

A Survey Of Sign Language Recognition

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ABSTRACT

There are many people who are not able to speak and hear i.e. deaf and dumb. A deaf and dumb people make the communication with other people using their motion of hand and expression. We are developing such system which is called as sign language recognition for deaf and dumb people. In this system user have to store his signs first in the database after that he can use that sign while communicating with another person. When user communicate with another person by using that sign the another person can see that sign, a message related to that sign and also hear voice message related to sign so if the person is deaf he can see the message or if the person is dumb he can see or listen the voice message. Because this system normal person can understand the sign language so that normal people can communicate with deaf and dumb people easily. In this system we are using web camera for capturing the signs from user which will be converted to text and audio. First user have to store their signs into the system then he can use those signs for communication. Here we are using image and video processing for converting text message into speech by using Open cv library.

Keywords: Edge Detection, Human Computer Interface (HCI), Image Processing, kNN Search, Peak Detection, Sign Language Recognition System (SLRs).

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I. INTRODUCTION

What A gesture may be defined as a movement, usually of hand or face that expresses an idea, sentiment or emotion e.g. rising of eyebrows, shrugging of shoulders are some of the gestures we use in our day to day life. Sign language is a more organized and defined way of communication in which every word or alphabet is assigned some gesture. In American Sign Language (ASL) each alphabet of English vocabulary, A-Z, is assigned a unique gesture. Sign language is mostly used by the deaf, dumb or people with any other kind of disabilities. With the rapid advancements in technology, the use of computers in our daily life has increased manifolds. Our aim is to design a Human Computer Interface (HCI) system that can understand the sign language accurately so that the signing people may communicate with the non signing people without the need of an interpreter. It can be used to generate speech or text. Unfortunately, there has not been any system with these

capabilities so far. A huge population in India alone is of the deaf and dumb. It is our social responsibility to make this community more independent in life so that they can also be a part of this growing technology world. In this work a sample sign language has been used for the purpose of testing.

Loss of hearing can cause people to become isolated and lonely, having a tremendous affect on both their social and working life. Looking up the meaning of a sign is not a straightforward task. Sign Language is the well structured code gesture; every gesture has meaning assigned to it. Sign Language is the only means of communication for deaf people. With advancement of science and technology many techniques have been developed not only to minimize the problem of deaf people but also to implement it in different fields. It becomes difficult finding a well experienced and educated translator for the sign language every time and

everywhere but human computer interaction system for this can be installed anywhere possible. The motivation for developing such helpful application came from the fact that it would prove to be of utmost importance for socially aiding people and how it would help increasingly for social awareness as well. There are different categories of sign languages are there, Indian Sign Language, British Sign Language, American Sign Language etc. In our approach, having encountered an unknown sign, the user can simply perform the sign in front of a webcam. Then, the system compares the input sign with videos of signs stored in the system database, and presents the most similar signs (and potentially also their English translations) to the user and also produce the audio of that specific character. The user can then view the results and decide which (if any) of those results is correct. It will not only benefit the deaf and dumb people of India but also could be used in various applications in the technology field.

II. LITERATURE REVIEW

Different approaches have been used by different researchers for recognition of various hand gestures which were implemented in different fields. Some of the approaches were vision based approaches, data glove based approaches, soft computing approaches like Artificial Neural Network, Fuzzy logic, Genetic Algorithm and others like PCA, Canonical Analysis, etc. The whole approaches could be divided into three broad categories Hand segmentation approaches, Feature extraction approaches and Gesture recognition approaches.

A simplification used in this project, which was not found in any recognition methods researched, is the use of a wrist band to remove several degrees of freedom. This enabled three new recognition methods to be devised. The recognition frame rate achieved is comparable to most of the systems in existence (after allowance for processor speed) but the number of different gestures recognized and the recognition accuracy are amongst the best found. The generated audio will be useful for dumb people. A different method had been developed by Archana S Ghotkar, Ruche Khatal, Sanjana Khupase, Surbhi Asati and Mithila Hadop through Hand Gesture Recognition for Indian Sign Language.

III. PROPOSED OBJECTIVE

The deaf and dumb people becomes neglected from the society. The normal people does not involve them in society because normal people never understand the sign language and they are not able to learn sign language so that they cannot communicate with deaf and dumb people. So our project aims to bridge the gap between us and deaf and

dumb people by introducing sign language recognition system by developing a tool for communication of deaf and dumb people with normal people which will allow the user to understand the meaning of the sign with the help of text message and voice message.

IV. PROPOSED SYSTEM

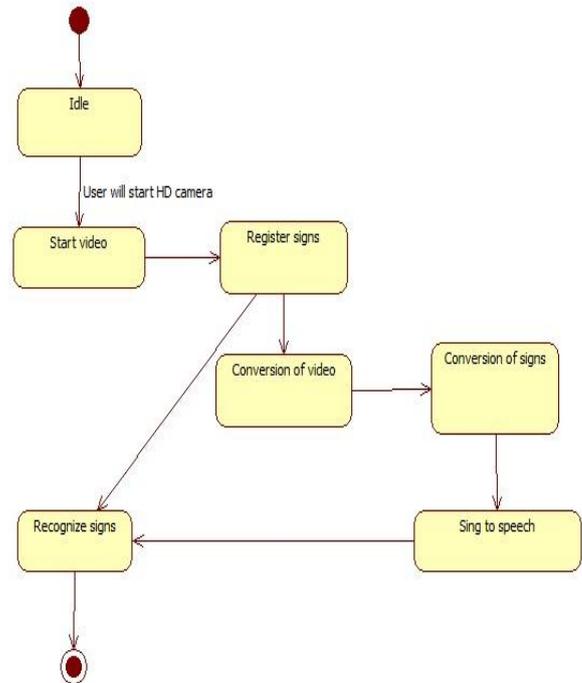


Fig 1. System Flow

V. CONCLUSION

This system not only improves the recognition rates of lacking alphabets, but also maintains the 100% recognition rate of other alphabets. The recognition time has also been improved significantly. It was observed that the recognition rate was fairly improved and recognition time was reduced significantly. This has been achieved by using knn search instead of contour method as is done before.

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