

Speech Recognition E-Mail Services

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Abstract- *Communicate with another person or communication has become so simple due to unification of communication technologies with internet in today's world. However, the people who are visually challenged, they find it very difficult to utilize this kind of technology. In past few years, much new advancement has been implemented to help them. This paper aims at developing an email system that it will help a visually impaired person to use the services of email for communication without any training easily and efficiently. This project has enabled the blind people to send as well as receive email message through the voice in their understandable language with the help of computer application. In this, the person who are blind don't need to use the keyboard instead it will work only on mouse operation and voice command which will converted into text and Also the normal person can use this system. The system is completely based on IVT means interactive voice response which will make it user friendly and efficient to use.*

We found that our proposed architecture performs much better than that of the existing GUIs. In this project, we use technique of voice to text and text to voice access for blind people.

Keywords- speech-to-text converter, screen reader formatting, IVR, component, blind people

I. INTRODUCTION

As we know that in today's world, Internet is a major storehouse of information through which we can communicate with another person and also access the information. No single work can be done without the help of it. It has even become one of the de facto methods used in communication. And out of all N methods available, email is one of the most common forms of communication especially in the business world. However not all people can use the internet. This is because in order to access the internet you would need to know what is written on the screen. If that is not visible it is of no use. This problem makes internet a completely useless technology for the blind person and illiterate people. As nearly 250 million people around worldwide are estimated visually impaired. It becomes necessary to make internet facilities for communication usable for them also.

Therefore, we have come up with this project in which we will be developing a email system which are totally voice based which will help the visually impaired people who are naive to computer systems to use email facilities in a hassle free manner. This system uses Text-to-Speech technique for blindness people in order to provide a navigation service through voice. This allows blind people to easy access the program. An increasing number of studies have used technology to help blind people to integrate more fully into a global world. Whoever uses this system would not need to have any even basic information regarding keyboard shortcuts or where the keys are located or how it works. All the functions are worked on simple mouse click operations making it very easy for any type of user to use this system.

Also the user don't need to worry about remembering which mouse click operation he/she needs to perform in order to avail a given service as the system itself will be prompting them as to which click will provide them with what operation.

II. EXISTING SYSTEM

There are a total number of 4.9 billion email accounts created until 2017 and there will be estimated 5.2 billion accounts by end of 2018. This makes emails the most used form of communication. The most common mail services that we use in our day to day life cannot be used by visually challenged people. This is because they do not provide any facility to the blind person so that the person in front can hear out the content of the screen. As they cannot visualize what is already present on screen they cannot make out where to click in order to perform the required operations. For a visually challenged person using a computer for the first time is not that convenient as it is for a normal user even though it is user friendly. Although there are many screen readers available then also these people face some minor difficulties. The person read out whatever content is on the screen and to perform those actions, the user will have to use keyboard shortcuts as mouse location cannot be traced by the person. This means two things; one that the user cannot make use of mouse pointer as it is completely inconvenient if the pointer location cannot be traced and second that user should be well versed with the keyboard as to where each and every key is located. A user is new to computer can therefore not use this service as they are not aware of the key locations. Another

drawback that sets in is that screen readers read out the content in sequential manner and therefore user can make out the contents of the screen only if they are in basic HTML format. Thus the new advanced web pages which do not follow this paradigm in order to make the website more user-friendly only create extra hassles for these people. All these are some drawbacks of the current system which we will overcome in the system we are developing.

III. PROPOSED SYSTEM

The proposed system is based on a completely novel idea and is nowhere like the existing mail systems. The most important aspect that has been kept in mind while developing the proposed system is accessibility. A web system is said to be perfectly accessible only if it can be used efficiently by all types of people whether able or disable. The current systems do not provide this accessibility. Thus the system we are developing is completely different from the current system. Unlike current system which emphasizes more on user friendliness of normal users, our system focuses more on user friendliness of all types of people including normal people visually impaired people as well as illiterate people.

The complete system is based on STT (Speech to Text), TTS (Text to Speech), IVR (Interactive Voice Response). Using this system, the computer will be prompting the user to perform specific operations to avail respective services and if the user needs to access the respective services then he/she needs to perform that operation.

One of the major advantages of this system is that user won't require to use the keyboard. All operations will be based on mouse click events.

Now the question that arises is that how will the blind users find location of the mouse pointer.

As particular location cannot be tracked by the blind user the system has given the user a free will to click blandly anywhere on the screen. Which type of click will perform which function will be specified by the IVR. Thus user need not worry about location of the mouse at all. This system will be perfectly accessible to all types of users as it is just based on simple mouse clicks and speech inputs and there is no need to remember keyboard shortcuts.

IV. LITERATURE SURVEY

Number of technological solutions has been implemented in past decade for visually impaired so that they can utilize them, and get benefited by them. It as a key idea we

have built an android application that will help blind people to send and read emails as ordinary people do. In this research paper we describe the SRES system architecture for android platform that can be used by a Blind Person to access e-mails easily. The application uses 'text to speech' and voice recognizer to facilitate sending, reading, forwarding and replying to emails using an android smart phone.

Access E-mail and multimedia functions of operating system easily and efficiently. Voice mail architecture helps blind people to access e-mail and other multimedia functions of operating system (songs, text). Also in mobile application SMS can be read by system itself. Now days the advancement made in computer technology opened platforms for visually impaired people across the world. In the past researches, it has been observed that nearly about 55% of total blind population across the world is present in INDIA. Some of the people are considered as handicapped for use this kind of technology. In this paper, we describe the speech recognition mail architecture used by blind people to access E-mail and multimedia functions of operating system easily and efficiently.

V. METHODOLOGY

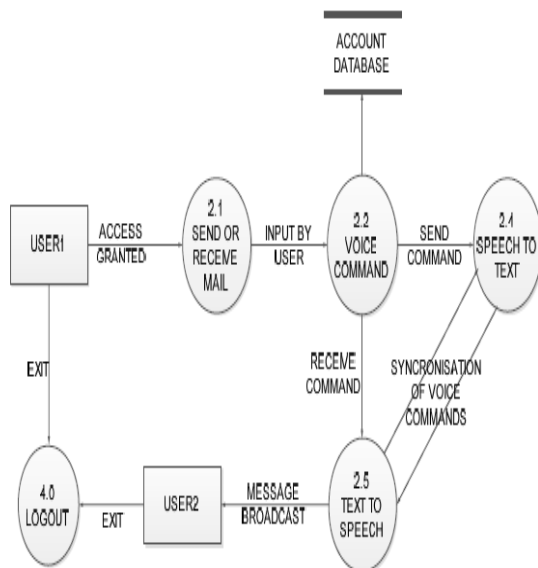
In this SRMS system, mainly three types of technologies are used namely:

- i. STT (Speech-to-text): in this, whatever the user speak is converted to text. There will a small icon of mic, after clicking on it the user had to speak and his/her speech will be converted to text format, which the naked people would see and read also.
- ii. TTS (text-to-speech) this, method is full opposite of STT. In this method, which converts the text format of the emails to synthesized speech?
- iii. IVR (Interactive Voice Response): IVR is an advanced technology describes the interaction between the user and the system in the way of responding by using keyboard for the respective voice message. IVR allows user to interact with an email host system via a system keyboard, after that users can easily service their own enquiries by listening to the IVR dialogue. IVR systems are used to generally respond with pre-recorded Audio voice to further assist users on how to proceed. The audio that would be pre-recorded and the system need to have large volumes.

WORD RECOGNITION

Word recognition software, in other words we also known as speech to text software allows an individual person to use their voice instead of typing on a keyboard. Word recognition may be used to dictate text into the computer or to give commands to the computer. Word recognition software allows for a quick method of writing onto a computer. It is also useful for people with disabilities who find it difficult to use the keyboard. This software can also help those people who have difficulty with transferring ideas onto paper as it helps take the focus out of the mechanics of writing. Word recognition is measured as a speed of word, such that a word with a high level of recognition is read faster than a novel one. This manner of testing suggests that comprehension of the meaning of the words being read is not required, but rather the ability to recognize them in a way that allows proper pronunciation.

VI. SYSTEM ARCHITECTURE



- When user will visit our site he would first have to register in our website through registration form. User will be very well guided with the help of voice commands, while registering all the necessary fields to be filled will be read by site, by clicking on that box he would have to fill in them. For e.g. If cursor moves over register icon it would sound “register button”, after clicking on register button it would sound like “you are on registration page”.
- While filling up the necessary fields, speech would be recorded in database. Very frequently used words will be present i.e., when user would speak it would get typed automatically. Also the voice would be recorded in the database. Because after registration, user has to go to login page and type user id & password which

would get recognized through database enabling the correct user to get access to his/her account. After successful login the user would read the received mails present in inbox and also can send the mails.

VII. DIAGRAMS

7.1 Use-Case Diagram:

(Simple flow of Speech recognition email services)

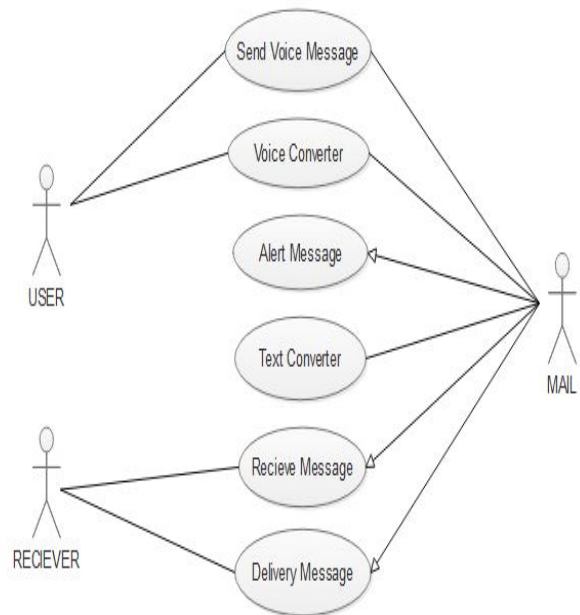


Fig. Use case Diagram for user

VIII. MODULES AND THEIR WORKING

i. REGISTRATION

This is the first module of the system. Any user who wishes to use the system should first register to obtain username and password. This module will collect complete information of the user by prompting the user as to what details needs to be entered. The user will need to speak up the details to which the system will again confirm by prompting alphabetically. If the information is not correct user can re-enter else the prompt will specify the operation to be performed to confirm.

ii. LOGIN

Once the registration is done the user can login to the system. This module will ask the user to provide the username and password. This will be accepted in speech. Speech conversion will be done to text and user will be told to validate whether the details are entered correctly or not. Once the entry is done correctly database will be checked for entry. If the user is authorized it will be directed to homepage.

iii. FORGOT PASSWORD

In case where an authorized user forgets the password and thus is not able to login he/she can select forgot password module. In this module the user will be first told to enter n username. According to username the security question will be searched in database. This is the question provided at time of registration. The question will be spoken out by the computer. The user should in turn specify the answer that was provided by him/her during registration. If both get matched, user is given option to change password.

iv. HOME PAGE

The user is redirected to this page once log in done successfully. From this page now the user can perform operations that the user wishes to perform. The options available are:

1. Inbox
2. Compose
3. Sent mail

Prompting will provide the mouse click operation that needs to be performed for the required service. The double right click event is specifically reserved to log out of the system at any time the user wants to. This will be specified by the prompt right at the beginning after login.

IX. CONCLUSION

In this email services system, it has the feature of speech like text as well as text to speech with speech reader which makes designed a system to be handled by a blind person as well as visually impaired people. This e-mail system can be used by any user of any age group with ease of access. Some drawbacks earlier faced by the blind people in accessing emails. So this system will help to overcome it. We are developing a system which will aid the people who are visually impaired to access email services easily. We have totally eliminated the concept of using keyboard shortcuts along with screen readers which will help reducing the cognitive load of remembering keyboard shortcuts. If the any

user does not know the location of keys on the keyboard, so need not worry as keyboard usage is eliminated. The only need is that user follows the instructions which given by the IVR and use mouse clicks accordingly to get the respective services offered. Other than this the user might need to feed in information voice inputs when specified.

X. FUTURE WORK

The person who are not visually impaired or who can see, for that person e-mailing is not difficult, but for people who are not blessed with gift of vision, it postures a key concern because of its intersection with many vocational responsibilities. This speech recognition email system has great application as it is used by blind people as they can understand where they are. E.g. whenever cursor moves to any icon on the website say Register it will sound like “Register Button”. There are many screen readers available. But people had to remember mouse clicks. Rather, this project will reduce this problem as mouse pointer would read out where he/she lies. This system focuses more on user friendliness of all types of persons including regular persons, visually compromised people as well as illiterate.

XI. ACKNOWLEDGEMENT

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