Communication System For Normal, Deaf,Dumband Blind People Using Computer Interface

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Abstract- *In the present communication technology ,deaf blind and normal people find difficulties while communicating with each other. Our goal to provide a human computer interface for these deaf ,dumb, blind and normal people. Our system is going to help the blind person to hear the voice by saying the word which is gestured by the deaf, dumb people. Our system works in two directions, the first direction is converting from video to speech. The gestures are going to caught and converted to pictures. Then, the relevant audio is generated using Text to Speech application program interface. The second direction is speech to video conversion processing.*

Keywords- Application program interface, Communication technology, Gestures.

I. INTRODUCTION

According to the information from the world health organization there are around four hundred and sixty six million people who had here loss and around two hundred and eighty five million people are visually impared. And almost thirty nine million people are blind, and two hundred and fourty six million people are having low vision all over the world. Hence it is very very important to consider this situation and also very important to provide them a proper sophisticated communication system which enables them to communicate with all of them using different technologies, stratergies.
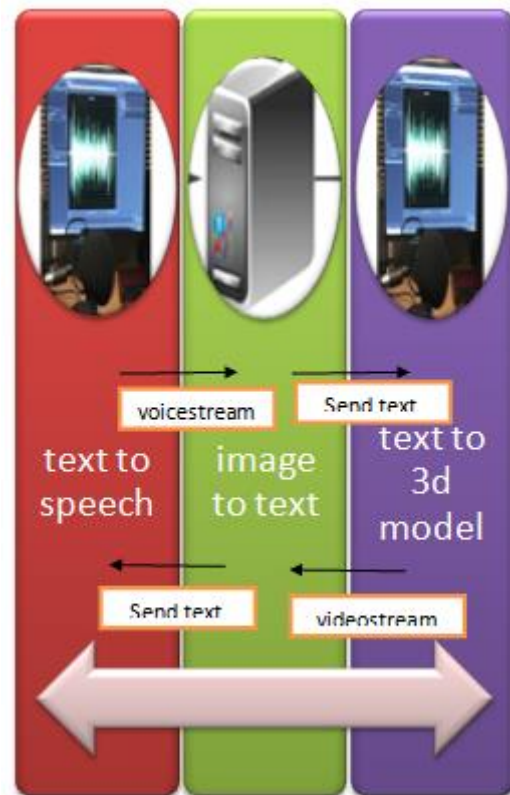

Fig.1 Bidirectional communication between Deaf to Normal\Blind, or From Normal\Blind to Deaf .

II. METHODOLOGY

*The first direction:-*Here the input text given through the keyboard or the video stream which is captured using the camera are going to converted into text.Then it is converted into speech and played through speaker.
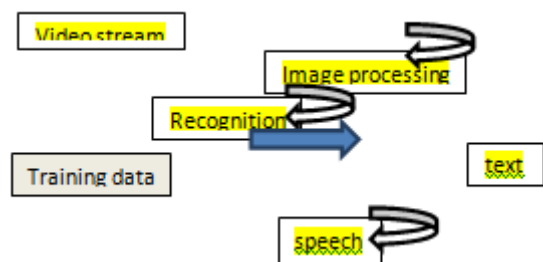

FIG 2.Sign voice based communication

The second direction: - Here audio recorded through the microphone is going to get filtered and sent to the server.That is recognized using dynamic time wrapping and get converted into text and then to image.

III. PROPOSED SYSTEM

The proposed system consists of:

Input – microphone, camera, keyboard .
Output – speaker and device screen.

In text to speech conversion we are going to give the text using keyboard or the image is going to get captured and then are going to get converted to speech.In the speech to text conversion speech which is recorded through microphone is converted into text and get displayed on the screen. In the gesture to speech conversion the gestures we show to the camera are going to get captured and converted into speech and also displayed on the screen. In the image to speech conversion image showed to the camera are converted to speech and played through the speaker

ADVANTAGES

Deaf, dumb andblind people can overcome their disabilities and can express their views to normal people and also among themselves. All in one solution for deaf, dumb and blind in one device.This is language independent, user friendly, portable, very low cost

IV. IMPLEMENTATION

The Project is divided into 4 different modules
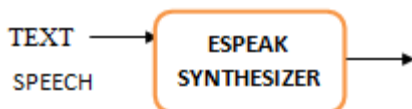
1.Text-to-speech(TTS)

FIG 3. Block diagram of text to speech.

Dumb people cannot talk hence they have to communicate others through the text. That is going to display anyway on the screen and people can read. But the blind people cannot see that, so the text which is given through the keyboard is converted into speech as well through the espeak synthesizer software which is very good at its job. When this text to speech function is invoked espeak synthesizer is going to run and respected work is done and the text is converted into speech and played through speaker.

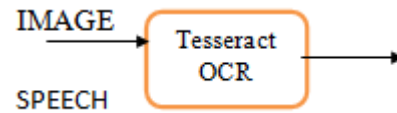**2.Image-to-speech using camera(ITSC)**

FIG 4. Block diagram of image to speech

Image to speech conversion is done to help blind people by converting text images to speech by using the Tesseract optical character recognition.

The image is captured using the open CV tool for the better recognition of the words and sentence.Then the text is going to get recognized and converted to text using the tesseract OCR then that text is going to get converted into speech by using the espeak software and played through the speaker which is connected to the system.
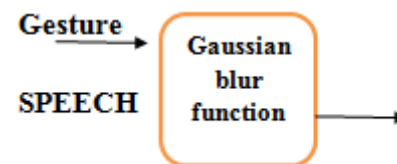
3.Gesture-to-speech(GTS)

FIG 5. Block diagram of gesture to speech.

Dumb people cannot talk as before mentioned, if they cannot type text they can anyway show there gestures which are more often used by them. Each gestures has its own meaning .In our project the gestures are going to get captured by the camera using open CV tool which is then converted into gray scale image from RGB image.The Gaussian blur function is used to find the different angles between fingures. And also we use convex hull function where we can implement figure point. Then the gestures are going to get converted into speechand is going to get played through the speaker which is connected to system.
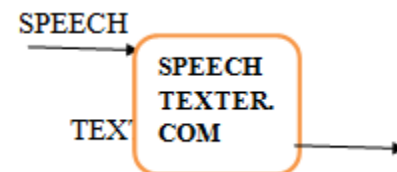
4.Speech-to-Text(STT)

FIG 6. Block diagram of speech to text

Speech to text converter is used to help the dumb people to here what other people talk to them. Asthe function get invoked the chromium browser opens and directly the

URL speechtexter.com is going to run and gives us the text which is already get converted before .Speech which is recorded through the microphone is get filtered by all the distubances of the environment.

V. RESULTS

Text-to-speech(TTS)

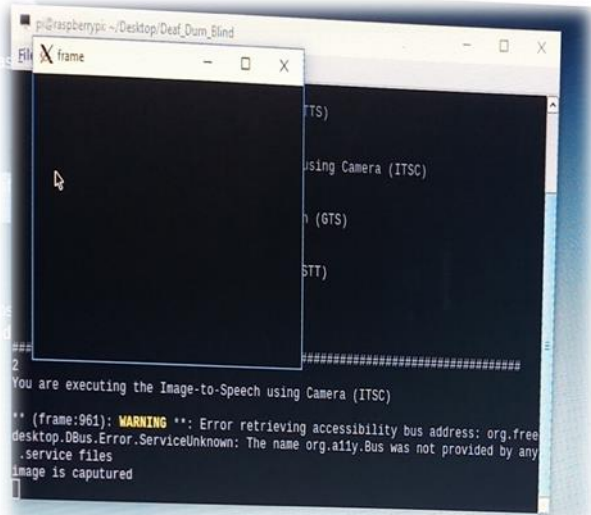The text is converted to speech using espeak synthesizer.

Figure 7: Text-to-Speech

Image-to-speech using camera(ITSC)

In order to help blind people image is going to get converted into speech using tesseract OCR.
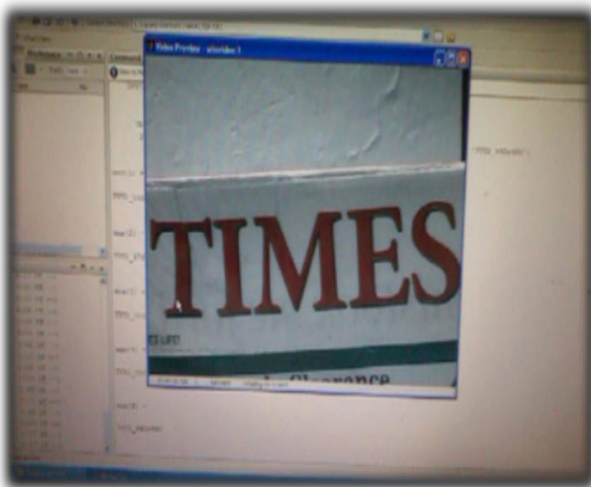

Figure 8: Image-to-Speech

Speech-to-Text(STT)

In order to help dumb and blind, our project is provided with a switch which is used to convert the voice of the normal people text .

Gesture-to-speech(GTS)

Dumb people use gesture to communicate with normal people which are majorly not understandable by normal people.
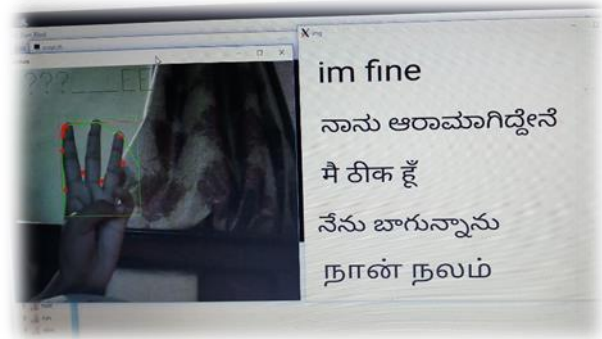

FIGURE 9: Gesture to speech.

VI. CONCLUSIONS

In this paper by using the hearing chat system method is used to translate the sign gesture to the human speech .Here we are having mainly two parts one is static sign recognition based on the posture recognition for example the alphabets, figure spelling,which are having no motion associated with it. And the send one is voice recognition which is going to recognize either one by one or the whole sentence at once.Our proposed system has no restrictions of voice disturbances because of better features we used here.It is mainly having no restrictions and no difficulties.And very user friendly and cost effective

VII. ACKNOWLEDGMENT

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