VOICE BASED EMAIL FOR VISUALLY CHALLENGED

Ms.Lekha[1],Sangras Bhargav[2],Bhanu pratap[3],Satarup Das[4]

Department of Computer Science and Engineering

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY,

Ramapuram,Chennai-600089,Tamil Nadu,India.

Abstract

The optically impaired people find it very problematic to access the technology because of the truth that it need optical perception. Unlike the normal users these need some needful precautions for using the technologies.Thus it aims at developing an developing an email where it will help even an optically challenged to use the services for communication without the before hand training. This system will also reduce the subjective pressure by the blind to memorize the keyboard. The system will be keyboard independent but will work on speech recognition. It is mostly based on interactive voice recognition.it is mostly based on interactive voice response which may make it user friendly to use it describes the voicemail system architecture that can prescribe by a blind person to make use to send and receive the voice based email messages in their language with the use of mobile device. Our proposed system GUI of a age old mail server we found that our architecture performs much better than that of the existing GUIS.

Keywords-*Keyboard Independent, Voice Mail, Interactive voice response (IVR), Automatic Speech Recognition (ASR), Text to speech(TTS).*

I.INTRODUCTION

Internet is considered as a major storehouse of information in today's world. Not even a single work can be done without the help of it. It has become one of the methods which is used in the communication. And of all the methods available here email is the most common forms of communication especially in field of business world. However not all people use the internet because in order to use the internet you would need to know what is written on the screen. If that is not virtually visible then it is of no use. This makes internet completely useless technology for the optically impaired 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. Near estimations show that 285 million people worldwide are optically 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 and avoid bickering manner.

The users of this system cannot be need to have any basic information about keyboard shortcuts or where the keys are located. All the functions are based on simple mouse click operations making it very easy for any type of user to use this system. Also the user has not worry about remembering which one of mouse click operation he/she needs to perform in order to avail a given service as the system itself will be prompting them to which click when it will provide them with what operations.

II. RELATED WORK

By looking at the scenario we tried to understand that the main reason for this problem .It is to understand relationship between touch screen and a blind person's capabilities in text to entry context. So in this paper we sum up to find the methods, advantages and disadvantages.How in total this is related to method and its demands then we further identify the individual differences which have greater impact in user's ability. In this paper we have tried to specify different types of methods that highlight different users capabilities which include fixed and adaptive layouts, scanning and gesture approaches ,different target sizes,number of screens keys and number of off screen keys.we then conceptualised how blind people use these methods and highlight their cognitive skills and functional abilit. The method difficulties they face such as in qwerty targets small and split tapping near the edges and In multi tap split multi-tapping then in nav touch they tend to accidental touch and lose their control over keypad and this is same with brallie text where they time out and lose of track. So by concluding the results in this paper a comparative text-entry method evaluation showed the various methods which has different demands. Hower these demands depends on specific individual attributes. This clearly shows that various designs suit various blind people. It is very much noteworthy to understand these relations and provide design to account for individual variations[1].

Despite the growing awareness of the accessibility around the surrounding touch screens which are used by blind people, designers still face challenges when the creating accessible touch screen interfaces. One of the major stumbling block is lack of understanding about how the blind people actually use the touch screens. We conducted two user studies which compared how the blind people and sighted people use touch screen gestures. First, we conducted a gesture elicitation study in which 10 blind and 10 sighted people invented gestures to perform common computing tasks on a tablet PC .In this paper, we explored two main issues related to the design of touch screen where user interfaces for blind people. First, we examined blind and sighted participants' preferences for gesture-based commands on a tablet PC by asking them to invent their own gestures. We found that blind participants did in fact suggest gestures that were different than those suggested by sighted people Second, we examined differences in how blind and sighted people perform the same set of gestures, and presented metrics for describing how gestures produced by blind people differ from gestures produced by sighted people. We believe that this work will bring us closer to the creation of robust and usable touch screen interfaces that work equally well for blind and sighted people.[2]

Tactile displays are currently becoming available in a form that can be easily used in a user interface. This paper says about a new form of tactile output. Tactons, or tactile icons, are modiefied, abstract messages that can be used to communicate messages non-visually. A range of different constraints can be used for Tacton construction including: frequency, amplitude and life of a tactile pulse, plus other parameters such as rhythm and location. Tactons have the ability to improve interaction in a range of different areas,specially where the visual display is overloaded, limited in size or not available, such as interfaces for blind people or in mobile and wearable devices. This paper describes Tactons, the parameters used to build them and some possible ways to design them. Examples of where Tactons prove useful in user interfaces are given. This paper about blinds has laid out a few of the foundations of information display through Tactons. There is still much work to be done to fully understand how they should be designed/implement and used. There are many lower level thoeritical questions to be addressed before we go to higher level design issues. Many of the parameters of sense described in are not fully understood and the full usable ranges of the parameters are not known. Studies need to be undertaken to explore the space of constraints so that the relative importance of the different constraints can be discovered. In result, this paper has proposed a new way to give tactile output called Tactons. These are structured tactile messages that are to going be used to communicate information. Tactile output is less used in current interfaces and Tactons provide a way of addressing this problem. The basic parameters that are described and design issues discussed. A methed is now available to allow tactile display to form a significant part of the set of interaction and display techniques that can be used to communicate with users at the interface.[3]

Tapulator: A Non-Visual Calculator using Natural Prefix-Free Codes. Its methodologies are VoiceOver-like interface and easy-to-remember gesture. The non-visual Calculator can only be used to calculate, it has single function and can't meet the needs of the blind to read.[4]

Students that reads braille use assistive technology to engage in literacy tasks and to access the general curriculum. There is few research on the ways in which technology has changed the reading and writing forms and

preferences of students that uses braille, nor is there much research on how assistive technology has been learned by students with visual impairments. Methods: That tell us the first phase of a mixed-methods study that was conducted to learn about the current use of paper braille and assistive technology among students aged 16–22, and the students attitudes toward the braille and its technology as tools for classroom learning in high school and college. The first phase of the study having of 12 structured interviews of students from across the United States, which were studied, analyzed qualitatively, and coded for themes reported here. Results: The practices used by students are divided into three broad themes, (1) the various variety of devices used for reading and writing, (2) the types of tasks they performed using particular devices, and (3) the ways students learned practices to use braille and technology. Their attitudes are divided into three themes as well: (1) preferences about braille and of technology tools, (2) how students chose to use those tools for particular tasks, and (3) the role teachers to get students learned to use technology. Discussion: conclusion of the study indicated the changing nature of how students use various tools and how they are selecting approaches to complete their class work, and the importance for students of being able to make choices regarding tools and strategies. Implications for practitioners: These themes suggest that for students to take advantage of the many choices given to efficiently complete school tasks, they must be proficient in multiple methods and tools for learning.

III.DESIGN AND IMPLEMENTATION:

A. User Authentication System:

The user has to give login information such as his/her username, password through voice command, all operations performed will get a voice based feedback.

Fig 3.1 user authentication system

B. Options in Mailing:

1) Compose mail: In the compose module, the blind user can give the voice command to open the compose mail window where user can again speak the mail contents and create a mail.

2) Sending mail: In the sending module, the user can send the mail on the voice command send mail, here the user can give the read command to check the mail again before sending.

3) Attachments: The user can attach the files required using attach voice command after which, the required location of the file will be accessed by the system and the selected file will be prompted to the user and when the user says okay command the file will be uploaded/attached to the mail.

4) Create label: In this option the user can create a label as per the need for example the user can create a meeting label under which he can save all the meeting related mails. So this will provide easy access to the user for meeting related mails.

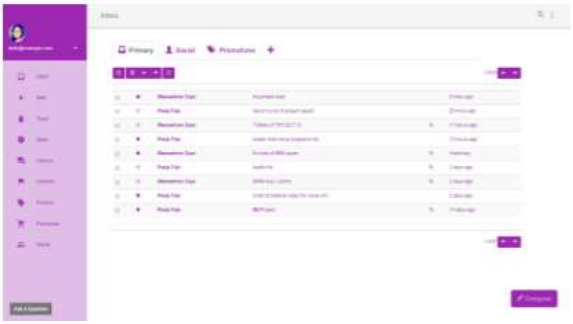

Fig 3.2 Create label

SPEECH_ TO_ TEXT Converter:

The system requires speech at run time through a microphone and processes the sampled speech to recognize the uttered text. The recognized text will be stored in a file. Our speech to-text system directly gets and converts speech to text. A speech-to-text converter system can also improve system to acess data by providing data entry options for blind, deaf, or physically impaired users. Speech recognition system fell into several blocks: feature extraction, acoustic models database which is structured based on the training data, dictionary, language model and the speech recognition algorithm. Analog speech signal is first to be sampled at time and amplitude axes, or digitized. Samples of the speech signal are analyzed in even intervals. This period is usually 20 m/s because the signal in this interval is considered stationary.

TEXT_ TO_ SPEECH Converter:

Converting text to voice output using speech synthesis techniques. Text-to-speech is also used on handling on hand accuracy of above 90%. It is a microcontroller based hardware which is coded in Embedded C language. Further research is to be done to use various methods of inputting the text i.e. analizing the text using optical sensor and converting it to speech so that almost all sorts of physical challenges faced by the people while communicating are overcome. devices such as portable GPS units to announce street names when giving directions. Our Text-to-Speech Converter accepts a groups of 50 characters of text (alphabets and/or numbers) as input.

WORD RECOGNITION :

Voice recognition software (also known as speech to text software) allows an individual to use their voice instead of typing on a keyboard. Voice recognition may be used to dictate text into the computer or to give commands to the computer. Voice 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 assist those 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 matter of speed, 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.

IV. CONCLUSION & FUTURE WORK

Voice based Email system helps the visually impaired people to access email. It has been observed by the studies that nearly about 60% of total visually impaired population across the world is present in India. This system, working on basis on the voice mail architecture for blind people to access E-mail easily and efficiently. This system will help in overcoming some drawbacks that were earlier faced by the blind people in accessing e-mails. We have romoved the concept of using keyboard shortcuts along with screen readers which will help reducing the excess load of remembering keyboard shortcuts. Also any computer illitrerate user who does not know the location of keys on the keyboard need not worry as keyboard usage is eliminated. The user only needs to follow the instructions given by the IVR and use mouse clicks as per it says to get the respective services offered. Other than this the user might need to feed in information through voice inputs when specified. It also helps handicapped and illiterate people.

Along with the email system this architecture can be extended for the usage of other activities of the blind user such as browsing, accessing files on the desktop, creating folders, listening music and likewise activities. The system can provide option of desktop browser which helps to search contents in computer, Operate multimedia functions of computer such as audio, text, News on internet can be read by system .So the blind people can access the entire system independently which will help them gain confidence in their activities also make their task's efficient and much easier.

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