International Journal of Science Engineering and Advance Technology

Gesture to Voice Conversion for Speech and Hearing Impaired Disabilities

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ABSTRACT:

Glove-based systems stand for one of the most significant efforts meant at obtain hand movement data. It also analyzes the kind of the devices, offers a road map of the development of the technology, and converse precincts of current technology and drift at the frontiers of investigate. The progress of the most admired devices for hand society achievement, glove-based systems, started about 30 years ago and keeps on to appoint a growing number of researchers. It is then not surprising that an extensive amount of research effort has been staunch to developing technologies for cram contact and management and for enhances our facility to act upon such tasks.

KEYWORDS: Gestures recognition, man–machine interfaces, wearable sensors.

I. INTRODUCTION:

The chief object is to bring in sensorized gloves to the non expert readers paying attention in selecting one of these devices for their exacting application. Our incentive for writing this paper is the surveillance that relevant information on such devices, counting measurement performance, is sprinkled across the manufacturing and methodical literature and, even when located, can be unreachable to the non specialist. This makes it complicated for a beginner to conclude whether and how well a scrupulous glove suits a particular application. Systematic swot up of the literature, above all of the one recitation how gloves were applied for different uses, can then help this similar process, at the same time importance practical issues that may come up during it. Primary purpose of this paper is to present readers who are new to the area with a basis for accepting glove systems expertise and how it can be applied, while donation specialists an reorganized picture of the breadth of applications in some engineering and biomedical sciences areas.

II. RELATED WORK:

In the image processing practice camera is used to incarcerate the image/video, in this static images are analyzed and gratitude of the image agreed out using algorithms that construct sentences in the present. The algorithms used in idea based sign language recognition system are Hidden Markov Mode (HMM), Artificial Neural Networks (ANN) and Sum of Absolute Difference (SAD) Algorithm use to haul out the image and get rid of the unwanted background noise. In sign language appreciation system which uses image processing method, image acquisition procedure has much environmental anxiety such as background condition and lightning sensitivity. Higher resolution camera take up more calculation time and live in more memory space, user always need camera everlastingly and cannot put into practice in public place.

III. LITERATURE SURVEY:

THE AUTHOR, Vutinuntakasame, S **(ET .AL), AIM IN [1],** this paper presents a hand-gesture based interface for make easy communication in the middle of speech- and hearing-impaired disabilities. In the system, a wireless sensor glove able to with five flex sensors and a 3D accelerometer is used as the input device. By incorporate the speech synthesizer onto an mechanical gesture recognition system, user's hand gestures can be decipher into sounds. In this swot up, we future a hierarchical gesture acknowledgment framework based on the collective use of multivariate Gaussian distribution, bigram and a set of rules for model and feature set selection, receive from a detailed analysis of misclassified gestures in the confusion matrix. To exemplify the practical use of the framework, a gesture recognition experiment has been conduct on American Sign Language (ASL) finger spelling gestures with two additional gestures representing space and full stop.

THE AUTHOR, Mehdi, S.A. **(ET .AL) AIM IN [2],** this paper inspects the likelihood of distinguish sign language gestures using sensor gloves. Until that time sensor gloves are used in games or in submission with custom gestures. This paper discover their use in Sign Language recognition. This is done by put into practice a project called "Talking Hands", and studying the results. The project uses a sensor

glove to imprison the signs of American Sign Language performed by a user and translates them into sentences of English language. Reproduction neural networks are used to know the sensor values coming from the sensor glove. These values are then branded in 24 alphabets of English language and two punctuation symbols bring in by the author. So, mute people can mark total sentences using this application.

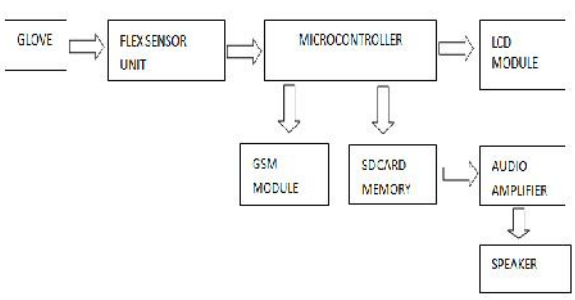
IV. PROBLEM DEFINITION:

A catalogue of glove characteristics naturally reported in the fiction for technical assessment purposes, such as sensors specifications type of information registered by the sensors, sensor technology, number, location, precision, and number of records per seconds, external connections, and data communication boundary, as well as a (non complete) list of their options. Most description is self-explanatory. Commonly mute people use sign language for communication but the communication is turn out to be tricky with others who do not appreciate sign language.

V. PROPOSED APPROACH:

We are to create an electronic speaking glove; by only exhausting that data glove mute person can easily converse with the normal people. In this system LCD display is also used, after sign recognition the recognized word will be show as text on LCD display so it turn into easy for mute person to converse with deaf person. In this way this project will help to subordinate the communication gap between mute, deaf and normal people. While manufacture the system we should deem certain routine measures these are recognition time and recognition accuracy. The user should forms a sign and clutches it for two seconds to make sure recognition. The system should be accomplished of recognizing signs more hurriedly than this arbitrary two seconds limit. Low cost, Compact systems, Flexible to users, It takes less power to operate system.

VI. SYSTEM ARCHITECTURE:



VII. PROPOSED METHODOLOGY:

GSM:

GSM (Global System for Mobile communication) is a digital mobile telephone system that is extensively used in Europe and other parts of the world. GSM uses a distinction of Time Division Multiple Access (TDMA) and is the most broadly used of the three digital wireless telephone technologies (TDMA, GSM, and CDMA). GSM digitizes and compresses data, then post it down a channel with two other brook of user data, each in its own time slit.

GSM STANDARD:

GSM uses narrowband TDMA, which agree to eight concurrent calls on the same radio frequency. There are three basic principles in multiple access, FDMA (Frequency Division Multiple Access), TDMA (Time Division Multiple Access), and CDMA (Code Division Multiple Access). All three principles consent to several users to contribute to the same physical channel. But the two challenging technologies change in the way user chipping in the general resource.

TDMA:

It agrees to the users to go halves the same incidence channel by in-between the signal into diverse time slots. Each user takes rotate in a round robin manner for transmitting and receipt over the channel. Here, users can only broadcast in their own time slot. It can effortlessly adapt to programme of data as well as voice communication.

CDMA:

It uses a multiply spectrum technology that is it spreads the information restricted in a particular signal of curiosity over a much greater bandwidth than the original signal. Unlike TDMA, in CDMA several users can put out over the channel at the equivalent time.

GSM MODEM:

GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem acts like a dial-up modem. The main disparity between them is that a dial-up modem sends and receives data during a fixed telephone line while a wireless modem sends and receives data throughout radio waves.

VIII. ALGORITHM:

Stage 1: The data glove is fitted with flex sensors along the length of each finger and the thumb. The flex sensors output a stream of data that varies with degree of bend.

Stage 2: Flex sensors outputs data stream depending on the degree and amount of bend produced by the sign. A group of signs that represent words are collected as the data set for this system.

Stage 3: The output data stream from the flex sensor is fed to ARM 7 Microcontroller where it is processed and converted into digital form.
Stage 4: The microcontroller will compare these readings to the look up table stored in internal program memory, whichever reading is closest to the look up table microcontroller will select that word.
Stage 5: After this microcontroller will search the SD card for .wav file with similar name.
Stage 6:That text will be displayed on LCD and played out via speaker.

IX. CONCLUSION:

The proposed method has completed it apparent that the wideness of explore in glove devices has extended and grown over the past three decades. The role of software in making glove devices more ever-present in our daily lives cannot be exaggerated. Recent history has shown that when the fundamental software is instinctive and faultless, then mass adoption of the device is a result. This area of research leftovers very lively and it is obvious that technological advances in computing, sensor devices, materials and processing/classification techniques will make the next generation of glove devices cheaper, more influential, adaptable and, we hope, more omnipresent.

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