ANDROID CAMERA BASED HAND GESTURE RECOGNITION WITH CORRESPONDENCE VOICE PLAY BACK / COMMUNICATION

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ABSTRACT

In our Project it is to establish the communication between Normal Person & Deaf & Dumb Person. Disabled People will show their Hand Gesture to the Camera and communicates to the Normal Person. Deaf & Dumb Person will show the Hand Gesture to the Android Camera and Communicates to the Server to process the Hand Gesture Images via Android Application. Server will transmit the corresponding Values to the Android Phone and the Voice is played accordingly.

Keywords*:* Gesture Recognition, Principle compound analysis algorithm, Accelerometer, Sobel Edge detector,

INTRODUCTION

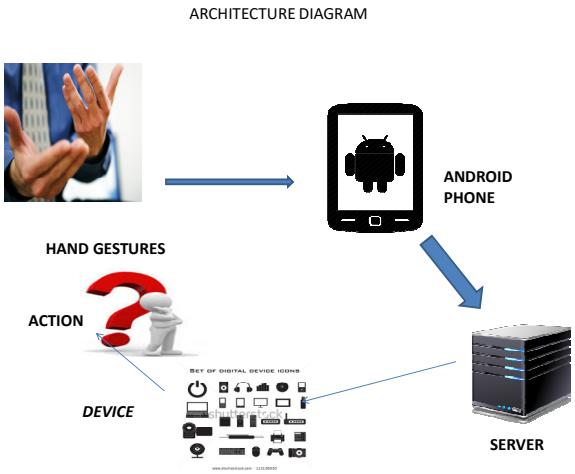
Among the set of gestures intuitively performed by humans when communicating with each other, pointing gestures are especially interesting for communication and is perhaps the most intuitive interface for selection. They open up the possibility of intuitively indicating objects and locations, e.g., to make a robot change direction of its movement or to simply mark some object. This is particularly useful in combination with speech recognition as pointing gestures can be used to specify parameters of location in verbal statements. Gesture recognition is a topic in computer science and language technology with the goal of interpreting human gestures via mathematical algorithms. Gestures can originate from any bodily motion or state but commonly originate from the face or hand. Gesture recognition can be seen as a way for computers to begin to understand human body language, thus building a richer bridge between machines and humans [1]. It enables humans to communicate with the machine (HMI) and interact naturally without any mechanical devices. There has been always considered a challenge in the development of a natural interaction interface, where people interact with technology as they are used to interact with the real world. A hand free interface, based only on human gestures, where no devices are attached to the user, will naturally immerse the user from the real world to the virtual environment.

EXISTING SYSTEM: In this existing system the research on the physically challenged people is less. Especially for Deaf &Dumb people there is no service is provided inside their home to understand their needs in both normal and emergency situation i.e there is no gesture recognition approach through the smart phone. Beyond Emergency Situation, Even Deaf & Dumb Person can communicate with any normal Person, it is not Practical that all Persons would know Deaf & Dumb Language. That too in the case of Emergency, these people cannot even coordinate with the normal people for their basic Needs also.

PROPOSED SYSTEM : In the proposed System, Android Application is deployed to capture Images through Camera. Main Idea of the Project is to understand the communication of the Deaf & Dumb People. Deaf & Dumb People will show their Hand Gesture to the Camera and communicates to the Normal Persons. Android Application is Deployed in the Phone, which initiates the Camera and captures the Gesture provided by the Disabled Person. This Image is processed by the Remote Cloud Server through Internet Connection. Cloud Server will have a set of Prestored Data set of Gestures which is used for comparison. Now Disabled Person's Gesture is compared with the Prestored Data Set in the Cloud Server [2]. This Server identifies the corresponding Gestures and transmit a Corresponding Digital value to the Android Phone again. Once Android App receives the value it automatically plays the corresponding Prerecorded Audio file to the Normal Person. So that normal Person cloud understands the requirement of the Disabled person. Location of the Disabled Person is also Tracked using GPS Device in the Android phone is obtained and immediate Support is provided to the Patient in case of any Emergency.

BASIC MODULE OF MOBILE CLIENT: Mobile Client is an Android application which created and installed in the User's Android Mobile Phone.

USER AUTHENTICATION: The Application First Page Consist of the User registration Process. While creating the Android Application, we have to design the page by dragging the tools like Button, Text field, and Radio Button. Once we create the full mobile application, it will generate Android Platform Kit (APK) file. This APK file will be installed in the User's Mobile Phone [3-5].



SERVER PROCESS: The Server Application which is used to communicate with the Mobile Clients. In the Project we are using Bluetooth technology to access with the Client. The Server will monitor the Mobile Client's accessing information and Respond to Client's Requested

Information. The Server will not allow the Unauthorized User from entering into the mobile phone.

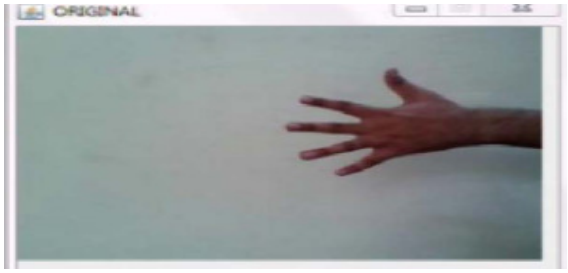
Image pre-processing module: In the field of image processing it is very interesting to recognize the human gesture for general life applications. It is nonverbal way of communication and this research area is full of innovative approaches. That is in this module every image as meaning and it will be stored in the server and it create the communication between the disable and human [6-8].

IMAGE ACQUISITION MODULE: The module briefly describes the schemes of capturing the image from android device, image detection, processing the image to recognize the gestures as well as voice result**.**

Recognition module: The main features used are centroid in the hand, presence of thumb and number of peaks in the hand gesture. That is the algorithm is based on shape based features by keeping in mind that shape of human hand is same for all human beings except in some situations.

FINAL VOICE PROCESS MODULE: Once the image captured and send through the GPRS or Bluetooth to the server .After that the server will recognized the image meaning and produce the result as voice .In addition we will also find the heart beat of the disabled patient and send the heart beat result to the android user [9].

Original Image Captured From Android Device



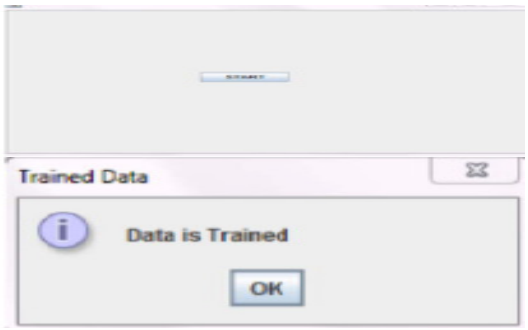
Filtered edge image:

Image after thinning:

Generated token of the original image:

TRAINED DATABASES OF GESTURE BY PREVIOUS PROCESS MODULES:

Initialization of the application:



CONCLUSION

Deaf/dumb person can communicate with other ordinary people using android application through mobile phone. Their hand gestures will be converted into voice by using principle compound analysis algorithm.

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