HAND GESTURE RECOGNITION SYSTEM FOR DUMB AND DEAF PEOPLE

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Abstract - Hand Gesture recognition system is one of the best technique has developed in last few year, the reason behind to get success is ability to cooperate with machine. Body gestures are consider most common way to communication along human and personal computer in virtual world. To developed effective algorithm to that can recognize, interpret, process, and simulate human affections. Advance computing has ability to humanize digital interactions. This pepper introduces application using Computer Vision(CV) to recognize hand gesture. A camera takes live footage and analysis gestures on the basis of analysis system takes decision and recognize gestures.

*Key Words***:** Hand Gesture, Open CV, MediaPipe, Hand land marks.

1. INTRODUCTION

In country like India we found 40 million people are visually impaired person and 2.42 people are deaf and able to speak. The vision and voice are the main problem in this people. They only have one median to connect to society that is sigh language. To the society it is mandatory to understand there sigh language. Some time it go's hard to society to understand there sigh language. So the we have design a system which may help society to understand there sigh language. The system has design with computer system and camera. The system or algorithm is able to recognize sigh language. In this algorithm Image processing has used as to recognize sigh. The complete algorithm has developed using python programming language. Python is one of the best programing language to do develop complex algorithm.

1.1 Problem Statement

The language of communication for deaf and dumb people is sign language. Most of these physically impaired people are dependent on sign language translators to express their thoughts to rest of the world which may make them feel uncomfortable. This causes these people to isolate from society. Hence, Sign language recognition is very important. A sign language is made of various actions formed by physical movement of body parts i.e. hand, arms and facial expressions.

1.2. SOLUTIONS

The purpose use of hand gestures for recognition of Indian sign language. Hand gesture recognition system user friendly way of interaction with the computer o any computerize machine which is more familiar or easy to use to the human beings. The communication between the dumb, visually impaired person are made only by their expressions and their hand gestures, We may design a system which is able to communicate or can be median for society.
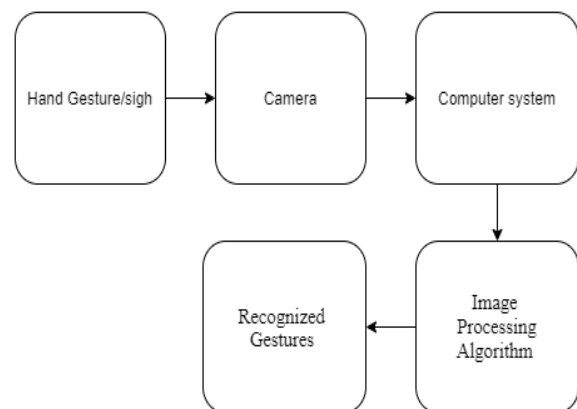
2. BLOCK DIAGRAM

Fig1: Block Diagram

Above fig shows that the block of the proposed system.it this system we have used computer to recognize hand gestures. The input of computer system is given to through the camera. Which can be systems camera or external USB camera. Here in the system hand gestures and of human are the input given to camera. Given hand gestures are getting recognized by applying image processing on to given input to apply image processing we have used python machine algorithms have used.
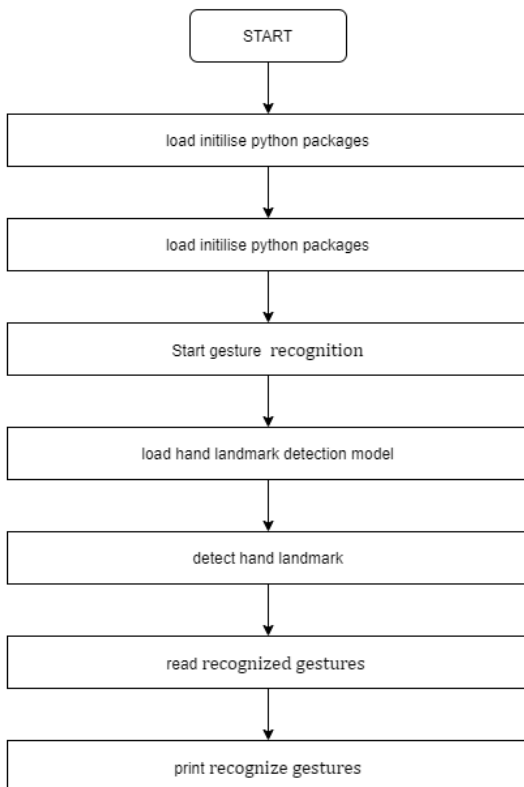
3. FLOW CHART

Fig2:Flow Chart

4. USED PROGRAMMING LANGUGE

Here in the system whole algorithm has developed using python programing language. Python is high level, interpreted programming language which is widely used develop complex machine learning algorithm deep learning algorithms using varies packages. Here in the system we have used bellow's python packages to develop algorithm.

4.1 OPEN CV

Open cv computer vision library which is dominated for image processing it also called open source computer vision library. Mainly used for real time computer vision and image processing. The main library has design in c ++. Open CV open source library started in 2011.

4.2 MEDIA PIPE

Media pipe python library which has design for machine learning package which has built in trained data set in tensor flow. it can form the basis for sign language understanding and hand gesture control, and can also enable the overlay of digital content and information on top of the physical world in augmented reality[1]. Media pipe most perfect solution for the hand and finger tracking solution. It employs Deep learning to infer 21 3D landmark on hand. MediaPipe Hands utilizes an ML pipeline consisting of multiple models working together: A palm detection model that operates on the full image and returns an oriented hand bounding box[1].

4.3 PYPQT5

PyQt5 is a python package. Used to build GUI application. PyQt5's Qtcore module contains all the class of GUI design.

6. RESULTS

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7. CONCLUSION

In this paper we have done hand gesture recognition using python. The language of communication for deaf and dumb people is sign language. Most of these physically impaired people are dependent on sign language translators to express their thoughts to rest of the world which may make them feel uncomfortable. So we have developed a algorithm which can recognize deaf, dumb people body language and gestures.

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