

An Efficient Communication System for Blind, Dumb and Deaf People

Pooja Narute¹, Aishwarya Pote², Aishwarya Poman³, Sayali Pawar⁴

^{1,2,3,4} NBN Sinhgad School of Engineering

Abstract - India is densely populated country. The numbers of blind, deaf and dumb people are high as 70 million. Hand gestures are a strong communication for hearing impaired society. It is helpful for establishing between human and computer. The aim of the project is to develop a system for blind, deaf and dumb people that will help them live a better life.

User will record a voice and the voice will be sent to the server. The server will convert speech to text. After that text will be classified, sign will be generated and sent over to the application of dumb or deaf person and the opposite system i.e. sign to speech can be developed for communication with visually impaired people. Hence, visually and hearing impaired people can communicate efficiently and effortlessly using this system.

Key Words: Image processing, Text recognition, Sign Recognition, Sign Language

1. INTRODUCTION

The essential application for communication via signs acknowledgment is to enhance the dialect training. Computer acknowledgment of sign based communication is an imperative research issue for empowering correspondence with hearing disabled individuals. Signs are solid medium of correspondence for hearing debilitated society. It is useful for building up correspondence among human and computer. In this framework we propose a consistent communication through signing sign acknowledgment framework where hand is utilized for playing out any sign. Perceiving a communication via signs

From persistent signals is an extremely difficult research issue.

In this system user will begin video from camera. User will have the capacity to enroll distinctive signs to promote acknowledgment utilizing camera. At the point when user will begin acknowledgment action and give different hand signs in front of camera sign will be identified and windows operation like enter or begin will be performed. For instance Thumbs up sign indicates ENTER button.

2. BACKGROUND STUDY

2.1 Object modeling for environment perception through human-robot interaction

In this paper they have proposed another strategy of object modelling for environment perception through human-robot interaction. Particularly, within a multi-model object modelling architecture, they have tackled the gestural language part using a stereo camera. To do that, they have characterized three human signals in view of the measure of target objects; holding little questions, pointing at medium ones, and reaching two corner purposes of huge ones. When a user indicates where the target object is located in the environment, the robot translates the client's motion and catches at least one pictures including the objective items [3].

2.2 Methodology and Comparison of Devices for Recognition of Sign Language Characters

In this paper they have proposed a system which is capable of identifying sign language characters and comparing them in order to verify layout with better accuracy. It consists of gestospacial and facial expression for purpose of transmitting expressions [1].

2.3 A Mobile Application of American Sign Language Translation via Image Processing Algorithms

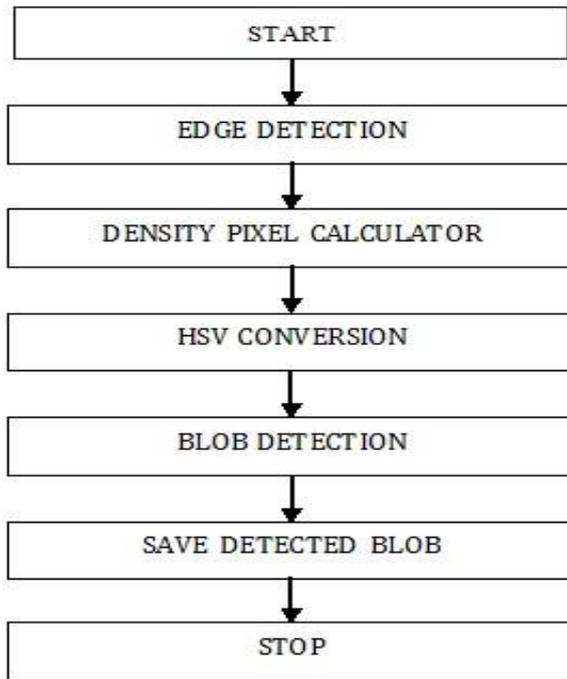
Due to relative lack of pervasive sign language usage within our society, deaf and other verbally-challenged people tend to face difficulty in communicating on a daily basis. In this paper they have established Image processing techniques which are used to recognize images of several sign language signs. They have successfully implemented the platform that is able to recognize and translate 16 different American Sign Language signs [2].

3. TECHNOLOGIES TO BE USED

3.1 Blob Detection

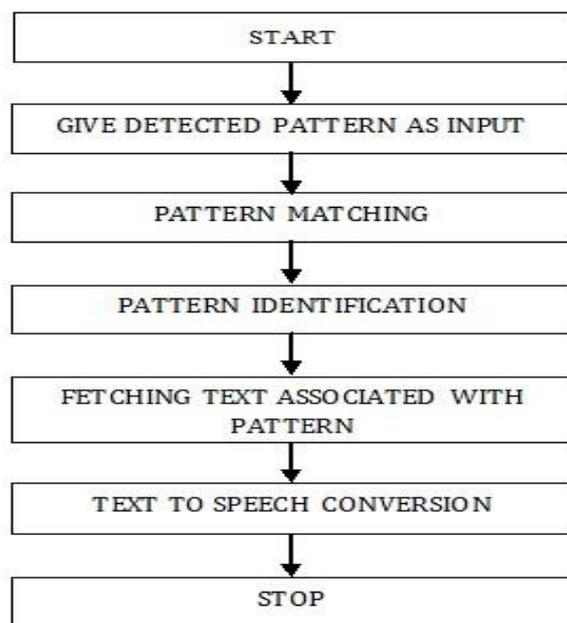
This calculation draws rectangles around abandoned part. Strategies are gone for distinguishing districts in a computerized picture that vary in needs, Such as splendor or shading, contrasted with encompassing locales. Autonomously distinguish comparing districts in scaled variants of a similar picture.

A BLOB is the district of a picture in which a few properties are steady or roughly consistent. Every one of the focuses in a BLOB can be considered in some sense to be like each other.



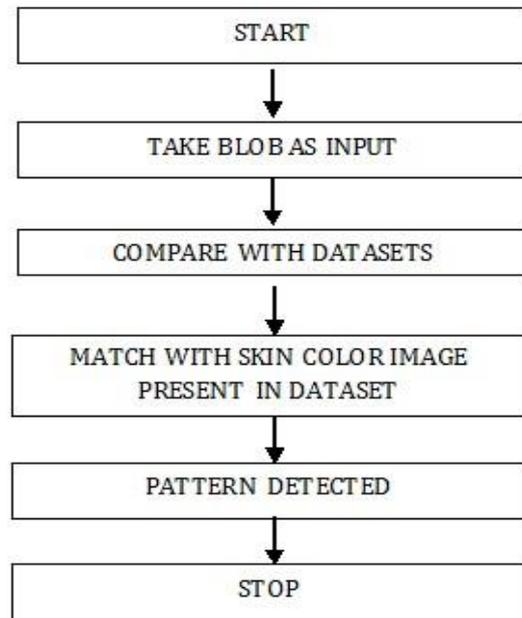
3.2 Template Matching

Layout coordinating is a method in computerized picture preparing for discovering little parts of a picture which coordinate a format picture. It can be utilized as a part of assembling as a piece of value control. An approach to explore portable robot, or as an approach to distinguish edges in pictures.



3.3 Skin Color Detection

Skin location is the way toward discovering skin hued pixels and locales in a picture or a video. This procedure is normally utilized as a preprocessing advance to discover locales that possibly have human appearances and appendages in pictures.



4. PROPOSED SYSTEM

Proposed systems scope is related with computer education to dumb, deaf and blind people.

Framework utilizes less equipment so it is reasonable and compact. Proposed System makes new specialized device to cooperate with computer, so regardless of whether Keyboard isn't working then additionally we can play out a portion of the operations utilizing Hand sign.

For Example:

1. Thumbs Up sing indicates ENTER Button.
2. Victory sign indicates Start.

Proposed system allows user to store different signs and use them for communication, Because of this, normal people also learn sign languages that helps them to communicate with deaf, blind and dumb people.

5. PURPOSE

Main purpose of the system is to recognize sign languages having different hand gestures. This application is helpful to study different sign languages.

Purpose of the system is to make communication between Humans and Computers using Sign Languages.

6. CHARACTERISTICS

1. Interface will allow user to start video from camera.
2. User will do different hand signs in front of camera.
3. GUI interface – User will be able to see Video and recognized sign.
4. User will be able to operate windows after recognizing sign.

- [3] Soohwan Kim; Dong Hwan Kim; Sung-Kee Park [2010] [Object modeling for environment perception through human-robot interaction]

7. SYSTEM ARCHITECTURE

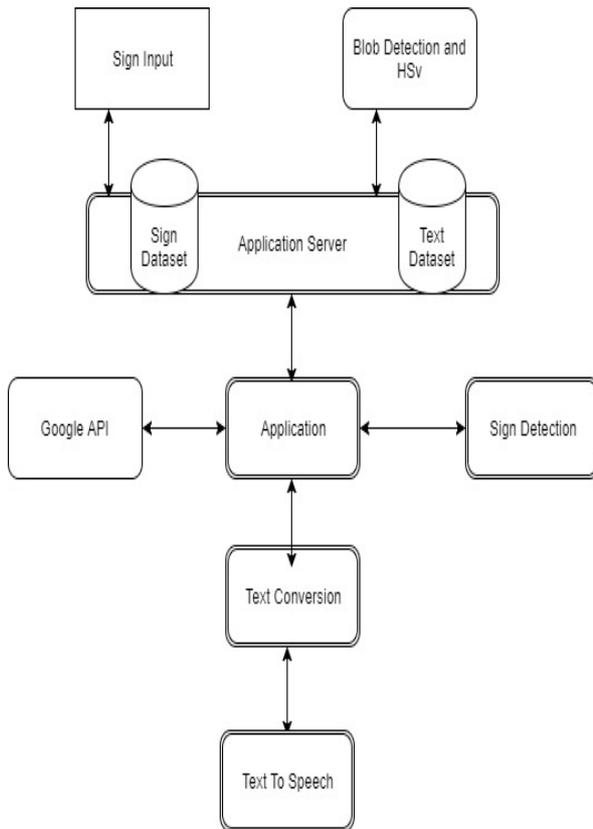


Fig.1. Architectural Diagram

8. CONCLUSION

Our proposed system aims to bridge the gap using Image Processing. Sign Language can be captured, recognized, stored and use of further computer operations.

REFERENCES

- [1] Brunna Carolinne, Rocha Silva, Geovanne Pereira Furriel [2017] [Methodology and comparison of Devices for Recognition of Sign Language Characters]
- [2] Cheok Ming Jin, Zaid Omar [2016] [A Mobile Application of American Sign Language Translation via Image Processing Algorithms]