OBJECT DETECTION WITH ASSISTIVE SYSTEM AND PANIC BUTTON FOR VISUALLY IMPAIRED PEOPLE USING SMARTPHONE

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Abstract- *Blindness may be a downside that plagues numerous people all over. Around thirty seven million people across the world are blind, over fifteen million are from Republic of India. The visually impaired suffer from a large vary of difficulties since they lack the first info for circumventing obstacles and dangers in their path. This paper is to develop real time communication for visually impaired people through a mobile application. Object detection is completed by victimization canny edge detection technique. It facilitates the user with a special push button, this button is intended to be utilized in case of in development of an emergency or a potential threat. A SOS and a pair of emergency numbers are saved. At the press of only one the degree button in mobile for three times, a system sends alert message to the registered emergency numbers in conjunction with the user's current location.*

Keywords *- Machine Learning, speech recognition, voice to sign system, Artificial Intelligence, Face Detection, Object Detection.*

I.INTRODUCTION

This paper explains about the application of android for gesture with voice which is mainly used for blind people to communicate with the rest of the world by converting speech in the form of audio, and these people can also able to communicate among each other by means of sign language. The main objective of this paper is to develop the speech recognition in order to understand key words in order to carry good communication among these blind people. Along these methods we also use voice to sign system for matching the parameter set from the database and face identification method is mainly used to identify people any object or person in general.

The interaction between normal with these blind people is very difficult because of various communication problems. Both these types of persons are provided with separate type of communication method. For blind people facial recognition method is used. In this paper we mainly use Android based application in order to communicate by means of gesture with voice to deal among these blind people. All this collected information was converting the received text into an audible form. Another innovative method is emergency notification to their reputed person. All these methods are used to have easy communication among these people plays a major role for blind people with which these people can easily understand the sent message to them by other common people. By using this above system, we can easily communicate among these blind people with having much difficulty and can able to do in short time. Thus, this is the main reason for using this android application system for gesture with voice in various places in the world.

II. RELATED WORK

Android application has shown a dramatic improvement in their functionality by using their applications in various parts of the world. This results in providing easy and efficient communication among each other in short time. The main objective of this system is to implement the speech recognition in order to understand keywords for carrying good communication among each other [1]. Gestures for these blind people can be used in the form of various hand movements like touch, sweep left, drag, pitch open, scroll down, long press, sweep right, touch left, double touch, pitch close, scroll up etc. Through using these simple android methods, we can communicate among these blind people [2].

This method can be used by making these blind people talk over the cell phone and thus we can easily understand what these people are conveying to us. We can also present what we are saying to these blind people by means of audio [2][3]. Thus, this is considered as the most advanced and technical method to carry easy communication among these blind people.

All these hand gestures are captured and processed with the help of MATLAB and then these

text and speech are converted into useful speech and text. Generally, in these situations we use two common languages they are Hindi and English. The most advanced technique that was used among these types of persons are video surveillance application. By using this video surveillance method, we can easily make them understand what we are actually conveying to them. We can also send them our conveying messages in the form of text.

A separate type of communication is used for each person. For blind persons facial recognition method is used to observe their reactions and also to know what they are saying and for disabled person V2S communication system was used [3][4]. Generally, the V2S system takes place by the following process, first the voice is being recorded then this voice is being converted into a digital signal processing then it is further converted into video database and if this video database matches with the already stored information of these blind people then automatically it plays the needed video for these disabled and blind people. Thus, communication takes place in a very short time when we have to deal with these blind persons living in the world and we can also convey our opinions to them by using text messages and also voice mail chat method can also prove to be effective for these types of people living in the world [5]. This was the main reason and objective for using this android application for gesture with voice for interacting with these blind persons.

III. EXISTING SYSTEM

Vision-based objects detection provides object behavior information of objects and is an intuitive detection method similar to human visual perception. Besides, vision-based objects detection methods are much low-cost compared with detection method LIDAR (Light Detection and Ranging).

IV. PROPOSED SYSTEM

In our proposed system, the app makes the blind persons easy to understand what they are going to perform. Here accelerometer sensor is used. When the mobile is shakes automatically app will opened and camera is enabled. If the blind people his/her lost their way, then the emergency notification with exact location has been sent to reputed person with the help of volume button.[3][4]. Home automation is also used for blind people. Thus, this is the specialty of using this android application for gestures with voice for these blind in the industry.

For blind persons face identification system was mainly used for two reasons, first to observe their facial reaction and second to make them understand what they are going to perform [5]. Thus, this method also reduces time of conversation when we have to deal with these blind persons. This would also help in improving our communication among these blind people without getting frustrated or irritated by using various android apps during the time of carrying conversation with these blind persons. This is considered as the one of the advanced methods used in our industry.

Thus, these are the two proposed systems that are used in dealing various such situations like this in various places.

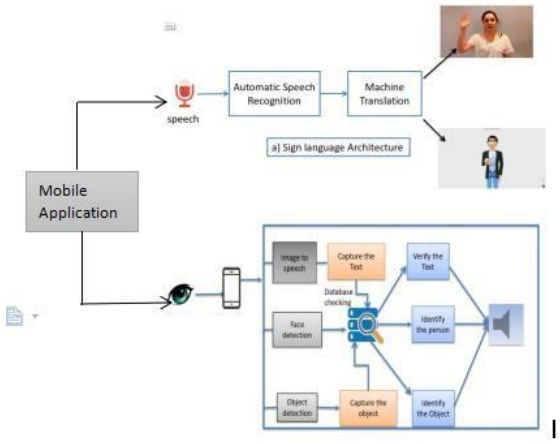


Fig 1.1 Architecture Diagram

V. METHODOLOGY

A. SPEECH RECOGNITION AND TRANSLATION

A visually-impaired person can easily communicate with the normal person through application in real- time. Input is given in image, machine will detect the object. Machine translates the image into audio.

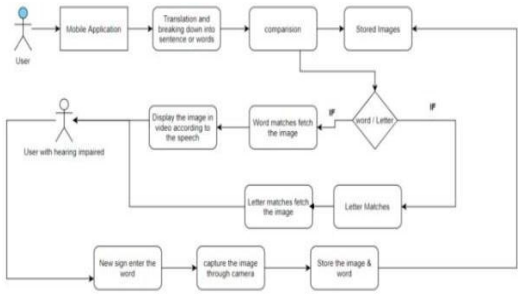


Fig 1.2 Work Flow Diagram

B. IDENTIFICATION OF OBJECT AND PERSON

When visually impaired people shake the mobile accelerometer sensor will be activated and camera will be enabled. Camera is used to scan the object or person. When it has been detected output is in voice format.

C. FACE IDENTIFICATION

A biometric software application is of uniquely identifying or verifying a person by matching and analysing patterns based on the persons facial features from given image with faces within a database. Facial recognition is a way of recognizing a human face through technology [5].

A facial recognition system uses bio metrics to map facial features from photograph and images which is given as default. It compares the information with a database that must be stored earlier for knowing faces to find a match.

D. OBJECT DETECTION

Every object has a unique, unchanging identity. Object identification is often referred as an OID [6].It is easy to identify the object by using OID. The processing of visual data happens in the ventral visual stream. It is a hierarchy of areas in the brain which happens in object recognition.

E. IMAGE TO SPEECH IDENTIFICATION

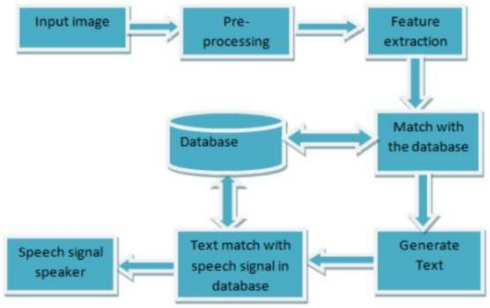


Fig 1.3 Image to Speech Identification

The system proceeds with various phases including pre-processing, feature extraction, object recognition, edge detection, image segmentation and text – to – speech (TTS) conversion [6][7]. The database consists of a huge set of sample images which help in identifying similar kind of projection in every different image. The major modules of this system are image- to- text and text – to- speech. An image- to- text that generates text descriptions in natural language based on understanding of the image [5]. The text- to-speech module converts the natural language into speech synthesis.

ALGORITHM:

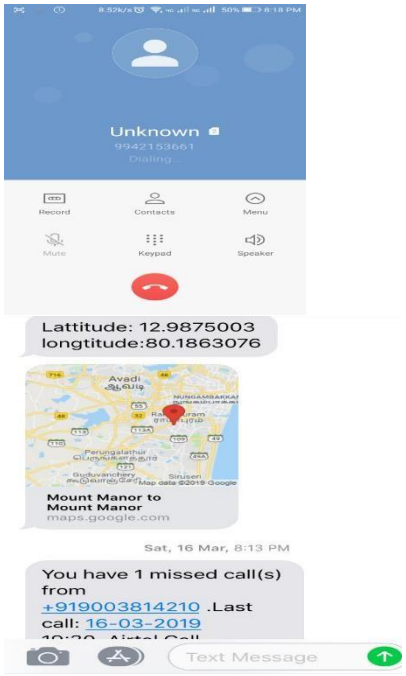
1. Hidden Markov model 2.Dynamic Time Wrapping and 3.Artificial neutral network HMM.

We have also considered canny edge detection technique with regards to following criteria:

Detection: The probabil0ity of detecting real edge points should be maximized while the probability of falsely non-edge points should be minimized. This corresponds to maximizing the signal-to-noise ratio.

Localization: The detected edges should be very closer to real edges. There should be minimum gap between real edges and detected Edges. Number of responses: One real edge will not results in more than one detected edge.

OUTPUT:



CONCLUSION

Visually Impaired People can identify the object/person through our application via using camera. Emergency notification will be sent via call as well as message.

VII. REFERENCES

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