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VOICE BASED EMAIL USING SPEECH RECOGNITION

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Abstract—
By creating a voice-based mail system, this project intends to satisfy the communication requirements of those who are visually impaired. Modern speech recognition and text-to-speech technologies will be used by the system to give a user-friendly and accessible email management interface. User identification, inbox management email composition, folder organization, search functionality, notifications, and connection with assistive technologies are among the key features. Users can customize the system's accessibility options, which include speech space, volume, and voice preferences. A seamless user experience will be provided through robust error handling and user assistance features. To make sure the system satisfies their unique needs, thorough user testing and feedback from visually impaired people will be incorporated throughout the development process—the voice-based mail system aims to empower those with visual impairments by giving them a convenient, independent, and inclusive means of accessing and managing their emails.

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

I. Introduction:

An innovative and empowering tool that allows persons who are blind to send and receive emails on their own is speech recognition technology for email. Traditional email systems might be difficult and time-consuming for blind persons to use.

However, individuals can dictate their messages verbally and have the software turn them into text using speech recognition software. For those who can only use their voice to manage their gadgets and have little or no use of their hands or fingers, this technology is very useful. Speech recognition technology allows them to compose emails, navigate through their inbox, and read messages without the need for any manual input. By using speech recognition software, visually impaired individuals can communicate more efficiently and effectively, and they can do so independently, without relying on others for assistance. It's a significant step towards improving accessibility and inclusivity for people with disabilities, and it highlights the potential of technology to empower and enable people with diverse abilities.

This technology is particularly helpful for blind people since it frees them from having to use a keyboard or mouse to navigate through email programs. Instead, users may just speak their messages into a microphone and have them sent out instantly. Their independence and effectiveness in email communication can both be significantly increased by this. Access to speech recognition software for sending emails is possible on a number of gadgets, including PCs, tablets, and Smart phones. There are many email applications with built-in speech recognition capabilities that can be used to compose and send emails for blind users, including Gmail and Outlook.

Overall, speech recognition email sending for the blind is a strong tool that can help remove barriers and increase accessibility for those with visual impairments in the digital age. This article's major goal is to create a voice-based emailing system that will enable people who are blind or illiterate to use everyday technology like sending and receiving emails and utilizing the internet. Users who are blind can sign in by speaking with ease thanks to this technology. Giving those who are blind or visually handicapped a stronger sense of community is the primary goal of developing the kind of

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system detailed in the study. Users of any age can effortlessly access our email system. This technology may one day be improved and extended to other services, such as texting and the voice control of other programs, in addition to email.

A. Objective:

The main objective of this article is to develop a voice-based emailing system that will make it possible for those who are blind or illiterate to use commonplace technology like emailing and browsing the internet. This technique makes it easy for blind users to sign in by speaking. The main objective of creating the kind of system described in the study is to give people who are blind or visually impaired a stronger sense of community. Our email system is easily accessible by anyone, regardless of age. In the future, this technology might be enhanced and utilized for new services, such as texting and using voice commands to control other programs in addition to email.

II. Literature review:

Existing method:

Email clients, which are software applications or web apps made specifically for sending, receiving, and managing email messages are typically used to send emails. Composing the email, adding the recipient's address, and sending the mail are the stages involve sending mail.

Using this procedure is relatively simple for average individuals, but blind people cannot use it because they are blind and cannot see. Typically, sending an email involves looking at the screen, typing the message and any other required information, or using a smart phone to enter the information. People who are visually impaired should not use the existing systems because they do not offer voice commands or audio features. Additionally, there are a number of search engines that now exist that accept text requests from users and retrieve the pertinent documents from servers to show them in text form in response, which is impossible for those who are blind or visually impaired.

Proposed method:

The system that has been proposed is based on a wholly original concept, and accessibility and security have been given top priority in its development. Only when a system can be used by people of all abilities, including those who are normal, visually impaired or differently able, can be claimed to be completely accessible. In terms of security, the prior system required users to voice their passwords [1] and [3]. But in the proposed system, we use a face recognition system to verify whether the user is legitimate or not additionally, if the face recognition system is unable to recognize the user as legitimate, the system will prompt the user to login(requiring the user to speak their user name and password, which will be their user name plus their ID).Regarding accessibility, in the past, people who are blind or visually impaired had to roll their mouse across the screen to carry out specified tasks, such as, say, clicking a button. When the cursor is over the register icon, the phrase "register button" will play; when it is clicked, the phrase" you are on the registration page" will play. Additionally, a logout icon will be there. When the mouse hovers or moves over it, the word "logout" will appear. Because of this, a user may log out of the system whenever they choose [1]. However, using a keyboard and a mouse click is completely abolished in the suggested solution for those with visual impairments. The user will be asked which action they would like to take, and the system will carry out a specified action based on their choice. As an illustration, a user can say "logout" to leave the system.

III. Methodology

Technology selection includes assessing and choosing the best options for text-to-speech conversion, user authentication, voice recognition, and integration with assistive technology. Think

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about things like integration simplicity, compatibility, and accuracy.

Design of the System: Create a thorough system architecture that includes all of the voice-based mail system's features. Specify the system architecture, data models, and user interface layout, making sure that they are simple to use, accessible, and intuitive for those with visual impairments.

Implementing speech recognition technology will allow spoken commands to be converted into text. To enhance precision and recognize particular speech patterns, train the speech recognition system using a dataset that contains speech samples from visually impaired people.

Integrate a top-notch text-to-speech engine to translate the content of emails into spoken language. Set up text-to-speech technology to produce comprehensible speech for users who are blind.

Implement a safe user authentication system that allows for the accessibility of people with visual impairments. Look into alternatives to traditional techniques that guarantee privacy and security, such as speech recognition, biometric identification, or other solutions.

Implement a secure user authentication mechanism that makes it possible for those with visual impairments to access the system. Examine alternatives to conventional methods that ensure privacy and security, such as speech recognition, biometric identification, or other techniques.

A) *Block Diagram*

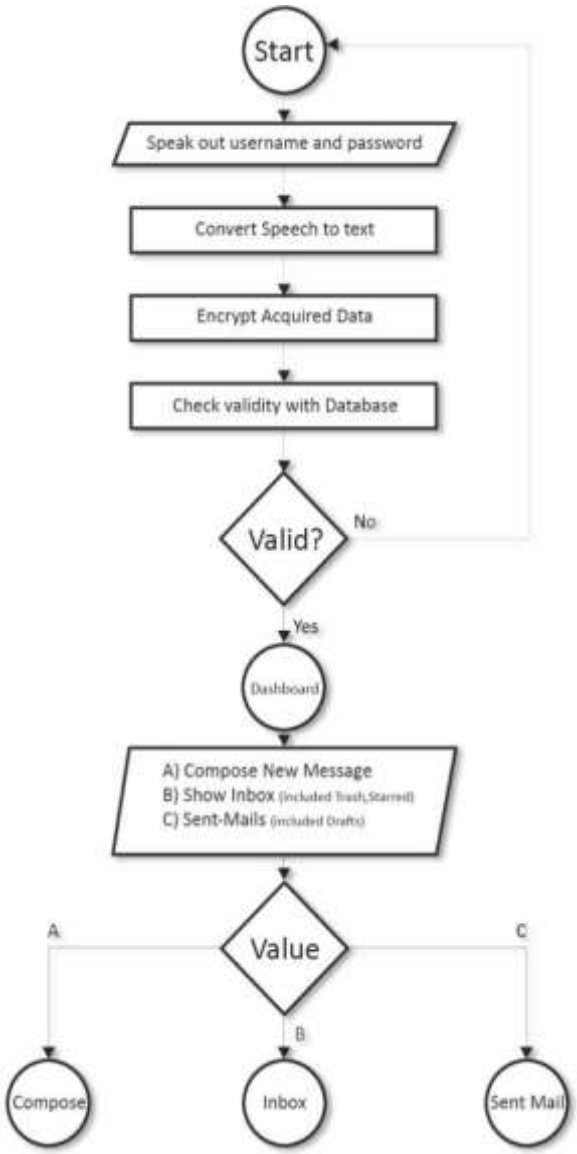

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Fig 1. Block Diagram

IV Working and it's principle

1. Speech_recognition: The system uses speech recognition software to translate spoken instructions or requests into text. Modern models and algorithms listen to the speech input, recognize the words and phrases, and then translate them into text.
2. Natural Language Processing: To understand and interpret the transcribed text, natural language processing (NLP) techniques are used. The text input is processed by NLP algorithms, which also extract pertinent data and ascertain the user's intent command.
3. Contents, into spoken words. For users who are blind or visually handicapped, TTS engines produce speech output that sounds human.
4. User Authentication: To confirm the identification of visually challenged users, secure user authentication techniques are used. This may employ several techniques, such as voice recognition, where the system examines the user's distinctive vocal traits to verify their access.
5. Effective inbox management is made possible by the system features for users who are blind or visually impaired. Users can navigate through their email using voice commands, listen to email subject lines, sender information, and message content, mark emails as read or unread, and carry out other typical inbox management operations
6. Voice input is available for email composition and sending for users who are blind or visually impaired. They can speak the email body, subject line, and recipient's email address, after which the text is transformed and sent to the intended recipient.
7. Users may use voice commands to use the system's folder organization feature to group their emails into folders. To keep their emails organized and accessible, users can create new folders, transfer emails between folders, and do other organizational chores.
8. Users can use voice commands to search for specific emails using sender, subject, date, or keyword criteria. The technology uses search algorithms to locate pertinent emails and then communicate the findings.
9. Alerts and notifications: Users who are blind can receive audio alerts when new emails are received. To make sure users are aware of incoming mail, these notifications can take the form of voice announcements or other aural cues.
10. Users who are blind can get audio notifications when fresh emails are received. These notifications, which might come in the form of voice announcements or other audible cues, are meant to make consumers aware of any new mail.
11. Customizable accessibility settings are offered to meet the unique requirements and preferences of users who are blind or visually impaired. To improve the user experience overall, this provides choices to change speech rate, volume, and voice preferences.
12. Error management and support: To deal with any problem that might come up when using the system, it has strong error handling procedures. A help menu, troubleshooting advice, and direct contact with support are all provided to help visually impaired users work through any issues.

Accessibility, usability, independence, and customization are the guiding concepts for a voice-based mail system for people who are blind or visually impaired. By allowing visually impaired users to independently navigate, comprehend, compose, and organize their emails using voice commands, the system intends to make email management inclusive and accessible for them. Usability guidelines ensure that the system is simple to use, intuitive, and voice interaction-friendly. Users can modify settings according to their unique needs and tastes by using customization features.
Overall, the system provides a useful and a powerful email management solution for people who are blind or visually impaired by fusing cutting-edge technologies with accessibility and user-

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centered design concepts.

V Results

The accuracy and effectiveness of the email-sending system can be used to evaluate the simulation's findings. Among the key performance indicators (KPIs) are:

Accuracy of Speech Recognition: By contrasting the text that was transcribed with the speech input itself, one can assess how accurate the speech recognition system is. A higher accuracy rate means that the system can accurately translate the user's speech and extract precise data for email composition.

The percentage of emails that are sent successfully and without errors can be used to calculate the success rate of email sending. The system's ability to send emails precisely and consistently is in dictated by a higher success rate.

User Confirmation and Correction Rate: It is possible to quantify the rate at which users confirm or correct the retrieved data. A higher confirmation and correction rate shows that the system can successfully convey the extracted information to the user and provides for necessary corrections, ensuring correctness in the emails that are composed.

Error Handling Rate: This refers to the frequency with which errors, such as wrong email addresses or missing information, are found and dealt with. A reduced error rate means that the system is more adept at handling mistakes and informing the user to make changes, resulting in prepared emails that are accurate and comprehensive.

Usability and Accessibility: Based on comments from blind users, the system's usability, and accessibility can be assessed. This can entail getting user feedback on the system's user interface, usability, and efficiency with speech recognition when sending emails.

VII **Advantages and Applications**

ADVANTAGES

.Accessibility: Speaking to a computer to send an email can make it easier for blind individuals to communicate because they don't have to rely on standard keyboard and mouse inputs.

Convenience: Speech_recognition can make it simple for blind users to compose and send emails by voicing their message instead of manually typing it or navigating through complicated user interfaces.

Efficiency: By allowing blind users to swiftly speak their message rather than having to type it out, speech recognition could potentially speed up the email-sending process for them.

Flexibility: Depending on the situation and the selected device, speech recognition can be used with a variety of gadgets, including smart phones, tablets, and voice-controlled gadgets. This gives blind people the ability to send emails.

Inclusivity: Sending emails with speech recognition enables blind people to participate in email-based communication just like their sighted colleagues, giving them the same access to the digital world.

Increased independence: Speech recognition technology allows blind people to compose and send emails freely without requiring assistance from seeing people.

Increased efficiency: Thanks to speech recognition technology, blind people can swiftly and effortlessly dictate their emails, vastly enhancing the pace and effectiveness of their communication.

Improved accuracy: Speech recognition software is getting more accurate, which lowers the possibility of typos in email content.

Access to visual data: Screen reading software in combination with speech recognition technology enables blind people to receive feedback on the email's contents, including any visual components like attachments, formatting, or graphics.

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APPLICATIONS

- Personal Communication: Blind people who use email sending with speech recognition can exchange information, remain in touch, and send emails to friends, family, or coworkers.
- Professional Communication: Blind users can use email sending with voice recognition for professional communication, including exchanging emails for work-related purposes, working with colleagues, or conversing with clients or customers.
- Information retrieval: Users who are blind can send emails using voice recognition to inquire for information from others, such as making queries, requesting papers or reports, or requesting assistance.
- Online shopping: Blind users can utilize email sending with voice recognition for tasks like placing orders, checking the status of their orders, and getting in touch with customer support if they have any questions or problems.
- Social Media Involvement: Blind individuals can utilize email sending with speech recognition for social media involvement, including sending emails to post updates, share content, or correspond with contacts on social media.

VIII Conclusion

The accessibility and practicality of communication for blind people can be considerably improved by using speech recognition when sending emails. Blind individuals can independently compose and send emails using their voice by utilizing speech recognition technology, doing away with the requirement for conventional keyboard and mouse inputs. These can enable blind people to engage in a range of personal and professional activities that require email communication and communicate effectively in the digital world.

Improved accessibility, practicality, effectiveness, adaptability, and inclusion are benefits of voice recognition-assisted email sending for blind people. But when designing and putting such systems into practice, it is important to take into account and handle potential drawbacks, including speech recognition accuracy, restricted control, language and accent restrictions, and privacy and security worries.

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- Anthony Zhang's "Python SpeechRecognition"explainshowtocreatespeech-enabledprogramsusingtheSpeechRecognition package and gives a general introduction to speech recognition in Python.
- "Python Text to Speech with Pyttsx3" by Pedro Henrique This tutorial demonstrates how to use the pyttsx3 module in Python to convert text to speech.signed anda