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Implementation of Bidirectional Voice Communication between Normal & Deaf & Dumb People Using Hand Wave & Voice Recognition

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ABSTRACT

According to the "World Federation Of The Deaf"there are about 70 million people in the world who are Deaf and use "Sign Language" to communicate. In this project the Main Idea of the Project is to understand the communication of the Deaf & Dumb People.The Android Application is deployed to capture Images through Camera. Deaf & Dumb people will show their Hand Gesture in front of Camera and it sends to the Server. Server processes the Hand Gesture and corresponding Voice alert is played in the Normal Person side (Android).Normal Person will speak through the Android Application, which recognizes the Voice input and it converts into Hand Gesture image to the Deaf & Dumb Person. We can also transfer the Hand Gesture input by deaf & dumb person to multiple Android normal People. We can Establish Two way Communication between Deaf & Dumb child with normal Child. There are global hand gestures present in the application. In the existing system there is no hand recognition system to indicate the actions.

PREFACE

As mentioned by World Health Organizationhearing and speaking are the utmost vital senses required for a man to survive in this world. But not all are lucky enough to be blessed by these gift and the people that we focus on are deaf and dumb where they can neither hear to speak.All of us around the world have seen people with difficulties and people who do have their vital senses and we all would have wondered how to help them. Today we have taken the initiative to help them in our field and the field that interest us so that we can have fun while helping people.These people are not accepted in the society as a regular people and are treated differently. There are various people with many physical impairment where many people are deaf, dumb, blind and do not have most of their utmost vital organs or are malfunctioned. To overcome these differences of being speech and hearing impaired we have created this application. Since there are billions of people with such defect and are not able to communicate this application helps in communicating. These people cannot express their feelings easily to people and develop psychological problems. Since our application focuses on the deaf and the dumb the universal language used by them is the sign language therefore using this sign language we have decided to make an application that will capture these images and give the voice output for that image. This application will have a voice to image and image to voice conversion. only difference here is that we are using it to convert it to voice to images and images to voice as we know that it is a challenge and this is a challenge we are willing to take for the sake of helping people the as much as we can and the technology today is flawless with the help of this advanced technology we can create a better world where not everything is about money but the very thing about caring and love. We use the same concept of Speech to text and text to speech.

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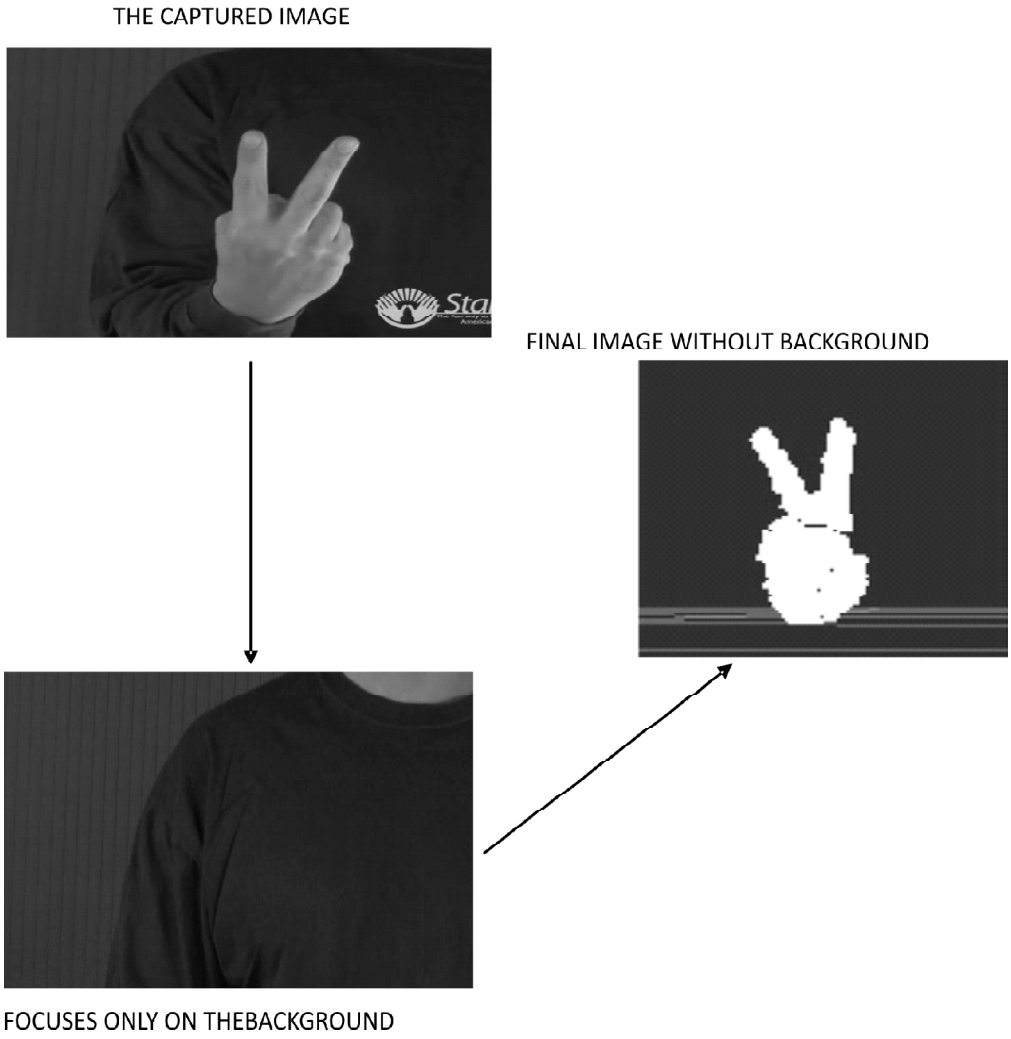
METHODOLOGY

Proposed System

Image Acquisition: Gesture to Voice

This Android Application has two modules, first module is where we initiate to capture the images and convert it into its voice message. This application gains access to the camera with the help of which when we select the option of hand gestures in the application it triggers the camera with the help of which we cancapture images once the images are captured it gets saved in d database and then the images aresent directly to the server. Once the server receives the captured images it uses the BACKGROUND SUBTRACTION ALGORITHM to compare the captured image to the image uploaded in the application. Since the application depends completely on the hang gestures this algorithm focuses completely on the hand gesture.The background subtraction technique is where when a specific object in the picture is targeted and the rest of the image is made murky. Once the image is made murky it then compares with the image present in its database. Once it checks finds a suitable match its image is compared it uses this technique to identify the picture. Once there is an appropriate match it has a voice message attached to that particular image and it plays the voice message related to that image. If there is not appropriate match to that image it displays no match and that image can be entered into the application with its new appropriate voice file.After entering into the application the module choices are provided when handgesture is clicked this module opens up and this operation takes place. We can just come back to come out of that particular module and then we can enter into another module.



BACKGROUND SUBTRACTION

Image Acquisition: Voice to Gesture

This is the second module in this project where the user can speak into the application andit records the users voice and according to speech and the words their appropriate image is displayed. The following technique used here is the SPEECH RECOGNITION TECHNIQUE. In this technique voice is converted to gestureimage we use this speech recognition technology which are made from the Hidden Markov Model and this speech recognition technology uses DNN(Deep Neural Netwotk) where the voice of the user is recorded and it compares with the images in the database. If no appropriate image is present to that appropriate word it displays no image. The output comes as an series of images as to an image for each word it has recognized. This voice to gesture is a very challenging technique only if that word and that appropriate image is in the database can be done. If there is an inappropriate word we can go into the database and the gesture with its word.

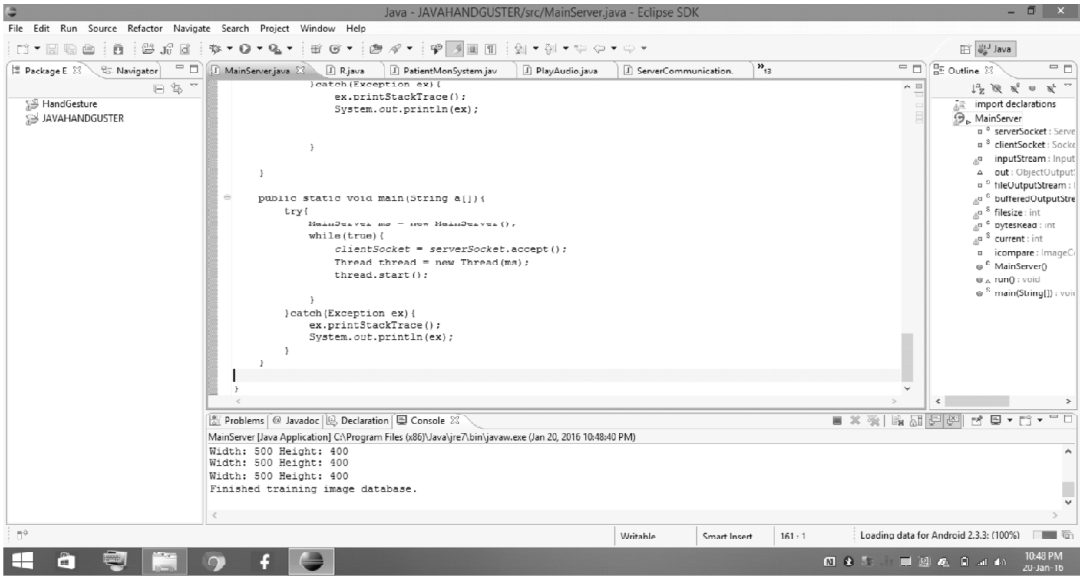
EXISTING SYSTEM

The existing system is an Desktop application where the web camera is used to communicate and make hand Gesture where the meaning of that hand gesture is displayed as text in the receivers computer. This application can only be used by the Deaf and the Dumb people only. This project uses Scale Invariance Fourier Transform (SIFT) and after the images are captured by the web camera the SIFT algorithm will perform the feature extraction. The basic code for opening the web camera will be done through MATLAB and then capturing the image as frame per second. As inspired by this existing system the thought of creating a mobile application for understanding and communicating with the deaf and dumb everywhere is evident.

RESULTS AND DISCUSSIONS

Server Check

This application when starts should be connected with the appropriate IP address of the server without which the whole implementation would fail. Once the IP address of the server is entered then the whole server program is run and then the implementation of the application starts working.Once the Server check is done all the other functionalities will perform properly the voice output for all the gestures are to be put correctly and the expected output is occurred.



CONCLUSION

This application is where it helps the communication bond become stronger between the deaf, dumb and the normal people. This not only help in communicating it help the deaf and dumb to communicate without feeling inferior and the world will be able to understand and reply back to their gestures. This can be done in anywhere and everywhere since its portable as an android application and not an desktop application.

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