

Sign Language Recognition Using CNN And SVM

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Abstract- For the people who are partially or permanently unable to hear the sign is most efficient way of communication. Due to the complexity the sign language is bit hard to understand. Many peoples have been researching on sign language since years back. Due to the complexity of sign language it's been making the system harder to recognize all the words accurately So there are a lot methods for sign language. Because of the similarity between Sign language recognition and Action Recognition both are almost impossible to distinguish, so we are trying to implement one of best models in Action Recognition which is called as i3d inception model to clear all these difficulties and complexities. It is also a new Action Recognition model with very high accuracy.

Keywords- sign Language, American Sign Language, ASL, Conventional Neural Networks

I. INTRODUCTION

Hard of hearing is a descriptor word which means incapable to hear. Difficulty in hearing happened to certain people which makes them limited to do communication with each other. Readily, there is a strategy called Sign Language which is an excellent method to have them the option to speak with others. Most of the partial or permanently deaf people prefers sign language for communication. But a large sum of people does not even consider that there are people who can't even communicate with others properly because most people neglect to learn the sign language, we figured this problem can be solved using technology. We went through a bunch of past publications and research in this regard and with all the research we figured that Convolutional Neural Networks can be a key in solving this problem . The system we're proposing uses webcam to capture the images of sign language from any video and will figure out the exact message and will provide users the message in English language. There are many factors which we need to consider while building this system, For instance, each nation has its own Sign Language and standard. There is no universal sign language , there is American Sign Language , British Sign Language , Pidgin Signed English etc. still we aim to build this system and help the deaf community to establish a communication bridge. Whenever the blind or muted person can interact with others through their signs then

normal person couldn't understood the word that can he/she says. Design a system that integrates deaf and muted peoples understanding with sign language recognition using CNN.

II. FIGURES/BLOCK DIAGRAM

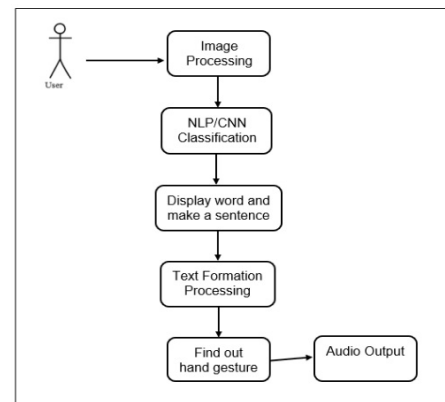


Fig.1 Block Diagram

III. SYSTEM WORKING

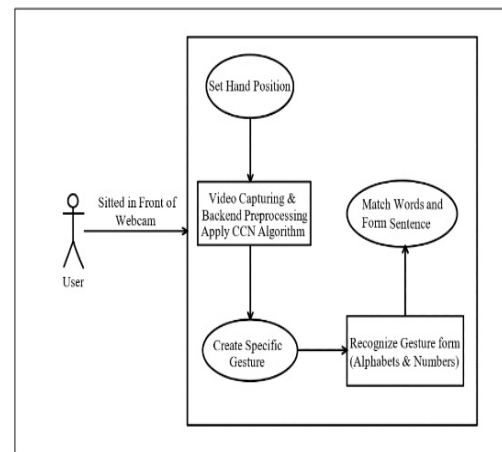


Fig 2 System Architecture Diagram

The system architecture diagram shows the work of the system in a detailed manner. It starts off with Image Processing because here we are using webcam videos as input which will further divided into frames for signs recognition hence first step which our system occurs is Image processing, then after that the classification algorithm is applied i.e. CNN classification. Then the system will display all the recognized

words and will try to generate whole texts and formulate the message, along with these the system will find out hand gestures for the audio output.

IV. ADVANTAGES OF THIS PROJECT

- 1) This application will help people with hearing disability in communication.
- 2) This application will help non deaf people to communicate with deaf people.
- 3) This application will remove the communication barrier between the people.
- 4) This application will help the deaf community to make their stand equal in society with others.

V. LIMITATION/CONSTRAINTS OF PROJECT

- 1) There's no universal sign language, the project is built for American Sign Language therefore British Sign Language Recognition won't work.
- 2) This application will help non deaf people to communicate with deaf people.

VI. APPLICATION

- 1) Community : This application is useful for people with hearing disability, with this application the deaf community can communicate with non deaf people easily and it will help everyone to understand the opinions of deaf people in a very easy and simple manner.
- 1) Educational Systems: This application can be vastly useful to students as we can educate them about communications with disabled people, to remove the lack of knowledge of sign language which is the main reason why we need this kind of system in the first place.

VII. CONCLUSION

The sign language recognition system is feasible for muted persons because they can be communicated in deaf via this system. The system can capture hand gestures and navigate the words as in text format it will use for muted persons to see these words and understand the sentences. It is also usable for blind people because they need to communicate with normal persons (using speech recognition). We develop this system using Neural Networks Algorithm to propose the system for social impact and to remove the communication barriers between regular and deaf people.

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