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Voice Based Email for Blind

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ABSTRACT
One of the most commonly used form of communication is Email. On an average there are 285 million people blind over worldwide. Email is used for sending and receiving information. It is used for both personal as well as professional needs. Most of the confidential and important information is exchanged through email. It is easier to access for normal users but on the other hand it is difficult for the visually challenged people. If visually impaired persons need to access email, they need the help of third party. For sending the mail they have to dictate the contents of the message to be send to third party and for reading the received mail they need the help of others. Some of the voice-based search engines and screen readers have helped the visually challenged people to access the internet easily. It is difficult for the visually impaired to get the assistance of others to carry out their task. There are many technologies introduced for the visually impaired such as screen readers, Braille keyboard for guiding them to access the computer. Our major goal is to create the Email for the visually impaired through voice. In our project we will use the latest technologies for helping the visually impaired without an external help. We are using machine learning technologies for the blind people.

Keywords:
Voice-based search engines, screen readers, Braille keyboard, visually impaired.

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I. INTRODUCTION

Email is the mode of communication for professional, business and educational perspective. The main aim of our project is to help the visually impaired people to access the email without the help of Braille keyboard and screen readers. The keyboard shortcuts of Braille keyboard is to be remembered by the blind person which is a difficult task. We aim to create an application which would help the blind people access the email through voice without any help of a third party. The system would prompt the user with voice commands to perform certain actions. The person needs to follow the commands given by the system and perform the necessary operations through voice. The message to be send through email is given in the form of speech by the blind person and the speech is then converted to text (STT). The incoming mail which is the text format is converted to speech (TTS).

II. PROBLEM IDENTIFIED

Email is one of the most reliable way for sending and receiving the information easily. But it is difficult for the visually challenged people to send and receive the information. The only way by which visually impaired person can send an email is they have to dictate the entire content of the mail to another person who is not visually challenged to compose and send the mail on behalf of the blind person.

III. LITERATURE SURVEY

Article [1] This paper describes about giving access to three-dimensional graphic computer to visually impaired through sense of touch by using dual finger haptic interface and it is augmented by audio and voice commands. It provides a platform for developing audio haptic applications in different fields such as art,

architecture and aeronautics. It was specifically focused on helping the visually impaired by developing three applications. The three applications are adventure game, a city map explorer, and a chart explorer. The developed system was tested with different types of visually impaired people such as congenitally blind, advantageously blind and partially sighted to evaluate the usefulness of the system.

Article [2] To ease the process of writing email, the application was developed which would help visually impaired as well as other people. The application developed stores the pre-sample voice in the database and does comparison with the user voice. Article [3] VOIP (Voice Over Internet Protocol) technology was used in developing the voice mailbox system. It is used to transmit the voice over internet. To reduce the development cost and shorten the development cycle, voice mailbox system was developed with digital voice and VOIP technology. Article [4] This paper describes about developing a search engine which supports man-machine interaction with voice. Web based search engine and web page reader is developed which helps the users by giving commands through voice and controlling the web browser with voice commands.

Article [5] This paper describes about designing of speech recognition device for visually impaired using Raspberry Pi. The device which was developed supports several applications of operating system such as music player, text and dialing system. The device was designed at low cost with offline speech recognition. Article [6] The development of communication creates a revolution in the current digital age. Formal or casual communication is now sent via email. The growth of digital technology has given the visually impaired a huge opportunity. This application was developed to make writing emails easier not only for visually impaired people but also for everyone. Now you can also type human voices instead of typing with the keyboard. So the extra skills needed for a typewriter are no longer needed. This application recognizes the user's voice and compares with the sample stored in the database and executes the voice command. Common everyday spoken words are used as command language. It focuses on reducing the load on human memory. The aim of the proposed work is to develop a mechanism that converts speech to text (STT) to write e-mails and also converts text to speech (TTS) to read e-mails. This program uses the Google Web Kit API (Application Programming Interface) for speech recognition. Studies conducted on the app prove its effectiveness by providing better performance on various parameters such as audible distance, accent, cadence, words per minute (WPM), accuracy and homophonic words. Graphical analysis describes the accuracy of word recognition.

Article [7] The increased use of technology and its limitless possibilities have made it inevitable for the current generations to take full advantage of Internet technology. E-mail, one of the most used functions of the Internet, is a basic premise. Apart from normal users, visually impaired people face challenges when using the Internet, despite the availability of various screen reading programs. Therefore, the purpose of this document is to provide vocal assistance to them. In addition to email, voice assistance for several simple but important daily applications such as calculator, music, etc. In Article [8] The Internet has become one of the basic conveniences of everyday life. Each person is vast access to information and knowledge through the Internet. However, blind people have difficulty getting there these textual materials also when you use services offered via the Internet. Advances in the computer field accessible system has opened up many opportunities for the visually impaired all over the world. We describe the architecture of a voicemail system that can be used by a blind person use emails easily and effectively.

Article [9] Communication has become so easy these days. However, the use of this technology is very problematic for the visually impaired, as its use requires visual perception. Although many new improvements have been made to effectively use the computer, no beginner visually impaired user can use this technology as effectively as some naive user, and unlike normal users, it requires practice in using existing technologies. The purpose of this paper is to develop an e-mail system that helps a novice visually impaired user to use communication services without prior training. The system does not allow the user to use the keyboard, but only works with the mouse and speech-to-text conversion. It can be used by people with disabilities who have reading difficulties. The system is fully based on interactive voice response, which makes it user friendly. Article [10] One of the most common forms of interpersonal communication is email. Nowadays, a lot of confidential and urgent information is exchanged via e-mail. There are approximately 253 million visually impaired people in the world. These visually impaired people have communication problems. As technology increases day by day, these types of visually impaired people are more challenged.

Article [11] Computerized developments are available systems have opened up many possibilities for visuals weakened in much of the world. Voice feedback based on a virtual environment, such as in screen readers helped blind people access online applications endlessly however, a large number of visually impaired The Indian subcontinent did not benefit much from such systems. This was mainly due to differences in technology Necessary for Indian languages compared to them corresponds to other popular languages in the world. We found that our proposed architecture works much better than current GUIs. Article [12] In today's world of luxury and luxury Internet has become a basic service for people nice All are increasingly common these days information and information via the internet. It is mostly used to communicate with each other around the world to our friends and family. And that's it used to access several functions, such as reading news, learn new things etc. As technology

advances, it is becoming easier for people to approach digital life and digital communication. There are different ways here to connect with others via the Internet modern era Most of them choose the easiest way communication, i.e. electronic mail (e-mail). Email is the main way to send/receive messages from others Through the Internet. However, it is not reliable a for use by the visually impaired or illiterate this facility. In addition, this design can facilitate the process to the blind or even illiterate email and possible forwarding functions.

IV. EXISTING SYSTEM

The mail can be send only through text and it is difficult for the blind person to communicate through email. The visually challenged persons cannot use the normal mail system in which the user has to type the text which is to be send. The mail service fails in providing user friendliness to the people. There is no option to read out the received email which is in text format and also there is no option to convert speech to text to send the email. Some of the technologies used for converting voice to text are Interactive Voice Response (IVR) and screen readers. But for these technologies shortcuts has to be remembered. Although the screen readers are helpful for the blind still it is difficult for them to use it.

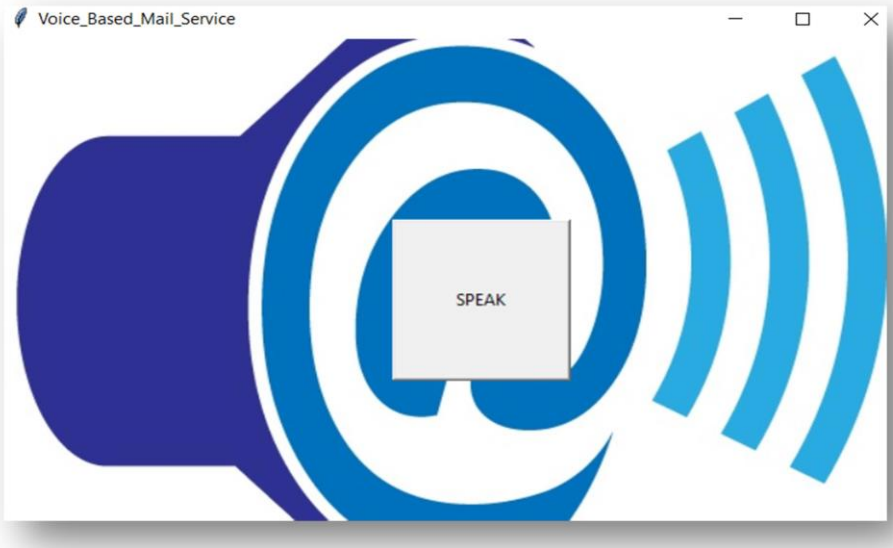
V. PROPOSED SYSTEM

Our proposed system aims on providing functionalities like compose, read, send, exit and receive emails with voice-based interactions. The voice given by the blind person is converted into text for sending the email. The received email which is in text is converted to speech. The user need not use the mouse or keyboard instead speech is given as input to the system. The system prompts the user with voice commands to perform certain actions and the user will respond to it. The speech given by the user is recognized and necessary operations are performed accordingly.

VI. DESIGN AND IMPLEMENTATION

6.1 User Interface

For Creating the Graphical User Interface (GUI), we are using tkinter framework in python. The Tkinter module has to be imported before we can develop a GUI application in the main window. If the cursor is moved on the screen then the function will start working and welcomes the user to voice controlled user interface then it will ask for the necessary options, that is either to read or compose message.



6.2 Speech To Text

This function converts the speech recognized through system microphone to the text and stores it in the variable. If not recognized it would rise an exception. The speech given by the user is converted to text with the speech recognition and gTTS (Google Text To Speech) libraries.

6.3 Send Email

The system will prompt the user with voice commands to choose the operation needed by the user, whether to send email or read email. If user choses to send email, then the system would ask the user to whom the mail is to be send. Then the system would ask the subject and text which is to be send. The speech given by the user is converted to text and the mail is send. SMTP protocol is used to send email.

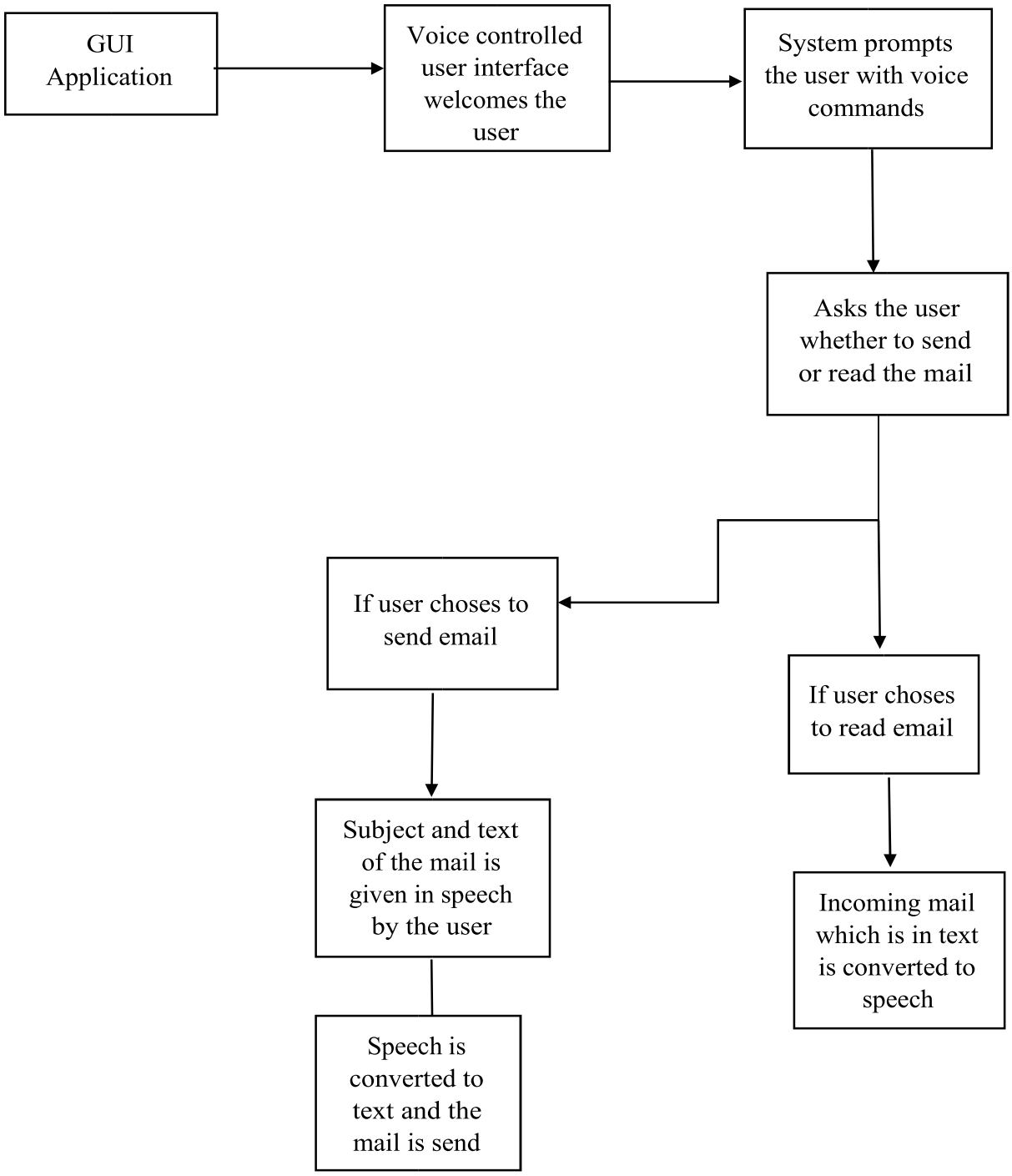
6.4 Text To Speech

This function converts the text given to that to the .mp3 file and plays the .mp3 file created. To use this function first import the gTTS (Google text tospeech) module. The text is converted to audio format which would help the blind people to read the incoming mail.

6.5 Read Email

If the user choses to read email, the incoming mail which is in the text format is converted to audio file. POP (Post Office Protocol) and IMAP (Internet Message Access Protocol) are used to receive email from the client-side.

VII.SYSTEM ARCHITECTURE



VIII.RESULTS

IX.FUTURE SCOPE

Email is a mode of communication for transmitting information. It is easier for normal users to send and receive the emails. But it is a challenge for visually impaired people to use the email. This application helps visually impaired persons as well as normal users to send and receive the emails through voice. The visually impaired person can compose and sent the mail without the help of a third person.

X.CONCLUSION

Our application overcomes some of the drawbacks present in the existing system. The usage of keyboard is completely eliminated in our system and there is no need of remembering keyboard shortcuts and keys position on the keyboard. The user's role is to listen to the voice commands given by the system and perform the necessary operations accordingly. The speech given by the user is recognized and desired operations are done. Our system provides user friendliness to the people. This system can be used by normal users, visually impaired persons and handicapped people.

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