

Voice based Email for Physically Challenged

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Abstract – Nowadays, Internet has become one of the important services utilized by one and all us. The utilization of internet has made the life very easy for several people as they can access the data easily. Internet has also revolutionized communication also. One of the ways of communication over internet is email.

E-mails are considered to be the foremost reliable way of communication over Internet, for sending or receiving some important information. But communication over internet is not easy for certainly section of society that's for physically challenged people that cannot see things and thus cannot see the pc screen or keyboard.

There are around 285 million people that are unaware of how to use Internet. The sole way by which a visually impaired person can send an E-mail is, they have to dictate the whole content of the mail to a third person (not visually challenged) and so the third person will compose the mail and forward the behalf of the visually impaired person.

But when it involves security and privacy, this is often not an accurate thanks to cope with this problem. It's very less likely that each time a dim sighted person can find someone for help.

So, for the betterment of physically challenged people and to produce them a higher way of communication over internet this paper aims to develop an application that provides the blind people with ability to send mails using voice without the keyboard or the other visual things. Thus we made a one to one chat system that just convert from audio to text and text to audio so that visually challenged can just use easily.

Key Words: Interactive Voice Response (IVR), text to speech, speech to text

1. INTRODUCTION

The application which is able to be a python-based application provide a voice based mailing service where they might read and send mail on their own through their g-mail accounts with none other person's help or guidance. The applying may be utilized by near-blind to access mails easily. The applying will use text to speech and speech to text as alternative of keyboard.

The application involves using Interactive Voice Response (IVR) which provides the user to manage their mail accounts through their voice only. Through voice, they are going to be ready to read, send and perform all the opposite required tasks. The system traces speech at run time through a microphone and processes the speech to acknowledge the

relevant text. The most advantage of this method is that it completely eliminates the utilization of keyboard and therefore the user can access the system though voice only.

2. Interactive Voice Response (IVR)

Interactive voice response (IVR) refers to a technology where humans can communicate with computer through keypad with the assistance of voice and DTMF tones input. In telecommunications, with the assistance of IVR customers can interact with a company's host system via a telephone keypad or by speech recognition. IVRs allows to record customized messages so the shoppers will have a more personalized experience whenever they call in your company. If the user doesn't opt to use his/her voice on IVR then the person can use pre-recorded IVR messages. IVR systems are very useful as IVR allows customers to resolve their own problems and acquire the knowledge they are looking for without chatting with the representative as well as route the callers to the foremost qualified representative to satisfy the customer's need. .

IVR systems are commonly used in mobile purchases, banking payments, retail orders, travel information and atmospheric conditions. The aim of an IVR is to get the input, process it, and provides a result, whereas that of an automatic attendant is to route calls. DTMF decoding and speech recognition are accustomed interpret the caller's response to voice prompts.

IVR technology is introduced into automobile systems for hands-free operation. Other technologies include using text-to-speech (TTS) where callers can find the necessary information without the requirement to speak to an agent, like schedules or account balances. TTS is a type of speech synthesis that converts text into spoken voice output. Real voices create the speech in fragments that are concatenated together and smoothed before being played to the caller.

IVR are utilized in automobile systems for easy operations too. Text To Speech is system originated synthesized speech that's not the robotic voice historically related to computer. Real voices produce the speech in portions that are joined together and rounded before played to the caller.

3. Speech Recognition

The improvement and accessibility alone within the field of speech recognition are worth considerable. It allows the physically and therefore the elderly and near blinded people

to collaborate with state of the art products and services quickly and naturally no graphical program is required.

If you want to use speech recognition or just convert speech to text in your python it's very easy to use.

Let's see how it will use:-

1. Working of speech recognition.
2. Packages available in PyPI.
3. You should know the way to install and how to use speech recognition packaging using python library.

The packages available for speech recognition exist on PyPI. some of them include:

1. Google-cloud-speech
2. Watson-developer-cloud
3. Pocketsphinx
4. Wit
5. Apiai
6. SpeechRecognition

4. Speech to text converter

The process of converting spoken speech or audio into text is termed speech to text converter. The method is sometimes called speech recognition. The Speech recognition is employed to characterize the broader operation of deriving content from speech which is understood as speech understanding. We regularly associate the method of identifying someone from their voice, that's voice recognition or speaker recognition so it is wrong to use this term for it.

As shown with the diagram speech to text converters depends totally on two models 1.Acoustic model and couple of 2.Language model. Systems generally use the pronunciation model. It's really imperative to be told that there's nothing sort of a universal speech recognizer. If you would like to include the simplest quality of transcription, you'll be able to specialize the above models for the any given language communicating.

Likewise another pattern recognition technology, speech recognition can even not be without error. Accuracy of speech transcript deeply relies on the voice of the speaker, the characteristics of speech and also the environmental conditions. Speech recognition may be a tougher method than what folks unremarkably assume, for a personality's being. Humans are born for understanding speech, to not transcribing it, and solely speech that's well developed going to be transcribed unequivocally. From the user's purpose of read, a speech to text system will be categorized based in its use.

5. Text to speech

Pytttsx3 is platform independent that's compatible with Windows, Linux, and MacOS speech library. This offers an excellent set of functionality and features. The user can set their voice metadata that's information about the info like gender male or female, pitch of the voice, age, name and language. It supports large set of voices.

So to put it in windows platform depending upon which version of python you're using.

For example if you are using python3 so you would like to put in to install pytttsx3.
 >>>shell> pip install pytttsx3.

Another module which might be used in python program for conversion is:- 1.5.3.2gTTS This module is Google text to speech library in python. To install the API in windows platform
 >>>shell>pip install gTTS.

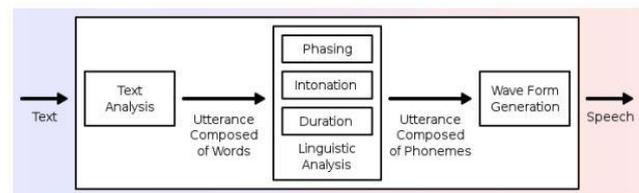


Fig -1: Text to Speech

7. Literature Survey

7.1 Voice Based System for Blind People

Voice mail system design helps visually blind people to use e-mail and other multimedia functions of operating computer code (songs, text, etc.).Also in mobile devices SMS are read by system itself. Now a days the advancement made in technology opened platforms for visually impaired people across the world. As we already know that 60% percent of total visually handicapped person present in India only across the world. In this Research paper, we describe the voice mail structure utilized by the blind people to access E-mail and multimedia functions and content of computer system code easily and efficiently. This architecture will reduce cognitive load from blind people and to use and remember type and sort characters from keyboard. There is a lot of data available on technological advances for visually impaired people. The technology also includes many development of text to Braille systems, screen magnifiers and screen readers also. Recently, attempts are also made so as to develop tools and technologies to help Blind people to assist internet technologies. Among the first attempts, voice input surfing was adopted for the Blind people. In IBM's Home page the web online page is an easy to-use interface and converts the text-to-speech having different gender voices for reading texts and links. However, the disadvantage of this can be that the developer has to design a complex new interface for the complex graphical sites to

be browsed and for the screen reader to acknowledge. Simple browsing solution, which divides an online web page into two dimensions. This greatly simplifies an online web page's structure and makes it easier to browse. Another web browser generated a tree structure from the HTML document through analyzing links because it attempts to structure the pages that are linked together to reinforce navigability, it did not prove very efficient for surfing. After, it failed to handle needs regarding navigability and usefulness of current page itself.

7.2 Voice Based Search Engine

It is a completely unique Voice based Search Engine and Web-page Reader which allows the users to command and control the online browser through their voice, is introduced. The prevailing Search Engines get request from the user within the style of text and respond by retrieving the relevant documents from the server and displays in the form of text.

Even though the existing web browsers are capable of playing audios and videos, the user has to request by typing some text in the search text box and then the user can play the audio/video with the help of Graphical User Interfaces (GUI).

The given Voice based Search Engine continue to serve the users especially the blind people in browsing the Internet. When the user speak the computer will receive the speaking message and respond back to user in the voice. The computer will assist and help the user in reading the related information and document as well.

Voice-enabled interfaces used with an addition support for gesture based input and output will approaches are for the "Social Robot Maggie" that convert it into an aloud reader. This voice recognition and synthesis can be affected by number of reasons such as the voice pitch, its speed, its volume etc.

8. CONCLUSION

The email system can be used by any physically challenged person easily by enabling one to one chat with another physically challenged person or any normal person. This system aids to reduce the obstacles that were earlier faced by physically challenged person by avoiding the use of keyboard. The system will also reduce cognitive load taken by blind to remember and type characters using keyboard. This system is very useful for blind or physically challenged people to move one step forward towards their betterment.

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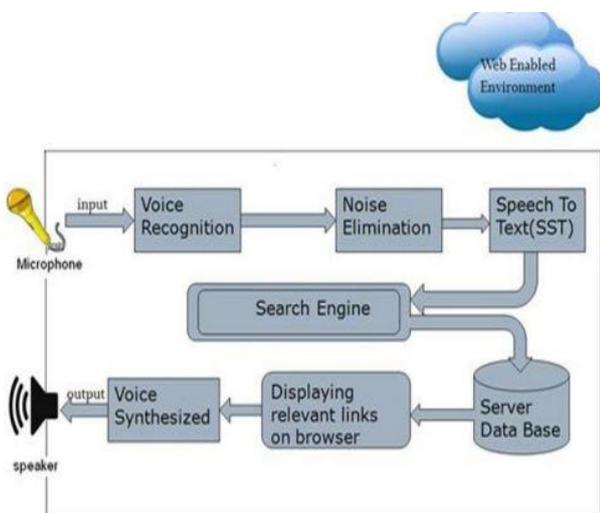


Fig 2– Voice based search engine