

Video Based Gesture Vocalizer (VGV) for Dumb Person

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ABSTRACT

Sign language is a natural way for communication between normal and dumb people, but often they find difficulty in communicating with normal people as we don't understand their sign language. Therefore, there always exists a language barrier. To minimize this barrier, we propose a device, which can convert their hand gestures into voice, which a normal person can understand. This device consists of a Wireless Glove, consisting of flex sensors and accelerometer. These sensors sense the movement of hands and fingers. This system consists of a speech synthesizer circuit, which converts these movements of hand into real time speech output, and a display will give the text for the corresponding gesture. The text and voice output being in English. So, this device provides efficient way of communication for both deaf-dumb and normal people.

Keywords: Video Based Gesture Vocalizer (VGV), Sign Language, Speech synthesizer

ARTICLE INFO

Article History

Received: 2nd April 2021

Received in revised form :
2nd April 2021

Accepted: 5th April 2021

Published online :

05th April 2021

I. INTRODUCTION

Communication is that the most vital a part of the life. regarding 9 billion individuals within the world area unit deaf and dumb. Even blind individuals may also communicate with one another victimization general language. however deaf and dumb ineffective to speak, so that they use special language that's signing. Effective communication is vital for the event of society and conjointly plays a crucial role for folks. Keeping these vital words in mind we tend to be attempting to implement a system which can facilitate in rising the communication with the dumb individuals victimization video signal process. This project aims to lower this barrier in communication. Deaf and Dumb individuals communicate with signing or gesture. a short description regarding numerous gesture and implementation is mentioned below. Deaf and Dump person and traditional person communication is as same as 2 totally {different|completely different}|completely different} persons from different countries uses 2 different languages for communication with none common language then they're going to have drawback of understanding one another. Deaf and Dumb population could be a results of the physical incapacity of hearing for deaf individuals and incapacity of speaking for dumb individuals. attributable to lack of communication between traditional person and deaf and dump person the magnitude relation is decreasing of Literate and used Deaf and Dump. Deaf and Dump person uses signing for communication that isn't known to traditional person for communication they needs a translator physically that isn't continually

convenient to rearrange. A system is developed that may translate video that contain signing into speech so as to create the communication present itself between speech impaired and paralytic patients within the traditional general language. There proposes totally different models to acknowledge these languages. There usually exploitation yank signing (ASL) and Indian signing (ISL). In previous couple of years, there has been raised interest among researches during this field of signing to found a best device for deaf folks. Finding Associate in Nursing knowledgeable interpreter for day to day activities is incredibly troublesome and unaffordable. thence for easy communication between impaired and traditional folks there used numerous physics and digital strategies.

PROBLEM DEFINITION

In this world many people suffer from hearing loss (deaf) and speech loss (dumb) that might have occurred since birth or during their lifetime later. It is tedious for the deaf & dumb people to talk with the ordinary people. So to overcome this barrier we are designing a video based gesture vocalizer for dumb person using video signal processing, which converts the gestures into an audio output and vice-versa.

II. LITERATURE SURVEY

Christy Paul et.al [1] Communication is that the most vital a part of the life. regarding 9 billion folks square measure dumb during this world. Hand gesture technique may be a thanks to communicate between impaired and traditional

folks. There proposes totally different models to acknowledge these languages. There commonly victimization yank linguistic communication (ASL) and Indian linguistic communication (ISL). Sign is non-verbal kind of language uses gestures to convey our thoughts. For this a selected movement of the hands with a particular form created out of them. when process, corresponding audio is made. Signs area unit wont to communicate words and sentences to audience. we tend to create use of sign speak glove that could be a traditional, artifact glove fastened with flex sensors on the length of every finger and thumb. Output from the sensing element is processed by the small controller and is transmitted through wireless communication, which can receive within the receiver section. The microcontroller and sensing element used knowledge glove helps to lower the communication gap between speech and hearing impaired individuals and traditional person. This paper contains the map to develop the Sign speak. It provides the connected works, explains the system design, characteristics and operations of every of the elements within the system design. Provides the applications and future works, of this device.

Dr. Pramod Sharma et.al [2] This project relies on the necessity of developing AN device that may translate finger gesture into text or speech so as to create the communication happen between the mute communities with the traditional individuals. an information glove is employed to convey the finger gesture of a mute person. the information glove is traditional rubber or artifact glove, fitted with flex sensors on the length of every finger. Mute individuals will use the glove to perform hand gesture and therefore the same are going to be born-again into text further as in speech in order that traditional individuals will perceive the mute person expression. This device contains a collection of four flex sensors that provide knowledge as input resistance to the microcontroller in step with the bending of flex sensors, this resistance is born-again into show through a sixteen bit {lcd|liquid crystal show|LCD|digital display|alphanumeric display} display on that the person on the opposite facet with traditional skills will simply scan the born-again message or if the person is blind will listen the born-again message from the speaker or earphones through voice recording and playback device supported APR33A3 IC. This project may also be used as medicine instrument in hospitals like medical aid unit or operation theatre.

Prof. G. R. Phulay et.al [3] Gesture recognition could be a topic in technology and language technology with the goal of decoding human gestures via mathematical algorithms. Gestures will originate from any bodily motion or state however ordinarily originate from the face or hand. Current focuses within the field embody feeling recognition from the face and hand gesture recognition. several approaches are created victimization cameras and laptop vision algorithms to interpret linguistic communication. However, the identification and recognition of posture, gait and human behaviors is additionally the topic of gesture recognition techniques. This paper handles the case study on the various hand gesture recognition systems and additionally the devices with knowledge glove and vocalize system. These systems area unit useful for disable individuals and their

hands can speak having worn the gesture vocalizer knowledge glove.

Mrs. Manjula G Hegde et.al [4] A gesture could be a explicit action or position of the hand, arm, body, head/eye, face that demonstrates the thought, outlook and sentiment of an individual. Vocalization of a gesture, is in concern with vocalization, the activity by that spoken sounds area unit created. once united with distinct advanced interface technologies like voice commands, gesture will turn out richer user expertise that aims to acknowledge the human "language", thereby feeling successive wave of electronic innovation. victimisation image process technology, there's less likelihood of information spatial relation when put next to the employment of sensors for identical system. This paper directs to transient the sensible extension of a camera for performing arts the service of gesture controller and vocalizer.

R.L.R. Lokesh man Et.al [5] usually dumb individuals use signing for communication however they notice issue in human activity with others World Health Organization don't perceive signing. This project aims to lower this barrier in communication. it's supported the necessity of developing Associate in Nursing device which will translate signing into speech so as to form the communication present itself between the mute communities with the final public doable. A Wireless information gloves is employed that is traditional material driving gloves fitted with flex sensors on the length of every finger and therefore the thumb. Mute individuals will use the gloves to perform hand gesture and it'll be born-again into speech in order that traditional individuals will perceive their expression. signing is that the language utilized by mute individuals and it's a communication talent that uses gestures rather than sound to convey which means at the same time combining hand shapes, orientations and movement of the hands, arms or body and facial expressions to precise fluidly a speaker's thoughts. Signs ar wont to communicate words and sentences to audience.

Jitendra Kurmi et.al [6] Gesture Vocalizer may be a boon to facilitate two-way communication between the dumb et al. ordinarily the deaf use hand gestures to speak with others that is extremely troublesome for others to know same as deaf and dumb cannot communicate victimisation any verbal language. Gesture Vocalizer System may be a device that uses 2 sensors i.e. measuring instrument and flex sensors mounted on the digital glove. These sensors ar wont to gauge the hand gestures. this technique uses a speech synthesizer circuit that converts the hand movements into speech output and therefore the show provides the text within the desired human intelligible language for the corresponding movements. within the same means, the speech input is born-again into the specified gestures for the dumb to know.

Abhishek Tandon et.al [7] during this paper, we've conferred a quick introduction of our projected style of 'Smart Glove' at the side of the previous tries tired this space. Since communication plays the foremost necessary half in a very human being's life however sadly not all kinsfolk ar ready to transfer their thoughts effectively simply because of a mere incapacity. This project serves to

get rid of the issues from this incapacity of ineffective to speak properly. Deaf & Dumb individuals use signing for his or her communication however traditional plenty face the issue of understanding this and there's a full course if one desires to be told this. This glove can convert the hand gestures of the user to sonic speech signals in order that the attender will simply perceive what the topic desires to convey. this could bridge this Brobdingnagian gap to Associate in Nursing extent. good glove is essentially a tool that is employed to convert hand gestures into corresponding speech signals, if they need any vital which means within the signing.

Dr. (Mrs) Lini Mathew et.al [8] linguistic communication is that the means that of communication among the deaf and mute community. linguistic communication emerges and evolves naturally at intervals hearing impaired community. linguistic communication communication involves manual and non-manual signals wherever manual signs involve fingers, hands, arms and non-manual signs involve face, head, eyes and body. linguistic communication may be a well-structured language with a synchronic linguistics, morphology, syntax and descriptive linguistics. linguistic communication may be a complete linguistic communication that uses alternative ways of expression for communication in daily life. linguistic communication recognition system transfers the communication from human to human-computer interaction. The aim of the linguistic communication recognition system is to gift Associate in Nursing economical and correct mechanism to transcribe text or speech, so the "dialog communication" between the deaf and hearing person are going to be swish. there's no standardized linguistic communication for all deaf folks across the globe. However, sign languages aren't universal, like spoken languages, these disagree from region to region. someone World Health Organization will speak and listen to properly (normal person) cannot communicate with deaf & dumb person unless he/she is acquainted with linguistic communication. Same case is applicable once a deaf & dumb person needs to speak with a standard person or blind man. So, there square measure 2 main approaches utilized in the linguistic communication recognition that's sensing element primarily {based} and Vision based Approach.

III. BLOCK DIAGRAM

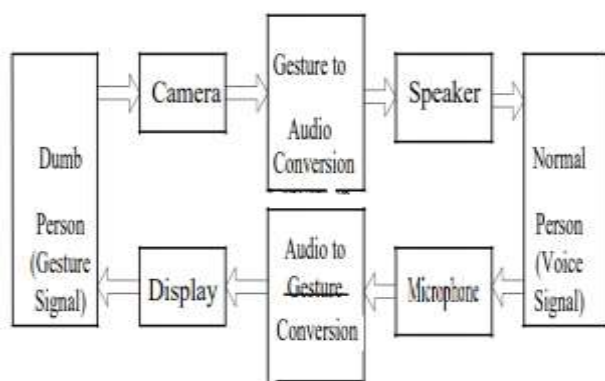


Fig 1. Block Diagram

The block diagram consists of different blocks such as hand gestures as input, video camera to record gestures, video to audio conversion using software and a speaker for audio output. If a normal person wants to understand the dumb person, he has to use the camera of smart phone and shoot his gestures. While recording the gestures there has to be sufficient light and plane background.

The captured video signal is further processed, to convert these gestures into an audio signal and vice-a-versa. The prime focus of this work is to convert the video signal into audio signal and vice-a-versa without any errors. A suitable frame is extracted from the live video and used for further processing. The frame filtering techniques such as blurring, RGB to HSV conversion and removing noise is done to get binary image.

IV. METHODOLOGY

a. Algorithm Step:

1. Start
2. Read gesture video
3. Convert the video into frames
4. Read the frame
5. Convert rgb frame into grayscale
6. Perform skin detection on frames
7. Gesture recognition
8. Audio output
9. End

b. Flow Chart:

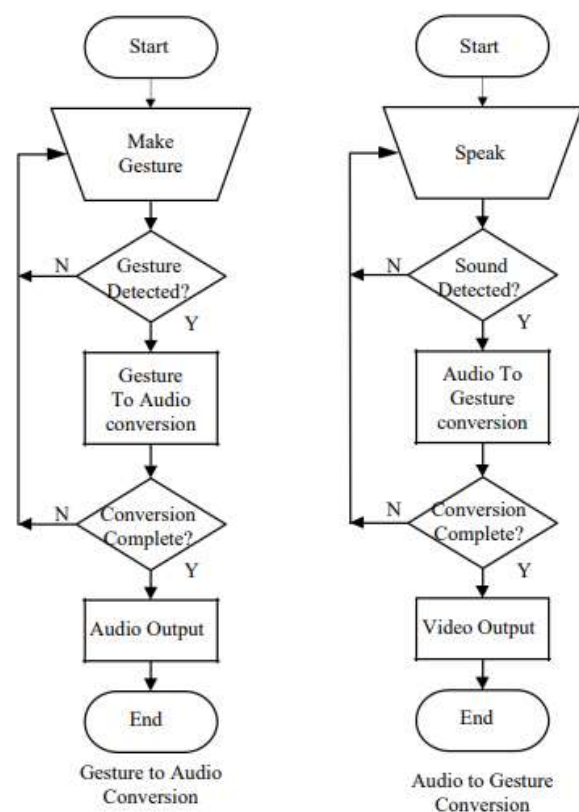


Fig 2. Flow Chart

V. RESULT



Fig. 3. Original image

Fig. 4 Binary image

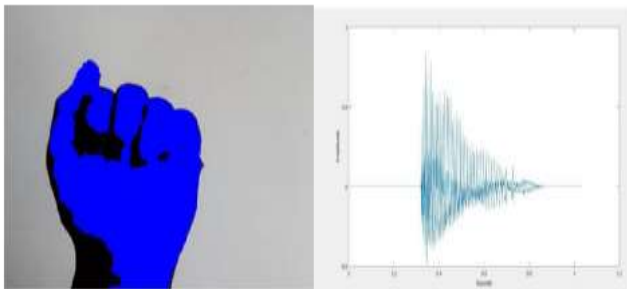


Fig. 6 Skin detected image

Fig. 7 Audio waveform

VI. CONCLUSION

This project deals with the system which can facilitate the Dumb or maybe deaf those that uses hand gesture system to speak with the conventional individuals. Hand gesture recognition system is taken into account as the simplest way for additional intuitive and profitable human pc interaction tool. This project describes survey on the various systems offered for gesture recognition and also the classes concerned in hand gestures. one in all the systems is explained in short here. the look and dealing of a system that is beneficial for disable individuals to speak with each other and with the conventional individuals. The dumb individuals use their commonplace language that isn't simply comprehensible by {common individuals| folk| people} and blind people cannot see their gestures. This technique converts the language into voice that is well comprehensible by blind and traditional individuals. The language is translated into some text kind, to facilitate the deaf individuals moreover.

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