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Assistance Device for Visually Impaired People

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Abstract: ***Tending to the issues of People with Visual, Hearing and Vocal Impairment through a solitary helping framework is an extreme activity. Numerous current explores center around tending to the issues of one of the above difficulties however not all. The work centers around finding a remarkable strategy that guides the outwardly hindered by letting them hear what is spoken to as content and it is accomplish d by the procedure that catches the picture through a camera and changes over the content accessible as voice signals. The paper gives away to the individuals with Hearing weakness to envision/read which is in sound structure by discourse to content transformation procedure and we additionally gives away to the vocally debilitated to speak to their voice by the guide of content to voice change method. All these three arrangements were regulated to be in a solitary remarkable framework. Every one of these exercises are composed with the utilization of Raspberry Pi. The outwardly impeded individuals are helped by the procedure where the picture to content and content to discourse is given by the demonstration OCR(Optical character acknowledgment). The hard of hearing individuals help with the procedure of an application which makes them to comprehend what the individual says can be shown as the message. Vocally weakened individuals can pass on their message by content so different people can hear the message in a speaker.***

I. INTRODUCTION

According to World Health Organization and International Agency for Prevention of Blindness (IPAB) approximately 285 million person all across the globe are visually impaired & this number is increasing rapidly. It's very difficult for the blind Person to move alone without the help of anyone. They are basically dependent on others. Although there are several aids available for the visually impaired person but those aids can be considered only for few small obstacles detection and also they do not completely ensures the safety of blinds. In this Paper a smart glove has been presented which can be easily carried out anywhere and perform multifunction's. Basically it work as an artificial eyes for blinds.

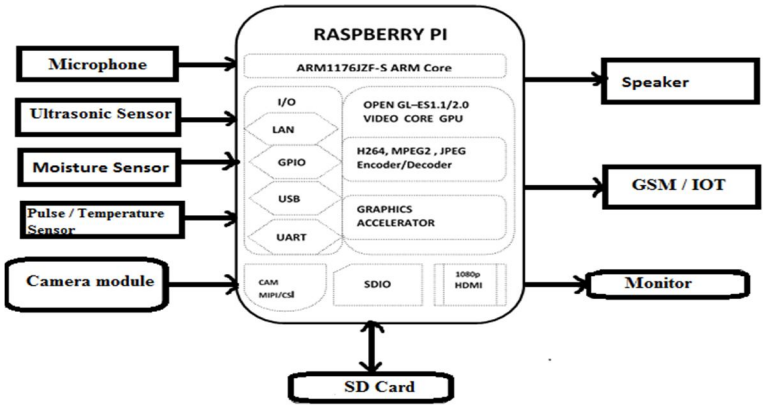

Fig: Block Diagram of System Design

The main Problem associated with visually impaired person is that they cannot see any object, they cannot read any text and also when they move anywhere, they can't get any proper information about any obstacles in their path which might can hurt them. So, these are some big issues which are associated with blinds. The glove described in this paper can sort out these problems. It can perform basically three tasks. All the three tasks are very essential for the safe navigation of blinds. This glove can detect the obstacles in the path of blinds and can warn them with the help of vibration in their hands and also by triggering the buzzer. Except it this gloves can also serves as artificial eyes for the blinds. Usually Blinds cannot read any text. For reading they basically use Braille lipi method & that is not very efficient. So this glove can help blinds to read any text. Basically a Special type of camera which will be mounted on the glove will capture the image of that text which blind wants to read, according to the instruction of blind.

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II. RELATED SURVEY

A ton of research has been in this area. An electronic visually impaired stick with haptic recognition utilizes ultrasonic sensors, a vibrator engine plot, a controller and a force unit inside the strolling stick. The ultrasonic sensors is utilized to discover the separation of the impediment and this data is passed on to the visually impaired individual in the type of material sensation. So as to maintain a strategic distance from crosstalk, the ultrasonic sensors have a consecutive terminating. With the help of progress in power of vibration, separation variety is experienced by the visually impaired individual. Separation is felt by the client regarding the vibration force change .In another proposed framework, two ultrasonic sensors are put on the stick which have go changing from 20-350cms. It implies that the worth can be set by the client. In addition, in this model, we have two Infrared sensors which are mounted on the lower side with an goal of maintaining a strategic distance from of little obstructions, decisively extending 2-10cms. Also, there is a button which can be utilized to communicate something specific if the visually impaired individual needs some assistance. In the event that the stick is going to hit the deterrent, the signal blares. In another model, two infrared sensor have been coordinated. The reason for utilizing two sensor is to recognize obstruction various way. The even sensor is to distinguish hindrances on the front side while of the slanted infrared sensor is utilized to identify impediments on floor, as well as on upward and descending steps. Both these sensors assemble information genuine and at last send it to Arduino microcontroller which plays out the undertaking of handling this information.

Fig :Model of the System

Numerous analysts have investigated this region of inquire about and huge work is accomplished for daze companions. Numerous ultrasonic visually impaired sticks have been made to encourage dazzle companions yet they are definitely not insightful. They have utilized ringers and cautions for notice the visually impaired companions however they don't direct them to pick the protected course. NAVBELT and GUIDCANE7 are two mechanical technology based advances that are utilized for snag shirking for managing blind companions. NAVBELT is a belt which contain exhibit of ultrasonic sensors it fundamentally manages the visually impaired companion through sound system headphones about the heading through which they walk without any problem. It imparts acoustic signs to client yet it doesn't help in quick strolling on the grounds that client can't comprehend direction flags in time. GUIDCANE uses7 the same apply autonomy innovation however it directs the client through a wheel appended toward the finish of stick; at the point when it identifies an impediment its wheel move in inverse bearing and the client feels the development and walk quick with it. In Ultrasonic Daze Walking Stick, ultrasonic sensor is utilized to detect the impediment (if there is any). The sign is then send to microcontroller to work a signal. There is one more preferred position of this framework. Now and then when the visually impaired loses their sticks or overlooked where they have put it, they can discover it by utilizing the remote. Wearable obstruction evasion for daze has been made to ease daze individuals. Two ultrasonic sensors are connected on the glasses which send the heading also, the size of snag through sound system discernible sound through earphones. This helps client in strolling.

III. METHODOLOGY

A. Object Detection

It is an errand in PC vision that includes distinguishing the nearness, area, and kind of at least one articles in a given photograph. It is a difficult issue that includes expanding upon strategies for object recognition(e.g. where are they), object restriction (for example what are their degree), and item arrangement (for example what are they).In ongoing years, profound learning methods are accomplishing cutting edge results for object identification, for example, on standard benchmark datasets and in PC vision rivalries. Striking is the "You Only Look Once," or YOLO, group of Convolutional Neural Networks that accomplish close to best in class results with a solitary start to finish model that can perform object identification in genuine time.In this instructional exercise, you will find how to build up a YOLOv3 model for object discovery on new photos.

B. YOLO for Object Detection

Item recognition is a PC vision task that includes both limiting at least one articles inside a picture and characterizing each article in the image. It is a difficult PC vision task that requires both effective article limitation so as to find and draw a bouncing box around each article in a picture, and item arrangement to foresee the right class of item that was confined.

The "You Only Look Once," or YOLO, group of models are a progression of start to finish profound learning models intended for quick item identification, created by Joseph Redmon, et al.also, first depicted in the 2015 paper titled "You Only Look Once: Unified, Real-Time Object Recognition."

The methodology includes a solitary profound convolutional neural system (initially a form of GoogLeNet, later refreshed and called DarkNet dependent on VGG) that parts the contribution to a lattice of cells and every phone legitimately predicts a jumping box and item arrangement. The outcome is countless competitor bouncing boxes that are merged into a last forecast by a post-preparing step. There are three principle varieties of the methodology, at the hour of composing; they are YOLOv1, YOLOv2, and YOLOv3. The main form proposed the general engineering, though the subsequent adaptation refined the plan and utilized predefined stay boxes to improve jumping box proposition, and form three further refined the model design and preparing process.

In spite of the fact that the exactness of the models is close yet not in the same class as Region-Based Convolutional Neural Networks (R-CNNs), they are famous for object discovery on account of their recognition speed, regularly showed continuously on record or with camera feed input.

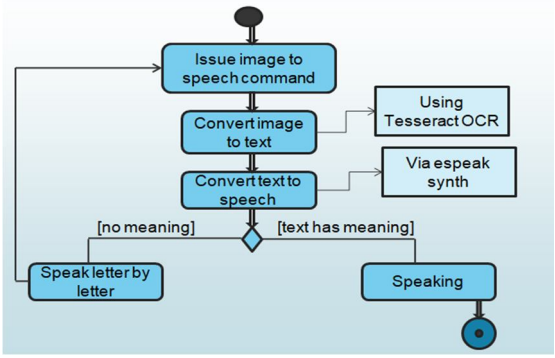
IV. IMPLEMENTATION

Introduce Python on your PC framework:

A. Install ImageAI and its conditions like Tensorflow, Numpy, OpenCV, etc.

B. Download the Object Detection model file&

1) *OCR:* Optical Character Recognition which is the first strategy for character acknowledgment commonly gives poor acknowledgment rate due to blunder in character division. Division is a significant errand of any OCR framework. It isolates the picture content archives into lines, words and characters. The exactness of OCR framework primarily relies upon the division calculation being utilized. Division of Transcribed content is troublesome when thought about with Printed or Printed English or some other Printed archive its basic intricacy and expanded character set. It contains vowels, consonants. A portion of the characters may cover together. The profile based techniques can as it were fragment non-covering lines and characters. This paper tends to the division of Manually written content report, the most mainstream content of Indian sub-mainland into lines, words what's more, characters. The proposed calculation is based on projection profiles. Trial results it is seen that 100% line division and about 98% character division precision can be accomplished with covering lines, words and characters.
2) *Image Acquisition:* In this progression, the inbuilt camera catches the pictures of the content. The nature of the image caught relies upon the camera utilized. We are utilizing the web camera which 5MP or more camera with a goals of 2592x1944.
3) *Image pre-processing:* This progression comprises of shading to dark scale transformation, edge location, clamor expulsion, twisting and trimming and thresholding. The picture is changed over to dark scale the same number of OpenCV capacities require the input parameter as a dark scale picture. Commotion expulsion is finished utilizing reciprocal channel. Watchful edge recognition is performed on the dark scale picture for better discovery of the forms. The distorting and editing of the picture are performed by the forms. This empowers us to recognize and remove just that district which contains content and expels the undesirable foundation. At long last, Thresholding is finished with the goal that the picture appears as though an examined record. This is done to permit the OCR to productively convert the picture to content.
4) *Image to text Conversion:* The above shows the progression of Text-To-Speech. The principal square is the picture pre-preparing modules and the OCR. It changes over the pre-prepared picture, which is in .png structure, to a .txt record. We are utilizing the Tesseract OCR.
5) *Text to Speech Conversion:* The subsequent square is the voice handling module. It changes over the .txt record to a sound yield. Here, the content is changed over to discourse utilizing a discourse synthesizer called Festival TTS.
6) *Image-to-speech using camera (ITSC):* The second process is developed for blind people who cannot read normal text. In order to help blind people, we have interfaced the Logitech camera to capture the image by using OPENCV tool. The captured image is converted to text using Tesseract OCR and save the text to file out.txt. Open the text file and split the paragraph into sentences and save it. In OCR, the adaptive thresholding techniques are used to change the image into binary images and they are transferred to character outlines. The converted text is read out by the espeak.



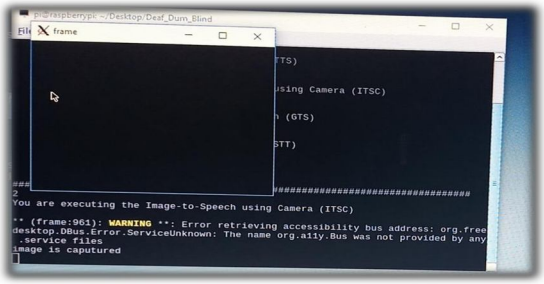


Fig: Image-to-Speech

7) *Object Recognition:* Video observation is a procedure of investigating video successions. It is a functioning zone in PC vision. It gives tremendous measure of information stockpiling and show. There are three kinds of Video observation exercises. Video reconnaissance exercises can be manual, semi-independent or completely self-sufficient . Manual video reconnaissance includes examination of the video content by a human. Such frameworks are at present broadly utilized. Semi-independent video observation includes some type of video handling yet with huge human mediation. Perform straightforward movement recognition. Just within the sight of noteworthy movement the video is recorded and sent for investigation by a human master. By a completely self-governing framework [10], just information is the video grouping taken at the scene where observation is performed.

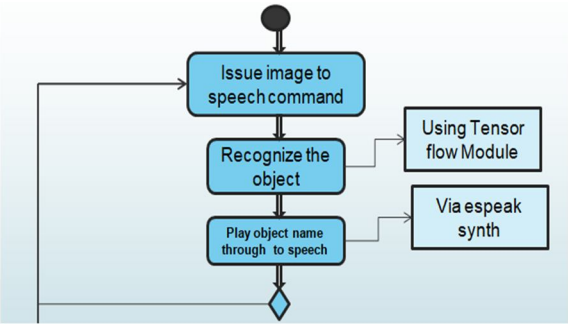


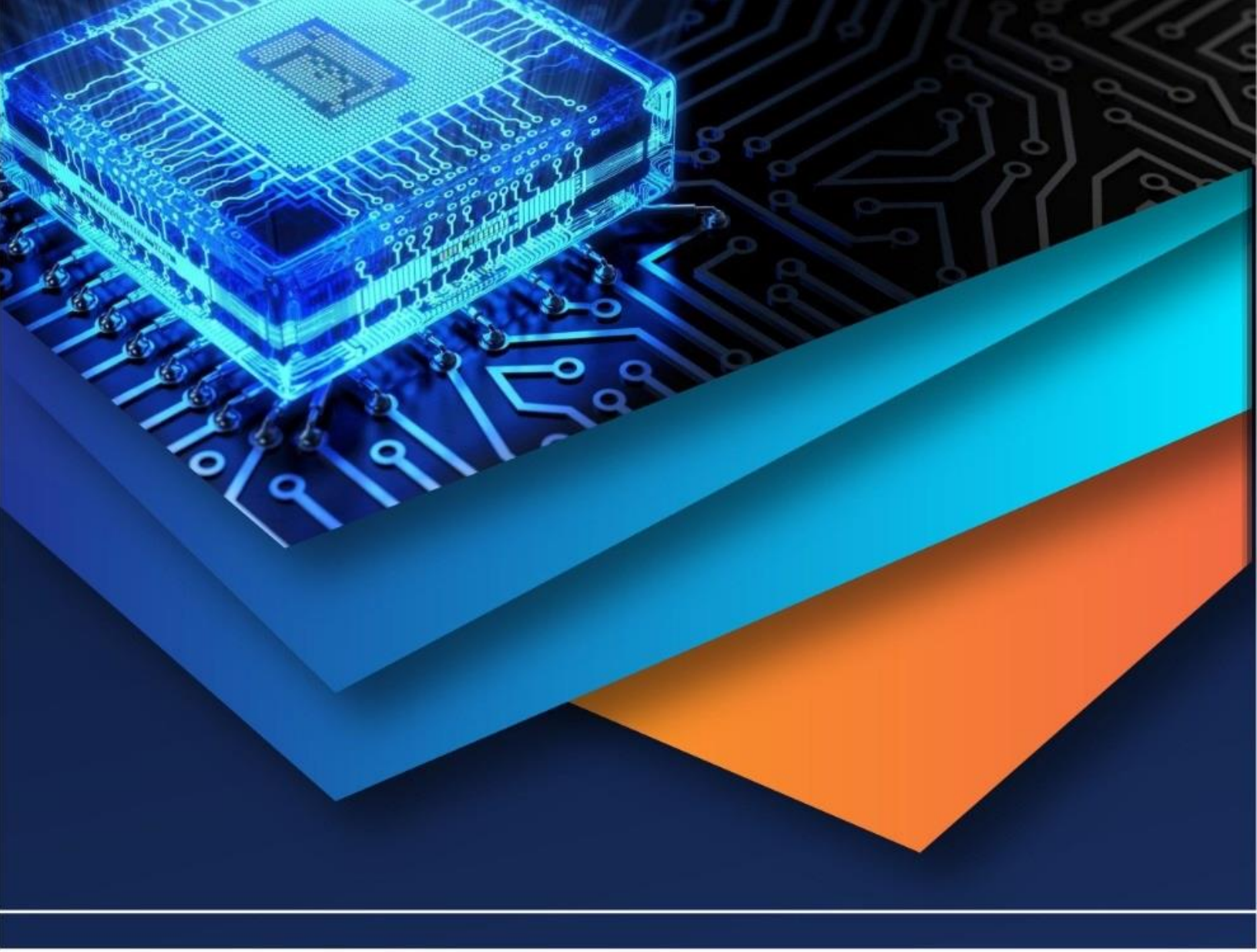
Fig: Object Recognition

V. CONCLUSION

This venture expects to bring down the correspondence hole between the hard of hearing or quiet network and the typical world, help them to lead standard way of life. We have structured the model for visually impaired, hard of hearing and unable to speak individuals into a solitary minimized gadget. The gadget can be utilized as brilliant right hand for diversely abled individuals to speak with others and it is a language free framework Basically it goes about as a counterfeit ear, tongue and eyes to a contrastingly abled People.

REFERENCES

[1] M. Delliraj, S.Vijayakumar # Department of Tifaccore in Pervasive enrolling Technologies Velammal Designing College, Chennai, India.2013 International Conference on Recent Trends in Information Technology (ICRTIT).
[2] Michael McEnancy" Finger Reader Is sound examining gadget for Index Finger "in July 2014.
[3] Waghamare, "Full Duplex Communication Framework for Deaf &Dumb People," Global Journal of Emerging Technology and Advanced Engineering (IJETAE), Volume 5, Issue 5, May 2015, ISSN 22502459.
[4] L. Anusha, Y. Usha Devi, Vignan's Lara Institute of Technology and Science, Implementation Of Gesture Based Voice And Language Translator For Dumb People,(2016).
[5] Dr P Subashini, Dr M Krishnaveni, M Manjutha, 2Department of Computer Science, 2016 International Conference on Computational Systems and Information Frameworks for Sustainable Solutions.
[6] Gita Indah Hapsari, Giva Andriana Mutiara, Dicky Tiara Kusumah, 2017 Fifth International Conference on Information and Communication Technology (ICoICT).



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