AN APPLICATION FOR MUTE AND HEARING IMPAIRED PERSON TO ATTEND PHONE CALL

R. SANDHIYA[1]V. SARANYA[2]
[1]Department of computer science and engineering
[2]Department of computer science and engineering
Velammal institute of technology, Chennai, India.
sandhiyarameshbhabu@gmail.com, saranyasan95@gmail.com

ABSTRACT

One of the common disabilities found in people now days are the inability to hear and speak. They could not lead a normal social life of attending and answering the phone calls. This application helps deaf and dumb people to make and attend phone calls. We allow them to normally communicate without acquiring the help of others .This uses voice to text technique and vice versa and also speech synthesis technology. There is also a dictionary facility provided to fasten their speed in typing. When dumb people want to call they can just type the message and send to receiver which gets converted to voice and then reach the receiver. In the same way when some other calls to deaf, people can answer the call. For the entire process the call should be put in loudspeaker mode. To send these messages one does not get charged. Thus this app help disable people to act like normal people.

Keywords: speech synthesis, pre-processing, segmentation, acoustic models, normalization.

I.   INTRODUCTION

Mute and hearing people need someone to answer phone calls on behalf of them and convey the message to them. But it is not possible all the times. Sometimes the disabled person may not be surrounded by people. Under such situation it will be a great task for them to answer the phone calls. There is no such application to help them. They have to be dependent on others to attend the phone calls. They will not have their own privacy if someone attends theircall instead of them .In this paper, a phone call can be made in a real time, that is when a person calls a deaf they can know what the person on the other side is speaking by viewing it as a message on the mobile screen and at the same time if he is mute then he can respond to the same call by typing the content as a message which gets converted as a voice and reaches the receiver. For this the speech recognition technique is used which converts voice-to-text and vice versa. It allows real time conversation. This app does not charge for the message that is typed during phone call.
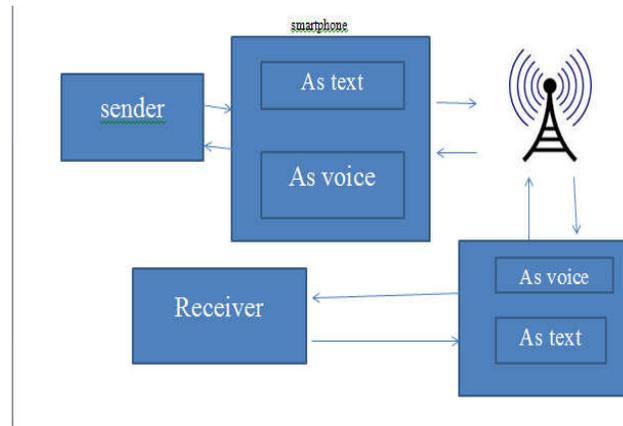
II. ARCHITECTURE

Fig: 1 architecture of application

In the fig 1 when sender calls the deaf or dumb people, the dumb person cannot hear the voice of other person, and so he will receive text on the mobile screen and when the person text the other person it reaches in the form of voice.
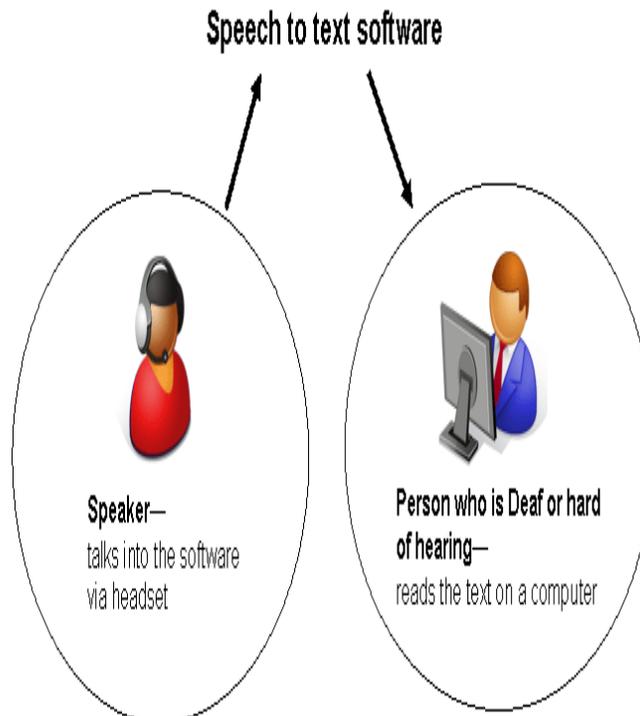

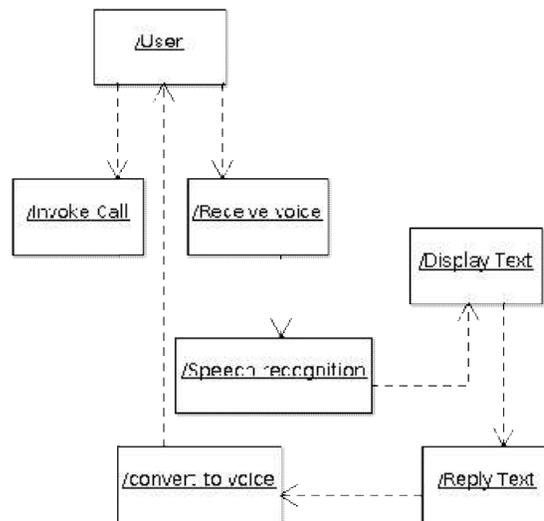Fig: 2 two persons communicating

III.   COLLABORATION DIAGRAM

Fig: 3 collaboration diagram

IV.   TECHNIQUES

a)   TEXT TO SPEECH

A text-to-speech system is composed of two parts. A front-end (screen) and a back-end (database). The front-end has two major tasks. First, it converts raw text like numbers and into the equivalent of written-out words. This process is often called text normalization, pre-processing, or tokenization. Text to Speech (TTS) software speaks the text on screen using a generated voice. TTS is a great technology if a person has visual stress, hard hearing capability, mute disability, finding error during reading. Nearly all technology come with some basic text to speech voices.. In this first the text is processed with feature extraction then the speech is recognised and converted tospeech.
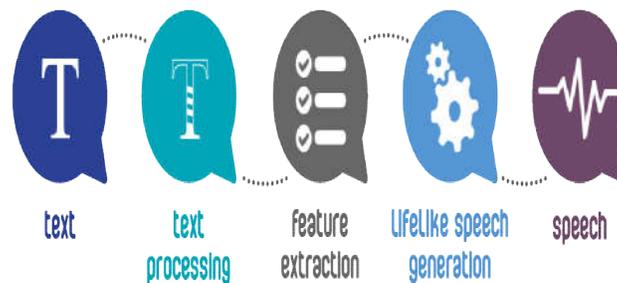

Fig 4 Tts Process

When the text is given as input first data cleaning is done, which checks the data given is without damaged or lost. then segmentation is done ,that is input is separated into each words and then operation is performed. Then fragmentation of input is performed, later then wave concatenation is done where the sound files repository is present, after that the wave smoothening is performed, after which normalization is done than later on the supra segmental processing happens, then the input text is synthesized into speech. Given in fig4
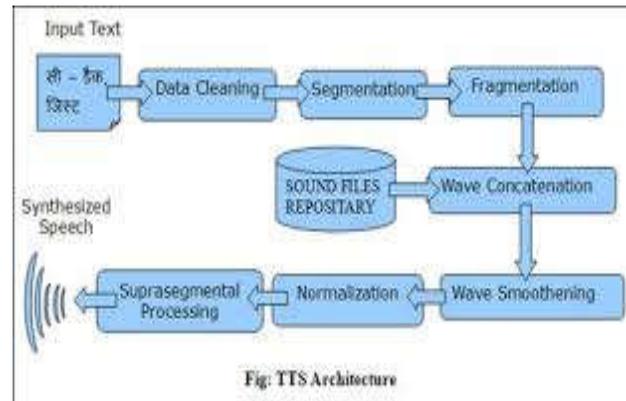

Fig 5 TTS Architecture

b)   SPEECH TO TEXT

When the user speaks a word, he speaks into phone, the phone captures the sound waves and generates electrical input impulses .than it reaches sound cards here it is converted as acoustical signal to digital signal. Then it enters into speech recognition engine which converts digital signal to words later it goes to speech aware application where words are converted into text input. The user uses speech to text technique when the have disabilities like hearing impaired, visually challenged, uneducated. Basically deaf and dumb people learn braille language. Given in fig 6
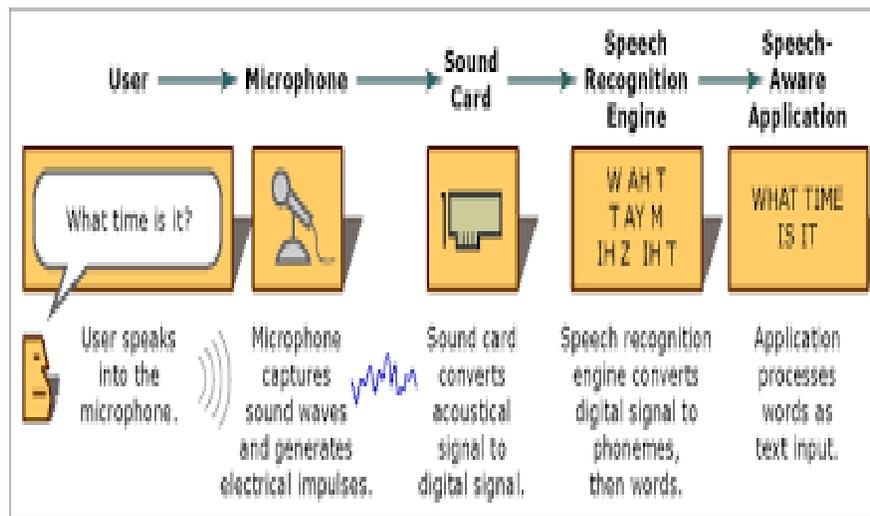

Fig 6 speech synthesis

c)   VOICE REGOGNISATION

Voice recognition is the process of taking the spoken word as an input to a computer program. This process is important to virtual reality.

When the raw speech is given as input it recognizes the speech by signal analysis then it is split into speech frames. Than acoustic analysis is done by acoustic models, then segmentation is performed based on time alignment at last word sequence is generated. Shown in fig 7
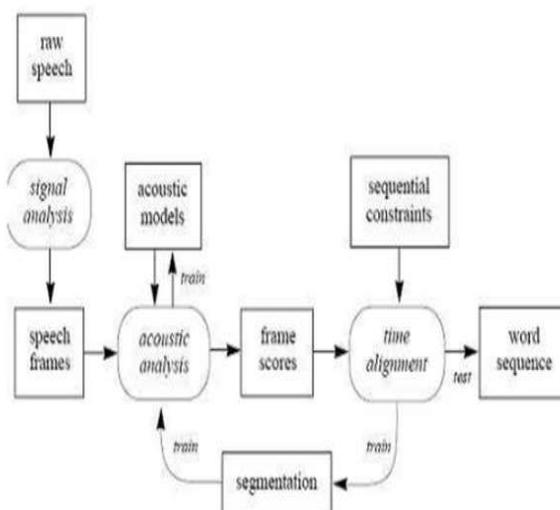

Fig 7 voice recognition

V.   ANDROID CALL

The Phone Call Channel is a native Android Channel that provides a set of Triggers and Actions built around calls placed to and from your phone. The person calls to another and receives an incoming call.

Fig 8 Dialling Android Call

Fig 9 Receiver End

VI.   REQUIREMENTS

d)   SOFTWARE REQUIREMENTS:

Operating system   : Windows 7.
Coding Language   : Java 1.7
Tool Kit   : Android 2.3 ABOVE
IDE   : Eclipse/Android studio

e)   HARDWARE REQUIREMENTS:

Processor   -   Pentium –III
RAM   -   256 MB (min)
Hard Disk   -   20 GB

VII.   CONCLUSION

Thus this application helps deaf and dumb to attend phone calls. It helps them to overcome their inferiority complex of their disability .This application helps them to speak out their thoughts and it could be even easily understood by person who is communicating with them from the other side. they can be independent and work on their own , without depending on others.

VIII.   FUTURE ENHANCEMENT
Now, the present application works only for universal language English, In future we are planning to implement in all other languages like Tamil, Urdu, Bengali, Hindi etc..
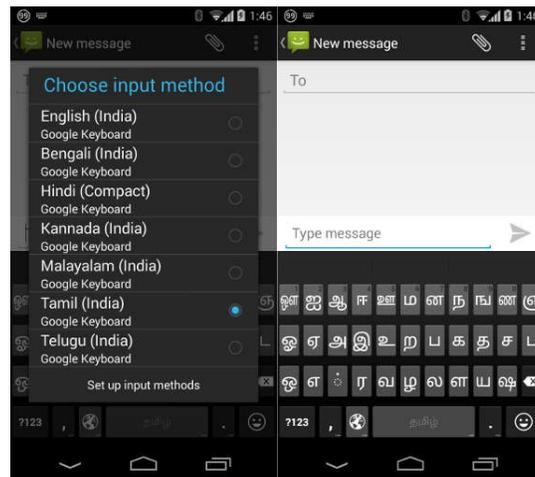
Fig10Multiple Language Keyboard

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