

Object Recognition Tool for Visually Impaired

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Abstract— Since the 1970, beholding technologies have matured to a degree at which exciting applications have become possible for visual substitution. In fact, industry has created a ramification of computer vision products and services by developing new electronic aids for the blind in order to overcome the difficulties that the dog and cane do not respond. This paper provides an outline of assorted visual substitution systems developed in the recent years. It aims also to introduce a proposed method that restores a central function of the visual system which is the identification of surrounding objects. This method relies on video analysis and interpretation. Thus, our contribution is to present a visual substitution system supported evaluating fast and robust algorithms to recognize and locate objects in images.

Keywords: Google API, Blind User, Object Recognition

I. INTRODUCTION

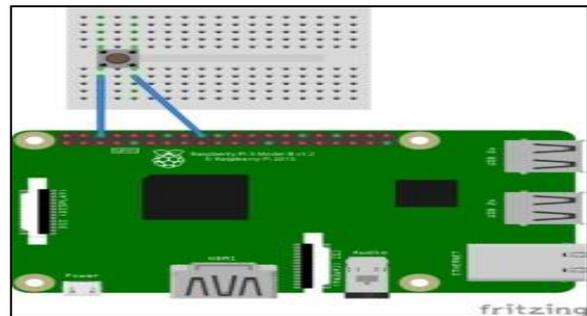
Visually Impaired People confront many problems in moving from one place to another i.e. navigation. Vision is human's power to notify him of the obstacles in his way. A solution which is easily available is needed to solve the problems of blind people. The application developed can detect the objects in the user surroundings. It can alert the user of the obstacles in his pathway and this fashion helps the user to navigate from one place to another saving him from tripping anywhere. It will also solve the matter of keeping a special device or a walking stick. The reason it is more reliable is because it is developed on the Android operating system and Android-based smartphones are very common and highly available almost everywhere. In fact it is one of the most used mobile operating system. This makes the application convenient to get. Thus in this project, a model has been proposed which makes the use of smartphone, a common device available to anyone and used technology to make an application which can help the blind user detect objects in his surroundings and help him in navigating from one place to another. The output of the system is in audio form that can be easily understandable for a blind user. These Visual impairment present severe consequences on certain capabilities related to visual function:

- The daily living activities (that require a vision at a medium distance)
- Communication, reading, writing (which requires a vision closely and average distance) – Evaluation of space and also the displacement (which require a vision far)
- The pursuit of an activity requiring prolonged maintenance of visual attentions.

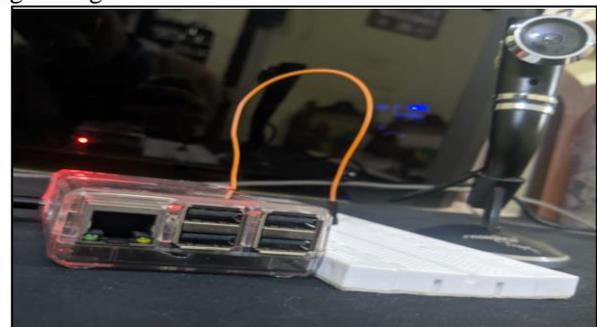
II. LITERATURE SURVEY

This project proposes a system in which two cameras are put on the glasses of a blind person. The proposed work has a wearable device and consists of a blind stick and sensor based detection circuit. It uses an infrared sensor which uses

infrared waves to scan the surroundings of a person. It uses object detection and gives them audio information about it. The system must be trained about object information. Feature extraction is also a part of the process. Another system proposed is focuses on giving the information about what are the different types of obstacles in front of the user, their size and their distance from the user. Software is used for signal processing. The camcorder is used for recording videos. Video processing methods using LED display are used after that.



It is a system where N object detectors are trained for N different objects. When an image is sent to the system, all object detectors do their work. If an object is found by a detector, it will mark its boundary and label the item name. After the process completes for all N detectors, the image is displayed with all the tags. Moving a cursor over an object in the image shows the complete boundary of the article with its label beside. This system is a little slower than other systems because a lot of object detectors are working on a single image.

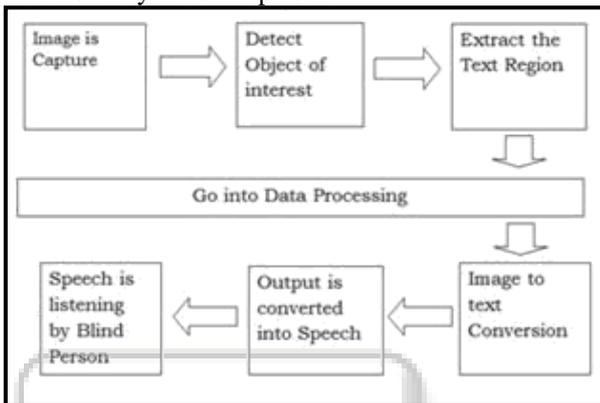


When the button is pressed, it captures an image of the object through the camera which is connected to it and sends it to Google Cloud. Then Google's Cloud Vision API uses artificial intelligence and provides relevant results of what the object can be. The output is then converted into audio format through Google's Text-to-Speech (gTTS). And finally, the converted audio is played using VLC. From a video, objects are detected by taking templates out of the video. It works if the object is present in the whole video.

III. PROPOSED WORK

The objective of this project is to provide a security for visually impaired people, by adapting methods for face recognition, object detection and currency identification which makes their life easy in today's computer vision

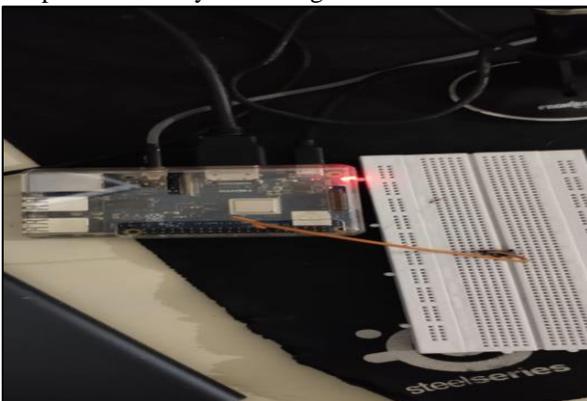
technology and also helps in security aspect. Normally, a blind person uses cane as a guide of him to protect him from obstacles. Most of area of surrounding is covered by the cane, especially the area near to his legs like stairs etc. But certain areas such as near to his head, especially when he is entering or leaving the door which is short in height. This system is specially designed to protect the area near to his head. It guides the user about obstacles as well as also provides information about appropriate or obstacle free path. Logical structure: The logical structure of our system is shown in following fig 1. The can be divided into three main parts: the user control i.e image to be captured, sensor control i.e detect the object, and the output to the user i.e speech listen by the blind person.



The control such as user control that includes the switches that allow the user to choose project's mode of operation. Sensor control determines when to tell the sensor to take a measurement and receives the output from the sensor and normalizes it to control value for the sensors.

IV. WORKING

The work that present in this system is based on the use of new technologies to improve visually impair people mobility. Our research is on obstacle detection so as to cut back navigation difficulties for visually impaired people. Moving through an unknown environment becomes a real challenge after we can't trust our own eyes. Since dynamic obstacles usually produce noise while moving, blind people develop the flexibility of hearing to localize them.



However they're reduced to their sense of touch when the matter is to see where an inanimate object exactly is. The common way for navigating of visionless person is using a walking stick cane or walking cane. The walking cane is a simple and computer dedicated to detect static

obstacles on the ground, uneven surfaces, and holes via simple tactile-force feedback. This device is light, portable, but range limited and it's not usable for the protection from obstacles as regards to head area. Another option that has the most effective travel aid for the blind is the guide dogs. Based on the symbiosis between the disabled owner and his dog, the training and also the relationship to the animal are the keys to success for this method. The dog is able to detect and analyse complex situations: cross walks, stairs, potential danger, know paths and more. Most of the information is passing through tactile feedback by the handle fixed on the animal. The user is able to feel the attitude of his dog, analyse matters and also give him appropriate orders. But guide dogs are still off from being affordable, around the price of a nice car, and their average working time is proscribed, an average of 7 years. The work they present in this system is based on the use of new technologies to improve visually impair people mobility. Our research is on obstacle detection so as to scale back navigation difficulties for visually impaired people. Moving through an unknown environment becomes a real challenge after we can't think about our own eyes. Since dynamic obstacles usually produce noise while moving, blind people develop the flexibility of hearing to localize them.

V. CONCLUSION

In this paper have presented an architecture for the facial & currency identification geared toward people with visual disabilities. The architecture has been designed and developed with the aim of achieving a sturdy and computationally light result that might be embedded in elements with a moderate computing capacity. It is quite simple, efficient and simple to be understand clearly.

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