 sec Captured photographthru PI.

5.Tesseract OCR Threshold photograph (20%) Save the document in textual contentshape.txt.

6.Text to Speech converter (gTTS).

7. Text to Speech converter Output Audio MP3.

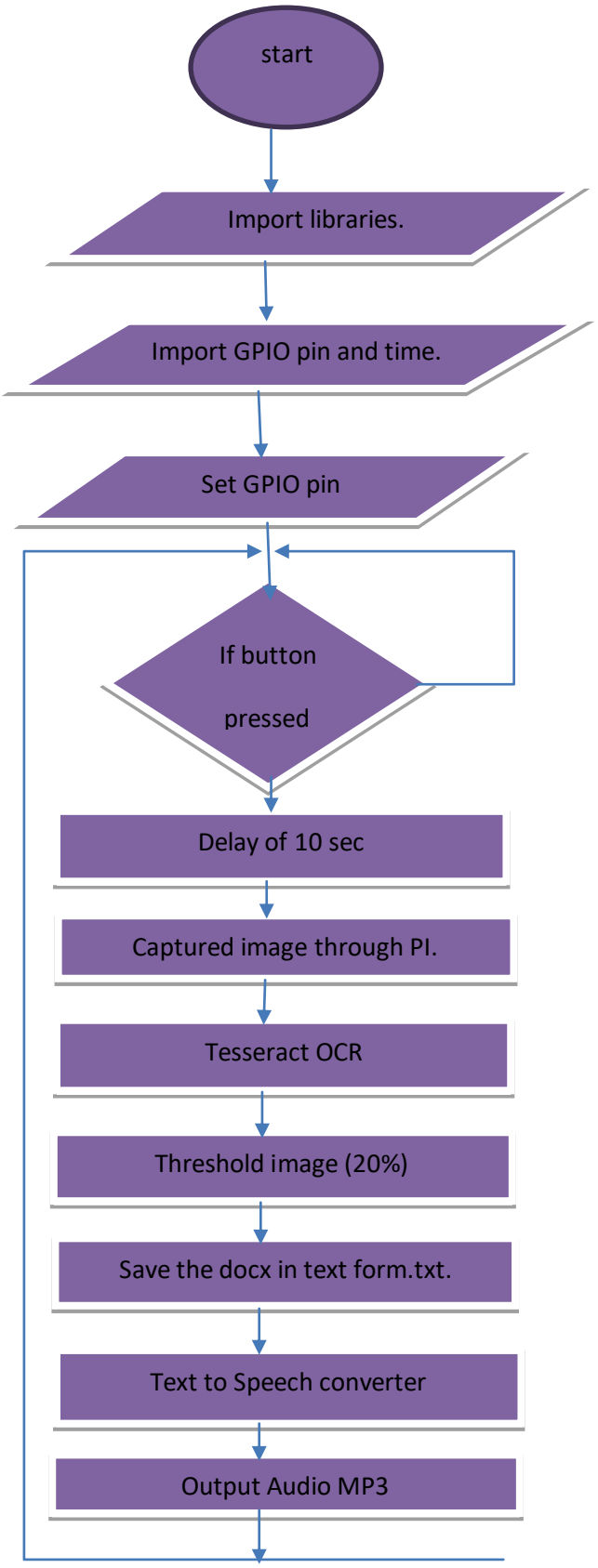

Fig.C suggests the waft chart, all theessential gpio, time and subprocess is imported withinside the python code, assign gpio pin to push button transfer, if button is pressed after postponephotograph is captured and dispatched to ocr, else it will likely be looping until button is pressed.

Expected Outcomes

1.It may be used for photograph to speech converter.

2.It also can be utilized in robotics and automation.

3. It might be very beneficial for visible impaired persons.

RESULT:

Input and Output photographs of the project

Project output Photographs

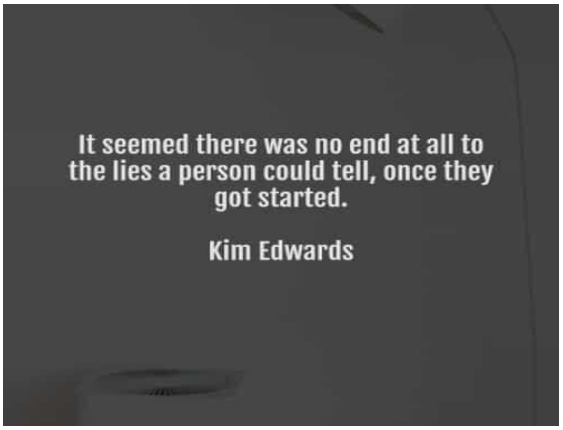

Fig.1 Input in JPG.

Fig.2 Output in text as well as Audio MP3

CONCLUSIONS

See and Speak the use of raspberrypi machineperforms a major studiespaintings and packages optical Character Recognition in diversearea. And finally, the maximumvitalpackages of OCR might beblanketedafter which conclusion. Today OCR is supportingnow no longersimplest in digitizing the handwritten medieval manuscripts howeveradditionallyallows in changing the typewritten files into virtualshape. Optical man or womanreputation is a machine that converts entertextual content into system-encoded layout. Optical man or woman Recognition extract the applicablestatistics and robotically enters it into electronics database as opposed to the traditionalmanner of manually retyping the textual content. OCR is likewiseextensively used in lots ofdifferent fields like Captcha, Institutional repositories and virtual libraries. Optical Character Recognition (OCR) is the method of amendment or conversion of any shape of textual content or textual content – containing filesalong with handwritten textual content, revealed or scanned textual contentpics, into an editable virtuallayout for deeper and similarly processing.

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