

# A novel voice recognition system for speech impaired people

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**Abstract**— Information Communication Technology (ICT) can support people with physical disabilities by enabling them to access the information along with others. Physical challenge either temporary or of permanent nature put limitations in learning process of an individual as it can limit accessibility, can hamper understanding thus making it difficult for such persons to be at par with others. A person can choose a technology based on his or her ability and ease in using a technology. This paper analysis how ICT can meet requirements of education and employment of physically challenged people. This paper is basically aims in making mobile phones that can be easily accessible by the speech impaired people, who are not hearing impaired. The primary aim lies in capturing the lip movements of the speech impaired people and converting these into vibrations and consequently into sound signals which are later transmitted to the receiver as such. Basically a device needs to be fitted in their mouth to sense the lip movements and consequently convert them into vibration. Then the process of recognizing the speech from vibrations takes place. The recognized speech is sent to receiver. Thus this product will prove effective for conversing with speech impaired people, thereby bringing a great impact in improving their communication with others and for understanding and sharing their thought and feelings. This product will be “SERVICE TO HUMANITY”.

## I. PRINCIPLE OF SOUND DETECTION

Sound causes objects to vibrate, which is used to detect and process the sound. The ear and a microphone are common detectors of sound, although there are also some clever devices [1] to detect sound at a distance. Laser can be used to detect conversation. From a distance outside [2], they would shine a small, invisible laser spot on a window of a building where secret conversations were being held. The reflected light off the window would be distorted due to the subtle vibrations of the glass from the conversations inside the room. The device would detect the reflected light and convert it into electrical signals.

## II. PROCEDURE

Disposing an audio sound to electrical signal transuding microphone adjacent a lip and mouth cavity facial area of a user subject, with the microphone generating electrical

signals representative of user speech sounds. The vibration is collected from the stern mastoid muscle which is present near the user's neck. The NAM sensor is used to convert the vibrations to analog electrical signals. The electrical signal produced using NAM sensor is weak when compared with normal speech signal. Hence the signal is amplified and combined with the carrier signal. Suitable filters are used for removing the noise and the unwanted DC component in the signal. Here we are using a band pass filter for the above purpose. Information from the signal is derived out using envelop detector in the system. The envelope of the vibrations produced is different for different sounds. The user's vibration frequencies are matched with the standard vibration frequencies during calibration of the device. The standard frequencies are stored in the system. The calibration is unique for different users.

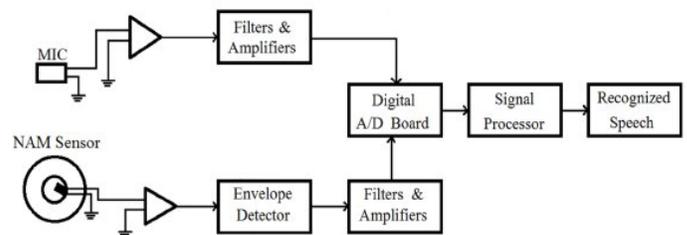


Figure 1. The Block diagram.



Figure 2. NAM microphone test module

## REFERENCES

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- [2] Campbell, F. (2004). The Case of Clint Hallam's Wayward Hand: Print Media Representations of the 'Uncooperative' Disabled Patient. *Journal of Media & Cultural Studies*, vol. 18, no. 3, pp. 443-458(16).

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