A GLOVE THAT TRANSLATE SIGN LANGUAGE INTO TEXT AND SPEECH

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ABSTRACT

In India about 6 million people are suffering from speech impairment and hearing impairment. People with speech impairment use sign languages to communicate with the society which is delicate for normal people to understand. Therefore communication between deaf-mute people and normal people had always been a grueling task each over the world. Hence deaf mute communication needed practitioner who'll convert hand gestures into audible speech. In past this design perpetration involved the use of image processing conception and accelerometer. But the debit of these executions are systems were non movable and too precious. Thus system is being proposed with the use of flex detectors and accelerometer. The easiest way for communication in the world is speech. Whereas it becomes delicate for speech bloodied and hearing disabled people to communicate as they use sign language for the communication. It becomes delicate for normal people to understand. Smart Glove for Subscribe Language Translation is a work that aims to present an easy way of communication for speech bloodied and hearing disabled people. This work consists of a glove equipped with detectors which senses different sign language gesture, these senses data are fed to arduino and transfer data to android phone via Bluetooth module, a common android phone is used in this work for sign to state restatement and voice to subscribe language restatement. In real life, the sign language druggies substantially use both hands. Therefore, this is a prototype work presenting an ease in communication for the speech bloodied and hearing impaired people.

Keywords: Gesture Recognition, Sign Languages, Flex Sensors, Accelerometer.

I. INTRODUCTION

India constitutes around 2.4 million of Deaf and Dumb population. These people lack the amenities which a normal person should own. This decreasing ratio of Literate and Employed Deaf and Dumb point population is a result of the physical disability of hearing for deaf people and disability of speaking for dumb people so it yields to lack of communication between normal person and Deaf and Dumb Person. It actually becomes the same problem of two persons which knows two different language, no one of them knows any common language so its becomes a problem to talk with each other and so they requires a translator physically which may not be always convenient to arrange and this same kind of problem occurs in between the Normal Person and the Deaf person or the Normal Person and the Dumb person. To overcome this problem, we introduce a hand Glove. Our Model is a desirable Interpreter which translates sign language to text and then into voice. All beings on earth have settled means in which to carry their emotions and thoughts to one another. However, it's the ability of individuals to use words and language to transfer exact meanings that groups them apart from the animal territory. Poor communication, due to personal causes or a lack of adequate technology, will unavoidably lead to unenthusiastic, ill informed that may begin to question on confidence in their skills and ultimately the organization as an entire. About 15% of the world's inhabitants lives with some form of incapacity, of whom 2-4% experience significant problems in functioning. The severe issue for the deaf and dumb civic is obviously the trouble in communicating with vocal people. These people communicate via sign language; however, the main subject is that the majority of people are not aware with sign language and they are not ready to learn this language. This created an idea to propose this project in which it will drastically facilitate and advance a communication method between the non vocaland vocal individuals. The wireless data gloves is used which is normal gloves fitted with Flex sensors along the length of each finger. Mute people can used the gloves to perform hand gesture and it will be converted into speech so that normal people can understand their expression. A gesture in a sign language particular movement of the hands with a specific shape made out of them.
II. LITERATURE SURVEY

The proposed ISLR system is considered as a pattern recognition fashion that has two important modules feature birth and bracket. The common use of Discrete Wavelet Transform (DWT) grounded point birth and nearest neighbour classifier is used to fete the sign language. The experimental results show that the proposed hand gesture recognition system achieves maximum 99.23 bracket delicacy while using cosine distance classifie. (1) In this paper authors presented a scheme using a data base driven hand gesture recognition grounded upon skin color model approach and thresholding approach along with an effective template matching with can be effectively used for mortal robotics operations and analogous other operations. Originally, hand region is segmented by applying skin color model in YCbCr color space. In the coming stage thresholding is applied to separate forward ground and background. Eventually, template grounded matching fashion is developed using Star Element Analysis (PCA) for recognition. (2) this paper, off- line hand recognition & verification using In neural network, where the hand is captured and presented to the stoner in a image format.(3) In this paper author proposed a system to prop communication of deaf and dumb people communication using Indian sign language (ISL) with normal people where hand gestures will be converted into applicable textbook communication. Main ideal is to design an algorithm to convert dynamic gesture to textbook at real time. Eventually after testing is done the system will be enforced on android platform and will be available as an operation for smart phone and tablet pc. (4) development of sign language grounded on homemade communication and body language. Subscribe language recognition system generally elaborate three way pre processing, point birth and bracket. Bracket styles used for recognition are Neural Network (NN), Support Vector Machine (SVM), Hidden Markov Models (HMM), Scale Invariant Feature Transform (SIFT), etc. (5)

III. PROPOSED SYSTEM

In the project came into actuality for one sole purpose, to help the deaf community to fluently communicate and interact with thier near girding. The end is to convert introductory symbols that represent the 26 English ABC as mentioned under ASL (American Sign Language) script and display them on a smartphone screen.

This design was inspired with the idea of controlling robotic arm with the help of hand movements. Utmost of the working is same but enforcing the remaining part is rather a complex task. Accelerometer is used to measure the cock in the win. Five bend detectors are placed on a glove, four for the fritters and one for the thumb. These detectors measure the bend in the fritters and thumb and win and according to the bend angle value. the Arduino Nano microcontroller understands which set of value represent which symbol and transfer the applicable outgrowth value to the Android app via Bluetooth which displays and speaks the symbol generated. Representing the first many symbols was relatively easy and delightful, but there were many symbols that were hard to distinguish similar as "U"and"V" which are veritably slightly different form each
other and gave nearly same value. The earlier prototype failed drastically to represent the same but the problem was answered using a metallic strip between the cutlet, which was used to tell if they're in contact or not. The delicacy was increased by continuously streamlining the data set for each symbol from time to time.

IV. HARDWARE

In the system design, flex detectors are attached to a hand glove, along with each cutlet length and recognizes a gestures. The affair of the flex detectors will vary depending on the bending degree of each cutlet, and the analog affair voltages, which are attained from these flex detectors, are fed into the analog legs of Arduino Uno board. The analog to digital convertor processes these analog signals and converts them into digital signals. Also, the program stored in the regulator will also convert the honored gesture into its original textbook information. The textbook information will be displayed on the mobile screen and the text to speech conversion will play out the mobile speaker.

A. ARDUINO NANO

The Arduino Nano is a small, complete, and breadboard-friendly board grounded on the ATmega328P released in 2008. It offers the same connectivity and specs of the Arduino Uno board in a lower form factor. The Arduino Nano is equipped with 30 joker I/ O heads, in a DIP30-suchlike configuration, which can be programmed using the Arduino Software integrated development terrain. (IDE), which is common to all Arduino boards and running both online and offline. The board can be powered through a type-Bmicro-USB string or from a 9 V battery. In 2019, Arduino released the Arduino Nano Every, a leg-original elaboration of the Nano. It features a more important ATmega4809 processor and twice the RAM.

B. FLEX SENSOR

A flex detector is a kind of detector which is used to measure the quantum of dereliction else bending. The designing of this detector can be done by using accoutrements like plastic and carbon. The carbon face is arranged on a plastic strip as this strip is turned away also the detector’s resistance will be changed. Therefore, it’s also named a bend detector. As its varying resistance can be directly commensurable to the volume of Strip principle which means whenever the strip is twisted also its resistance will be changed. This can be measured with the help of any regulator. This detector works analogous to a turn therefore it can also be employed like a goniometer. This detector works on the bending variable resistance because when it twists also the resistance will be changed. The resistance change can depend on the linearity of the face because the resistance will be different when it’s position. When the detector is twisted 450 also the resistance would be different. Also, when this senor is twisted to 900 also the resistance would be different. These three are the flex detector’s bending conditions. According to these three cases, the resistance will be normal in the first case, the resistance will be double as varied with the first case, and the resistance will be four-time when compared with the first case. So the resistance will be increased when the angle is increased.

V. SOFTWARE

ARDUINO IDE (Software)

The Arduino Integrated Development Environment (IDE) is across-platform operation (for Windows, macOS, Linux) that’s written in functions from C and C. is used to write and upload programs to Arduino compatible boards, but also, with the help of third- party cores, other seller development boards. The open- source Arduino Software (IDE) makes it easy to write law and upload it to the board. It runs on Windows, Mac OS X, and Linux. The terrain is written in Java and grounded on Processing and other open- source software. This software can be used with any Arduino board. Arduino programs can be divided in three main corridor Structure, Values (variables and constants), and Functions.

VI. CONCLUSION

The main hedge coming between the commerce of deaf & dumb community and the normal persons is how to communicate each other’s sentiments and feelings. It's needed for both the parties to have a deep knowledge of sign language. In utmost of the cases, it's seen that the deaf & dumb community has sign language as their rescuer but the normal persons face the difficulty in understanding them. In this paper, we reviewed multitudinous attempts and inductions taken by different persons to overcome this social issue. Gloves were made using flex detectors, accelerometers, image processing and numerous other sense were enforced but
each had some or the other debit. To take into account total of the sign language, a huge library of functions is needed which is a veritably tedious job in itself. Inquiries are still being made to construct new and cost effective ways to produce such a device which converts sign language to speech.

VII. REFERENCES


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