Voice Based Information Sharing System for Visually Impaired People

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ABSTRACT

In today's world communication has become so easy due to integration of communication technologies with internet. However, the visually challenged people find it very difficult to utilize this technology because of the fact that using them requires visual perception. Even though many new advancements have been implemented to help them use the computers efficiently no naïve user who is visually challenged can use this technology as efficiently as a normal naïve user can do that is unlike normal users they require some practice for using the available technologies. This paper aims at developing an email system that will help even a naïve visually impaired person to use the services for communication without previous training. The system will not let the user make use of keyboard instead will work only on mouse operation and speech conversion to text. Also this system can be used by any normal person also for example the one who is not able to read. The system is completely based on interactive voice response which will make it user friendly and efficient to use.

Keywords : Visually Challenged People, IVR, Speech to Text Converter, Mouse Click Event, Screen Reader

I. INTRODUCTION

Internet is considered as a major storehouse of information in today's world. 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 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 makes internet a completely useless technology for the visually impaired and illiterate people. Even the systems that are available currently like the screen readers TTS and ASR do not provide full efficiency to the blind people so as to use the internet. As nearly 285 million people worldwide are estimated visually

impaired it become 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 voice based email system which will aid the visually impaired people who are naive to computer systems to use email facilities in a hassle free manner. The users of this system would not need to have any basic information regarding keyboard shortcuts or where the keys are located. All functions are based on simple mouse click operations making it very easy for any type of user to use this system.

II. LITERATURE SURVEY

It is estimated that there are a total of 4.92 billion email accounts existing in 2017 and there will be approximately 5.59 billion accounts by the end of

2019[4]. It is also estimated that there are a total of 340.2 million smart phone users in India in the year 2017 [5]. This makes emails the most used kind of communication. The prevailing email systems don't give any means of feedback or Talkback service. The most common mail services that we tend to use in our day to day life cannot be used by visually challenged people. This is as a result of they do not offer any facility in order that the person in front will listen the content of the screen. As they cannot visualize what is already present on screen they cannot build out where to click in order to perform the required operations. For a visually impaired person employing a computer or smart phone system for the first time isn't that convenient as it is for a standard user even though it is user friendly. Though there are several screen readers offered then also these individuals face some minor difficulties. Screen readers speak out whatever content is there on the screen and to perform the particular actions the person will have to use keyboard shortcuts because mouse location cannot be detected by the screen readers. This means 2 things; one that the user cannot make use of mouse pointer as it is fully inconvenient if the pointer location cannot be derived and second that user should be versed with the keyboard on wherever each and every key is placed. A user who is new to computer will therefore not use this service as they're not conscious of the key locations. Also there are some difficulties faced by visually impaired people when using smartphone systems. All these are some drawbacks of the present system that we are going to overcome within the application we are developing.

III.EXISTING PROCESS

In today's world communication has become so easy due to integration of communication technologies with internet. However the visually challenged people find it very difficult to utilize this technology because of the fact that using them requires visual perception. Even though many new advancements have been implemented to help them use the computers efficiently no naïve user who is visually challenged can use this technology as efficiently as a normal naïve user can do that is unlike normal users they require some practice for using the available technologies.

IV. PROPOSED METHODOLOGY

The proposed system relies on voice command based system unlike the existing mail systems. The most important thing that has been kept in mind while developing the proposed system is accessibility. A system is accessible solely if it may be used expeditiously by all varieties of individuals whether or not disabled. The current systems do not offer this accessibility. Therefore the system we are developing is completely different from the current system. Unlike current system that emphasizes a lot on user friendliness of traditional users, our system focuses a lot on user friendliness of all varieties of individuals as well as normal people visually impaired individuals. The complete system is primarily based on speech to text commands. Once using this system the application will be prompting the user to speak specific commands to avail respective services and if the user wants to access the respective services then he/she needs to speak that command.

V. IMPLEMENTATION RESULTS
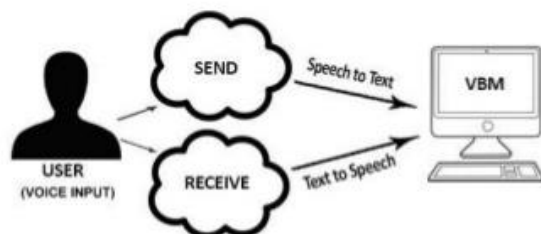
Speech-To-Text: Input to the System is provided by the means of speech-to text. Speech-to-Text API is used for conversion of speech-totext.HTML5's Built

in Speech Recognition API is used for this purpose hence using this input is provided to different modules of the system as intended user cannot manually enter the data required.

Text-To-Speech is used for conversion from text to speech. It is used to Speak menu to the user which can be used to provide list of available options a particular user can do on a given module or page. It is also used to read message that is been received by the intended user. As intended user cannot directly read. ResponsiveVocic.js is API that is used for conversion of Text to speech.

Php Mailer and PhP-IMAP PhP Mailer is a library which is provided by PhP which can be used to send e-mail. PhP Mailer is used in proposed system which is used to send emails. In order to extract the mails from the system Php Imap is used to fetch the user's mail from the IMAP server.

Knuth-Morris-Pratt Algorithm Pattern Matching is very key component when it comes to searching mail in inboxes. System provides three ways to search by keyword, date and today's date out of search by keyword requires KMP for pattern matching. Given a string 'S', the problem of string matching deals with finding whether a pattern 'p' occurs in 'S' and if 'p' does occur then returning position in 'S' where 'p' occurs. Knuth, Morris and Pratt proposed a linear time algorithm for the string matching problem as compared to other approaches.

VI.CONCLUSION

In this paper we have planned a system which can facilitate the visually impaired individuals to access email services efficiently. This system can help in overcoming some drawbacks that were earlier faced by the blind individuals in accessing emails. We've eliminated the thought of using keyboard altogether with screen readers which can help reducing the cognitive load of remembering keyboard operations. Conjointly any user who will not grasp the location of keys on the keyboard would like not worry as

keyboard usage is eliminated. The user solely has to follow the directions given by the system and use voice commands consequently to get the several services offered. Other than this the user may have to be requested to feed info through voice inputs whenever required.

VII.FUTURE ENHANCEMENT

Voice could be extended to image attachments and other options such as indentation, fonts etc., that are available with normal E-Mail.

VIII. REFERENCES

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