IDEATION REPORT

Real-Time Communication System Powered by AI for Specially Abled

INTRODUCTION

- Dumb people are usually face some problems on normal communication with other people in society. It has been observed that they sometimes find it difficult to interact with normal people with their gestures.
- To overcome these problems, we have proposed a system that uses cameras to capture and convert videos of hand gestures from dumb people who turn into speech for understanding normal people.
- The project uses the image processing system to identify, especially the English alphabetical character language used by the deaf to communicate.
- The system proposed to develop and build an intelligent system that uses image processing, machine learning and artificial intelligence concepts to make visual inputs of hand gestures of sign language and to create an easily recognizable form of outputs.

TECHNOLOGIES TO BE USED

1. Blob Detection

- This algorithm helps to draw rectangles around the defective part. The methods aim to detect areas in a digital image that differ in properties, such as brightness or colour, compared to surrounding regions.

2. Skin Colour Recognition

- This process is typically used as a pre processing step to find areas that may have human faces and limbs in images.

3. Template Matching

- Template matching is a technique in digital image processing to find small portions of an image that match a template image.

METHODOLOGY

1. Generation of the database

- Here our system takes the hand movements through the web camera. In this proposed method, 26 combinations of Indian characters are developed by the use of right Hand saved in training database.

2. Image Pre processing and Segmentation

- The pre-processing takes place on these recorded input gestures. Then the segmentation Hands are performed to separate object and background.

3. Feature Extraction

- The segmented hand image is represented with certain features. The characteristics are used for gesture recognition with the template matching algorithm that gives Optimized results.

4. Sign Recognition

- The given character gesture is recognized with the skin colour recognition and the template Matching from the record.

5. Sign to text and speech conversion

- The recognized sign is then mapped into text and further converted into speech With TTS libraries.

USER CHARACTERISTICS

- Systems interface will allow user to start video from camera.
- User will do different hand gestures in front of camera.
- User will able to see video, recognized sign on GUI.
- User will get output in the form of sound which is converted from Speech of recognized sign.

SCOPE

- Proposed systems scope is related with education of dumb peoples. Dumb people faces many problems when normal person could not understand their language. They were facing communication gap with normal peoples.
- For communication between deaf person and a second person, a mediator is required to translate sign language of deaf person. But a mediator is required to know the sign language used by deaf person. But this is not always possible since there are multiple sign languages for multiple languages.

CONCLUSION

- The proposed communication system between Deaf and Dumb people and ordinary people are aiming for it when bridging the communication gap between two societies. Several work is done earlier in this area, but this paper adds in complete two - sided communication in an efficient manner because the system is implemented as one Handy mobile application. So, it really serves its needs in all aspects.