

Voice based E-mail for the Visually Impaired

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Abstract-Modern generations must utilize Internet technology to the utmost extent due to the rising use of technology and its endless prospects. Email is one of the most popular features of the internet. The fundamental condition is the presence of widely utilized Internet functionalities. In addition to regular users, those who are blind or visually challenged still encounter difficulties when trying to utilize the internet, despite the existence of numerous screen readers. So, the purpose of this paper is to offer them voice aid. Along with email, voice assistance is available for a number of straightforward yet crucial daily-use programmers, like calculators and music players.

Keywords- Voice based Email, Visually impaired, Speech-to-text, text-to- speech, Speech recognition.

INTRODUCTION

Those who are blind are unable to use the most common postal services that we use on a daily basis. There are a number of technologies available to these visually impaired users to make these systems more user-friendly for them, including screen readers, automatic speech recognition software, speech to text and text to speech conversion, braille keyboards, etc. These technologies could not provide the right response like a typical system, so they were not particularly helpful to those folks.

The goal of Speech Based Email for Visually Impaired is to make it easier and more effective for people to access emails.

By utilizing text-to-speech and speech-to-text converters, this application enables everyone to manage their mail accounts just with their voice.

A survey has shown that there are more than 240 million visually impaired people around the globe. That is, around 240 million people are unaware of how to use Internet or E-mail. This system aims at developing an email system that will help even a visually impaired person to use the services for communication without previous training. The system

is completely built on interactive voice response which will make it user-friendly and efficient to use. The entire project is based on voice interaction which means speech recognition and synthesis.

LITERATURE SURVEY

We give a thorough literature review of current, related strategies in this section.

In article, a voice-based email architecture is suggested that will make email more accessible to blind people. Because it doesn't provide any aural feedback to read out text for the blind, the current system is not user-friendly for them. The suggested system makes use of mouse click events, interactive voice Response and speech recognition. Voice recognition is used for user authentication as well, for further security. Registration is the first module in this system. By asking the user to submit the necessary information, this module will gather all of the user's information. The system will query the user to log in during the second module, which is the login module. There are a total number of 4.1 billion email accounts created until 2014 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 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.

Voice-based systems for desktop and mobile devices are being proposed for blind people. The principal elements of the system proposed in this paper [7] are listed below.

1. The Gmail system scans the recipient mailbox for

messages.

2. RSS (Really Simple Syndication)
 3. Music listening
 4. Red book reader system
 5. Use the drive browser to look up drives and folders.
- System under Consideration: 38 blind individuals in an empirical study who completed 14 email-related tasks were used to evaluate the proposed email client. The suggested remedy might be useful. Email sending, receiving, management, and organization for blind persons. The design's usability has been assessed using standardized HCI accessibility and usability metrics. The suggested remedy was contrasted with other email applications like Google and Thunderbird.
- Framework for Tetra Mail client: Using the HCI paradigm as a guide, they created Tetra Mail, an email client for blind people. Tetra Mail's user interface is created in such a way that a blind person can use it without having a thorough understanding of how to use touch screen interfaces.

Results: As a result of its consistent and accessible interface design, Tetra Mail is a better option for blind users. The outcomes of implementing this prototype reveal enhanced user experience, accuracy in job completion and improved touch screen interface control when executing fundamental email management tasks. The findings show that Tetra Mail is an accessibility-inclusive email client that enables blind individuals to communicate with technology more effectively and manage email with less cognitive burden. An empirical investigation is used to evaluate the solution.

Findings revealed that using this email client makes it easier and more comfortable for blind people to send and receive emails.

Advantages of the above surveyed techniques
The majority of articles demonstrate how the speech-to-text and text-to-speech conversion processes make it easier and more participatory for people who are blind or visually impaired. People with disabilities feel like regular users thanks to this system. Voice-based technology is also helpful for those who are illiterate or disabled. Automated speech recognition is one of the main benefits. We can observe a decrease in the mental effort required by blind people to remember and write characters on a keyboard. A user-friendly system is the voice-based email system.

Disadvantages/Limitations of the above surveyed techniques

The use of mouse clicks for numerous activities is seen in practically all of the articles. For persons with vision impairment, it becomes more challenging. Also, this has no benefit for the Indian subcontinent because there are a large number of languages spoken there that speech recognition software cannot understand. Language used is primarily English. The system that is suggested is described in the section that follows.

PROPOSED SYSTEM

In the proposed system, a desktop application will be created so that users with different visual impairments can quickly and simply retrieve emails. The use of Google's Gmail is not supported by any of the currently available voice-based email systems, which all offer their own user-developed email services. In light of this, it is intended to develop the application By integrating it with the Gmail Client, providing users with even another benefit. Module Description. Sounds you produce by filtering what you say, and then digitize your speech into a text format that can be read by a computer. It is possible to store the recognized text in a file. C# and Net. Here, something was developed using internet platforms. Our speech-to-text system acquires and turns speech straight into text. The various components of voice recognition systems include feature extraction, acoustic models derived from training data, dictionaries, language models, and speech recognition algorithms.

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By integrating it with the Gmail Client, providing users with even another benefit. Module Description.

1. Speech- to-Text Converter

A speech-to-text converter can identify your voice, analyses the sounds you produce by filtering what you say, and then digitize your speech into a text format that can be read by a computer. It is possible to store the recognized text in a file. C# and Net. Here, something was developed using internet platforms.

Our speech-to-text system acquires and turns speech straight into text. The various components of voice recognition systems include feature extraction, acoustic models derived from training data, dictionaries, language models, and speech recognition algorithms.

2. Text-to-Speech Converter

It translates text to voice output using speech synthesis techniques. The blind utilize it to focus on written information; it is now widely used to convey financial data, emails and

All users can communicate through telephone to send and receive messages and other information. While providing instructions, text-to-speech is also employed on gadgets like handheld GPS systems to proclaim street names.

3. Voice based Email Application

The user can use voice instructions to send emails, listen to what they have typed, and receive emails. The application uses the SMTP protocol for Email. POP3 protocol is used for email receiving and sending. The SMTP (Simple Mail Transfer Protocol) server swiftly transmits the email messages, making it a dependable system for sending emails. In order to receive emails, POP3 (Post Office Protocol) is used. Emails are stored on the POP3 server and made available for viewing upon request. The same is accomplished in our application, where emails are downloaded at the user's request.

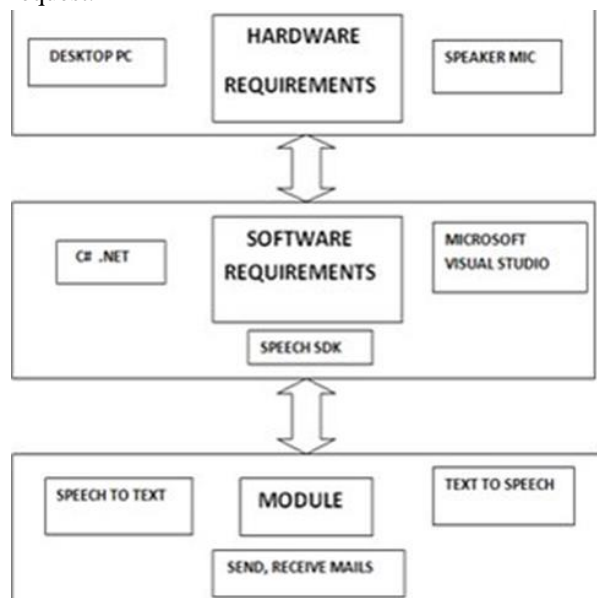


Figure 1: Overview of Proposed System

IMPLEMENTATION DETAILS

The implementation details based on the suggested system are resented in this section. According to Figure 3, email is saved in the database using the new user registration page. (Provide all information required for registration.) The Email ID and Password are the credentials needed for the registration process.



Figure 2: New User Registration Page

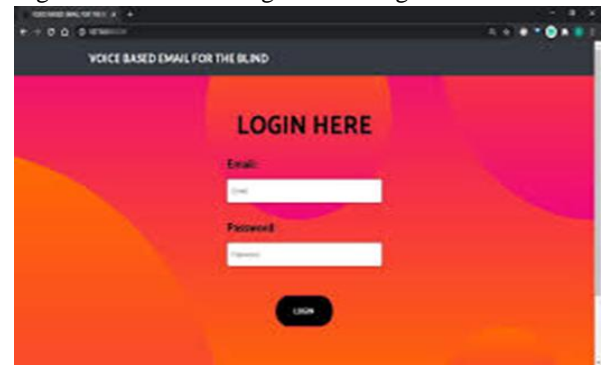


Figure 3: Login Page

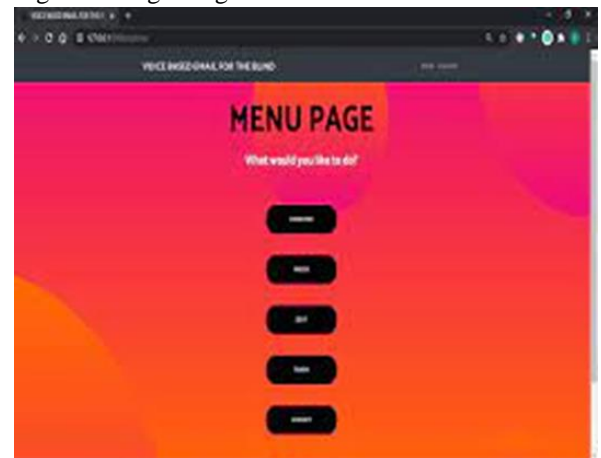


Figure 4: Login Page

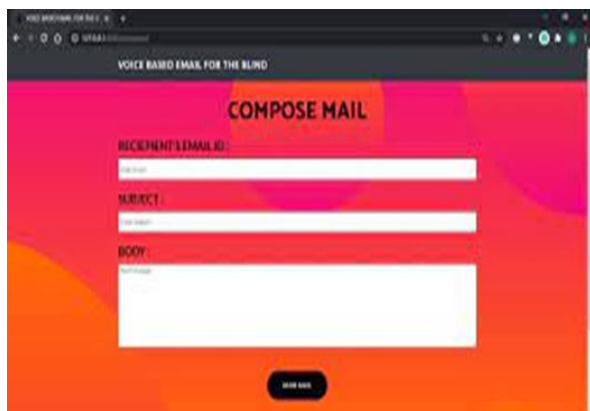


Figure 5: Compose Mail Page

According to Figure 3, reading of messages is done flawlessly and accurately. An application for text-to-speech conversion is used for this.

In relation to fig. 6 for email composition, we have included a message recorder for messages. Speech-to-text conversion is not very accurate because it needs to be trained. Users can easily attach the audio files using the recorder.

As a result, we have developed a desktop application that, with the use of Text-to-speech and Speech-to-text converters, makes checking and writing emails for the blind and visually handicapped easier.

CONCLUSION

This paper is the proposed Voice based Email system for visually impaired people, which is developed as an application which helps the blind and handicapped people to access mails easily and efficiently. It provides a voice-based mailing service where the visually impaired person could read and send mail by their own without the help of others. It requires basic information about keyboard shortcuts. System has eliminated all these concepts and overcome all difficulties faced by the visually impaired. It uses a speech recognition application which provides an efficient voice input method for mailing devices for blind. It is also useful for handicapped and illiterate people.

In future, we attempt to make the system keyboard free and fully voice based. So it's easy for the visually impaired people to access the services. The system developed now is working only on desktops. As use of mobile phones is emerging as a trend today, there is a scope to incorporate this facility as an application in mobile phones also. Also, security

measures to be implemented during the login phase can be revised to form the system safer.

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