Real-Time Hand Signs Language Recognition System

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Abstract: This paper proposes the real-time hand signs language detection system. As communication is an important part of life. And communication plays a vital role. Learning and remembering hand signs is not easy because of the above major issue, there is a huge communication gap present between mute/deaf persons with normal persons. To avoid the misleading interpretation of communication is being improved by this proposed system. The above problem is giving a serious impact on their lives, by clearing this problem the object can be involved freely environment and express the communication. The given proposed system is to solve the above communication problem, by evaluating the pre-defined dataset of signs images.

Keywords: Real-Time Detection, Hand Signs Detection, Image Processing, Object Detection, American Sign Language.

1. INTRODUCTION

Learning and remembering hand signs is not as easy, the understanding of the sign language is difficult for remember. Because of the above major issue, there is a huge communication gap present in between mute/deaf with normal person. As this communication gap is too high, those children cannot express their thoughts, ideas in front of the world. Hand gesture system classify it into two categories: sensor based and object based approaches. First category will make the user to wear a hand detection/capture device for interaction like camera devices, finger markers, etc. Forcefully, these methods ensure an easy hand detection process and provide good detection results, but they are unnatural and uncomfortable and not real-time for daily applications. The second category. Which uses the techniques which is the field of computer vision on the images capture, the segmentation of skin generally the step first and which is obtained skin points. As compare with the other existing works then found that most of the existent works are really limited with in the cloths and background and this makes difficult to find the possibility of the hand detection. With the help of booming technologies like object detection, openCV and ML, it can overcome the above Problem of communication.

2. LITERATURE SURVEY

Paper [1]:
Hand and Wrist Localization Approach for Features Extraction in Arabic Sign Language Recognition   Year: 2017 DOI Bookmark:9.1109/AICCSA.2017.67
System Goals: Receiving input by various methods and processing it to produce appropriate results.
Methods Used: Wrist Localization Approach for Features Extraction in Arabic Sign Language Recognition Uses some hardware to achieve output.

Paper [2]: Deep Learning Based Hand Detection in Cluttered Environment Using Skin Segmentation   Year: 2017 DOI Bookmark:10.1109/ICCVW.2017.81
System Goals: Input by camera and processing it to produce appropriate results.
Methods Used: Detection in Cluttered Environment Using Skin Segmentation labels colors to different objects that's how it identifies skin objects.

Paper [3]: Capturing human hand motion in image sequences 10.1109/MOTION.2002.1182220
System Goals: Input by camera and processing it to produce appropriate results.
Methods Used: By Capturing human hand motion in image sequences compares points plotted on same images and gives output.

Paper [4]: Efficient Hand Gesture Rendering and Decoding using a Simple Gesture Library, Year: 2006, Volume: 1, Pages: 1857-1860,
DOIBookmark:10.1109/ICME.2006.262916
System Goals: Input by camera and processing it to produce appropriate results.
Methods Used: This method uses the Tensor flow library, also for comparing images it uses an object detection model.

Paper [5]: Hand Skeleton Estimation Based on Two Specific Gestures, Date of Conference: 21-22 Oct. 2017, DOI: 10.1109/ICVRV.2017.00057
System Goals: Mathematical calculation produce appropriate results.
Methods Used: design a calibration method based on two specific gestures to achieve the correction of the initial error of the sensor-wearing process and calculate the proportion of the main bones of the hand.

Paper [6]: Development of a Method for Capturing Human Motion Using a RGB-D Camera. Year: 2017, Volume: 1, Pages: 97-106DOI Bookmark:10.1109/SVR.2017.21
System Goals: Input by camera and processing it to produce appropriate results.
Methods Used: This systems are able to track joints of human body using only one RGB-D sensor and obtain accurate results.
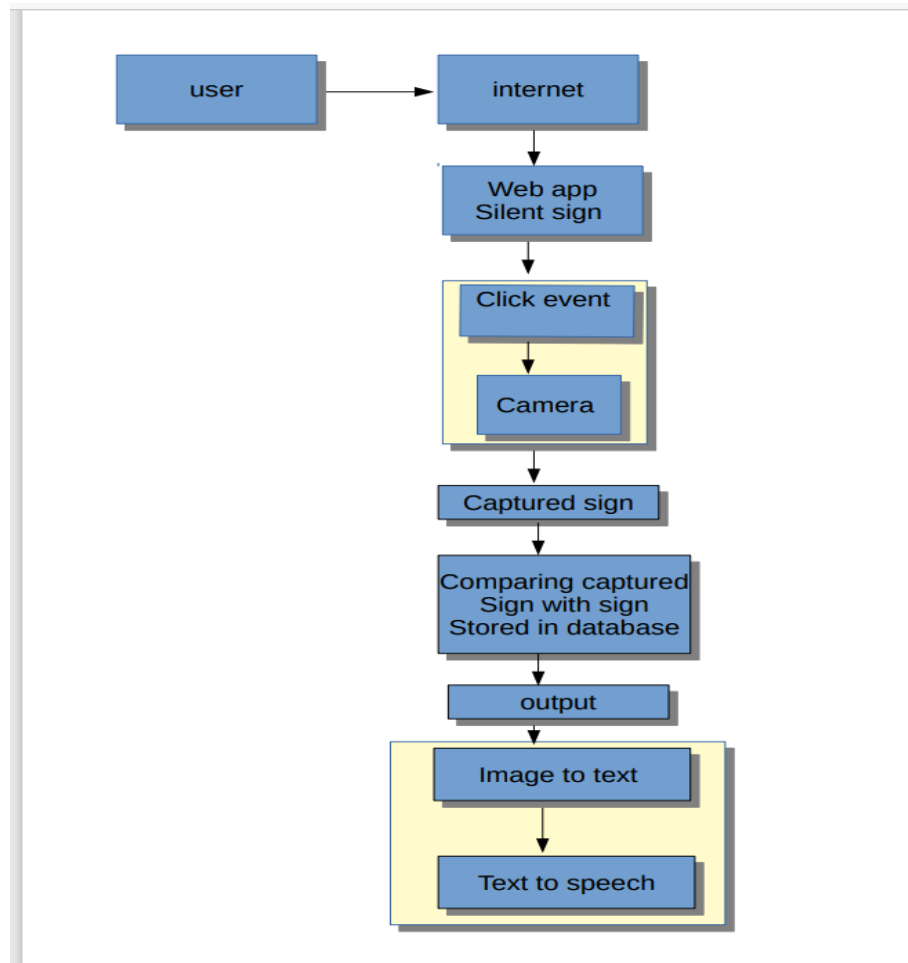
3. PROPOSED SYSTEM

Real-time Gesture detection works in below steps:

Step 1: Detect the hand sign using system camera using openCV library.
Step 2: capture the latest image of the hand sign and pass that to the algorithm.
Step 3: At final step we comparing the result by using set of images with input images. And print the final text output.

Flow diagram

4. CONCLUSION

By using OpenCV and ML, the system is proposed to solve the Real-time problems.

5. REFERENCES

Paper [1]: Hand and Wrist Localization Approach for Features Extraction in Arabic Sign Language Recognition Year: 2017 DOI Bookmark:9.1109/AICCSA.2017.67

Paper [2]: Deep Learning Based Hand Detection in Cluttered Environment Using Skin Segmentation   Year: 2017 DOI Bookmark:10.1109/ICCVW.2017.81

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Paper [6]: Development of a Method for Capturing Human Motion Using a RGB-D Camera. Year: 2017,   Volume: 1, Pages: 97-106 Bookmark:10.1109/SVR.2017.21