

BREAKING BARRIERS: A VOICE-BASED EMAIL SYSTEM FOR THE VISUALLY IMPAIRED

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ABSTRACT

The internet has become one of the basic conveniences of daily life. Everyone has access to knowledge and information through the internet. However, it is difficult for blind people to access these textual materials and use all the services offered through the Internet. Advances in computer-based accessible systems have opened up many new opportunities for visually impaired people around the world. Virtual environments based on audio feedback, such as the screen readers, have greatly facilitated access to Internet applications for blind people. We describe the architecture of the Voicemail system, which allows a blind person to access email easily and efficiently. This is a web application that helps visually impaired people access their email account. Here, the entire process from registering on the website to sending an email or reading the received email is done through voice commands, completely eliminating the use of the keyboard. The main objective of this website is also the same i.e. to completely eliminate the use of the keyboard.

1. INTRODUCTION

Voice Based Email For The Blind is an application designed for visually impaired people to use the services to communicate without prior training. The system has been developed entirely based on Interactive Voice Response and allows the user to control email accounts using only voice and read, send and perform all other useful tasks. The system prompts the user with voice commands to perform certain actions and the user

responds, making it user-friendly and efficient. This technology can also be used by people who cannot read or write. The entire project is based on speech interaction, i.e. speech recognition and synthesis.

2. AIM & OBJECTIVES

- 1) The main objective of the project is to set up email communication based on voice commands for blind people who are not able to use the internet and its functions.
- 2) In addition, the system also aims to facilitate postal delivery for the visually impaired by making it user-friendly and efficient.
- 3) The primary goal of the system is to use speech recognition technology to improve the user experience.

3. MOTIVATION

Speech-based email system architecture that can be used easily and efficiently by a blind person. This is the most important motive for this system. Another motive is that the user does not have to remember the functions of the keyboard. - There is no need to use the keyboard. The aim of this system is to enable visually impaired people to use the email service like any other normal person.

4. SCOPE

The system developed now only works on desktops. In the future, we will try to incorporate this function as an application in mobile phones as well. The security measures implemented during the login phase can also be revised to make the system more secure.

5. LITERATURE SURVEY

On analysing similar proposals and doing research on voice-based email, we identified the technologies commonly used in these systems:

1. Screen readers - Screen readers are software programs that allow users to read content on the screen using a speech synthesiser. It is an interface between the computer's operating system and its application and the user. It causes the user to enter the commands that the speech synthesiser is to pronounce. The user can locate the cursor, focus on text, read a location on the map and many other activities.
2. Braille keyboards - Braille computer keyboards are very rare. They connect to the computer much like a regular computer keyboard. It accepts input from them. They are also used in Braille typewriters.
3. IVR - It is an interactive voice response system. It allows the user to interact with the system through voice. It analyses and synthesises the user's voice and responds to them in the form of speech, text, email, etc.
4. Conversion of speech into text: The given voice input is forwarded to the server where it is converted into text output.
5. Conversion of text to speech - The operation is similar to the previous one, but the response is in the form of speech.

6. EXISTING SYSTEM

In the existing system, the user must enter commands in English language. This works for most people, but those who are not proficient in English might find it difficult to use, as English is not the first language for most people. So this is a barrier between the system and those who are not proficient in English.

7. NEED OF A NEW SYSTEM

At present, there is no problem for users who speak English well in using the existing system, but there is a problem for those who do not speak English

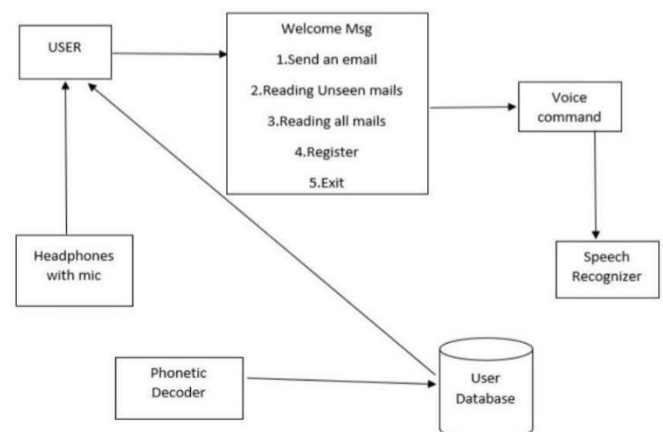
well. So if you have the possibility to give commands in your first language, it will be very helpful for most people. Even people who are not blind but have problems with English can use this system to get a better user experience and easier access to their emails. In addition, many security features have been improved to ensure the safety of user data in the database.

8. PROBLEM DEFINITION

The only way for a blind person to send an email is to dictate the entire content of the email to a third person, who then composes and sends the email on behalf of the visually impaired person.

But this is not the right way to deal with this problem. That's why we developed this project idea that allows the user to send mails using voice commands to improve the situation of people with special needs.

9. SYSTEM ARCHITECTURE



10. METHODOLOGY

- The user has to register themselves by creating their account.
- It will prompt for Email-id and Password, following which, authentication takes place.
- For correct credentials entered the user's Registration process will be successfully completed.
- The user can log into their mail systems, check mails and compose them.
- Here, the Speech-to-text & Text-to-Speech libraries come very helpful.
- System reads out mails, the sender's name, the subject and the main body.
- Similarly, users can compose emails with the help of the Speech Recognition library

11. FLOWCHART

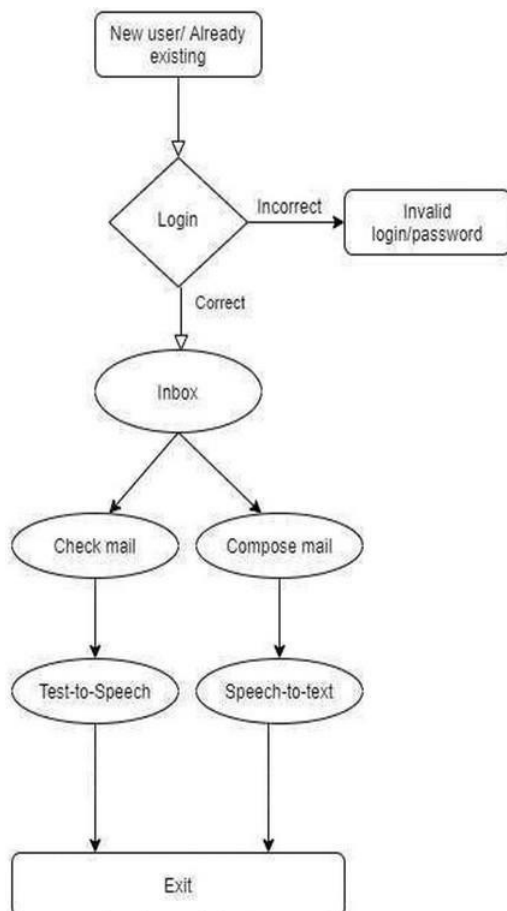
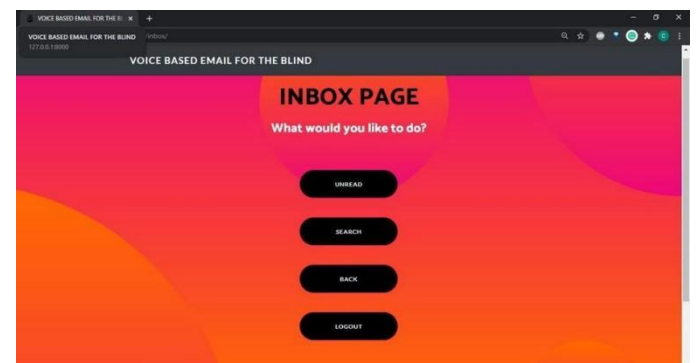
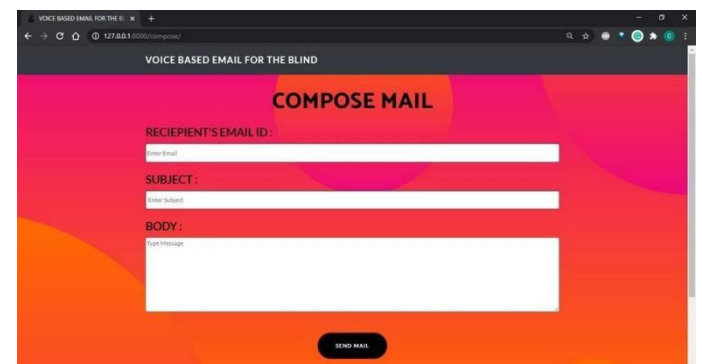
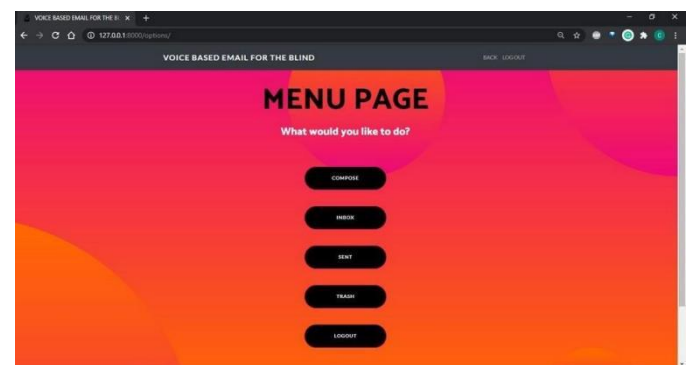
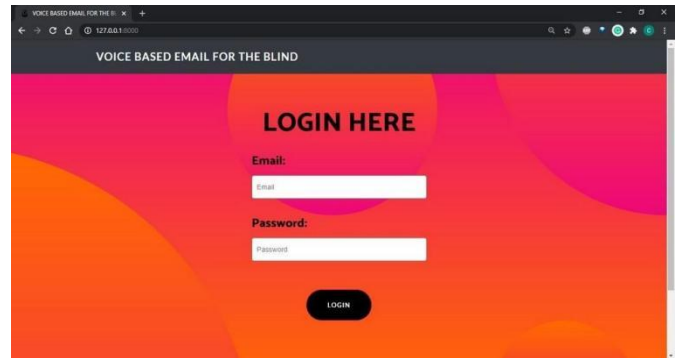
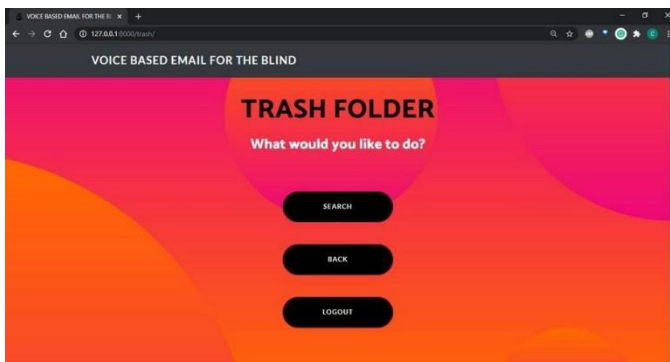
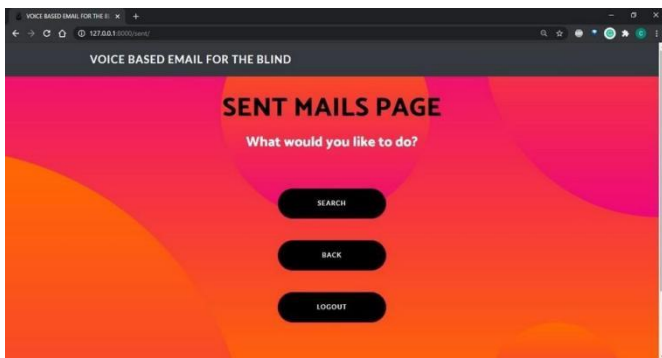


Figure 2: Flowchart of the Proposed System

12. RESULT





13. SOFTWARE & HARDWARE REQUIREMENTS

Software Requirements

- Operating System : Any version of Windows NT family (4.0 & above)
- **FRONTEND** : HTML5, CSS3, JAVASCRIPT AND BOOTSTRAP
- **BACKEND** : PYTHON
- **FRAMEWORK** : DJANGO

Hardware Requirements

- 1 GB RAM
- 200 GB HDD
- Intel 1.66 GHZ Processor Pentium 4

14. DEVELOPMENT PLAN

The system developed now only works on desktops. In the future, we will try to incorporate this function as an application in mobile phones as well. The security measures implemented during the login phase can also be revised to make the system even more secure.

15. CONCLUSION

In summary, we have developed a speech-based email system that eliminates all the difficulties faced by the visually impaired. The system uses speech recognition to provide an efficient speech

input method for mailing devices for the blind. The application is also useful for the disabled and illiterate. This e- mail system can be used by any user of any age group and is easily accessible.

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