

SIGN LANGUAGE RECOGNITION SYSTEM

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Abstract: The aim of this project is to help the communication of two people, one hearing impaired and one without any hearing disabilities by converting speech to finger spelling and finger spelling to speech. Finger spelling is a subset of Sign Language, and uses finger signs to spell words of the spoken or written language. We aim to convert finger spelled words to speech and vice versa. Different spoken languages and sign language such as English will be considered. We propose design and initial implementation of a smart system which can automatically translates voice into text and text to sign language. Sign Language Translation Systems could significantly improve deaf lives especially in communications, exchange of information and employment of machine for translation conversations from one language to another has. Therefore, considering these points, it seems necessary to study the speech recognition. Usually, the voice recognition algorithms address three major challenges. The first is extracting feature form speech and the second is when limited sound gallery are available for recognition, and the final challenge is to improve speaker dependent to speaker independent voice recognition. Extracting feature form speech is an important stage in our method. Different procedures are available for extracting feature form speech. One of the commonest of which used in speech recognition systems is MelFrequency Cepstral Coefficients (MFCCs). The algorithm starts with preprocessing and signal conditioning. Next extracting feature form speech using Cepstral coefficients will be done. Then the result of this process sends to segmentation part.

Keywords: Deaf Human, Sign Language Translation Systems, Humatronics, Automatic Speech Recognition

Introduction - Today's one in 1000 people become deaf before they have acquired speech and may always have a low reading age for written Persian. Sign is their natural language. Persian Sign Language has its own grammar and linguistic structure that is not based on Persian. So voice recognition systems play a very significant role in field of human electronics and its wide applications in deaf live.

This research was started with several speeches to text experiments to measure the communication skills of deaf people, and to understand their everyday problems better. The primary aim of our project was to develop a communication aid for deaf persons which can be implemented in a mobile telephone. In our system a partially animated face is displayed in interaction with deaf users. They are very useful in much application. Our system starts with prepossessing and signal conditioning. Next extracting feature form voice using Cepstral Coefficients will be done. Feature extraction is the process that extracts a small amount of data from the voice signal that can later be used to represent each word. Then the result of this process sends to Feature matching Hand gesture recognition is of great importance for human- computer interaction (HCI), because of its extensive applications in virtual reality and sign language recognition. Despite lots of previous work, traditional vision-based hand gesture recognition methods are still far from satisfactory for many real-life applications. The quality of the captured images is sensitive to lighting conditions and cluttered backgrounds, because of the limitations of the optical sensors. Thus it is generally not able to detect as well as track the hands robustly. This is largely affects the performance of hand gesture recognition. An effective way to make hand gesture recognition more robust is to use different sensors to capture the hand gesture and motion, e.g. through the data glove. Unlike optical sensors, such sensors are generally more reliable and are also not affected by lighting conditions or cluttered backgrounds.

Due to communication limitation, deaf and hard of hearing suffer relatively more when compared to their hearing peers because they lack the ability to fully integrate them selves into the world of hearing. For the deaf and hard of hearing, his or her hearing classmate, the teacher (regular or special) and other members of the society, choosing the most effective and acceptable communication medium is perhaps the greatest hurdle to crack, hence, there is need for a Sign Language Interpreter (SLI) who will enhance effective communication between the hearing society and individuals who are Deaf/hard of hearing.

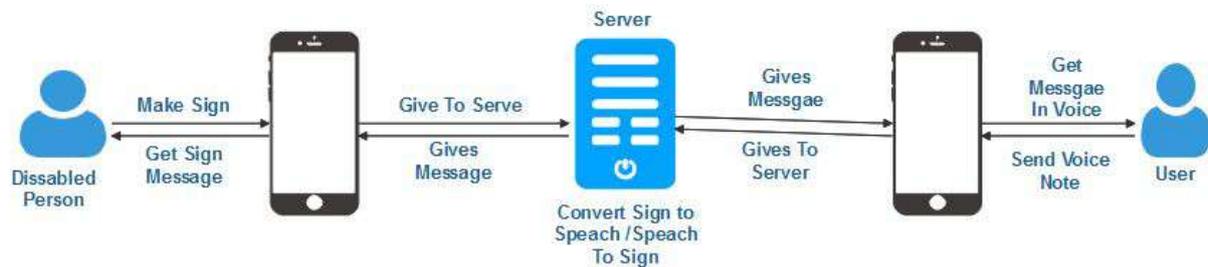
LITERATURE SURVEY

Deaf talk using 3D animated sign language: A sign language interpreter using Microsoft's kinect v2 this paper describes a neoteric approach to bridge the communication gap between deaf people and nor-mal human beings. In any community there exists such group of disable people who face severe difficulties in communication due to their speech and hearing impediments.

An Approach for Minimizing the Time Taken by Video Processing for Translating Sign Language to Simple Sentence in English Sign Language is the language of deaf. There are different types of sign languages spread all over the world. American Sign Language (ASL) is one of the sign languages. ASL is used by deaf Americans.

The First Complete Multipurpose Open Access Dataset of Isolated Characters for Bangla Sign Language the first complete isolated characters dataset of Bangla Sign Language (BdSL) is conducted in this article. It will help to increase interaction between hearing impaired community and general people.

SYSTEM ARCHITECTURE



System Description:

Indian Sign Language is used by deaf and hard of hearing people for communication by showing signs using different parts of body. All around the world there are different communities of deaf people and thus the language of these communities will be different. The Sign Language used in USA is American Sign Language (ASL); British Sign Language (BSL) is used in Britain; and Indian Sign Language (ISL) is used in India for expressing thoughts and communicating with each other. The "Indian Sign Language (ISL)" uses manual communication and body language (non-manual communication) to convey thoughts, ideas or feelings. ISL signs can be generally classified into three classes: One handed, two handed, and non-manual signs. One handed signs and two handed signs are also called manual signs where the signer uses his/her hands to make the signs for conveying the information. Non Manual signs are generated by changing the body posture and facial expressions.

This system is to help hearing impaired people in India interact with others as it translates English text to Sign language.

CONCLUSION

This system can support the communication between deaf and ordinary people. The aim of the project is to provide a complete dialog without knowing sign language. The program has two parts. Firstly, the voice recognition part uses speech processing methods. It takes the acoustic voice signal and converts it to a digital signal in computer and then show to the user the gif images as outcome. Secondly, the motion recognition part uses image processing methods. To increase the autonomy of deaf and hard of hearing people in their day-to-day professional and social lives, in this paper design and initial implementation of a new approach based on MFCC and Vector Quantization Method is described.

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