

ISSN: 0970-2555

Volume : 54, Issue 4, No.1, April : 2025

VOICE BASED EMAIL SYSTEM

Mrs. Snehal Jagtap, Assistant professor, Dept. of Computer Engineering, Genba Sopanrao Moze College of Engineering, pune, india.

Aditya Chaudhari, Student, Dept of Computer Engineering, Genba Sopanrao Moze College of Engineering pune, india.

Kalpesh Sonawane, Student, Dept of Computer Engineering, Genba Sopanrao Moze College of Engineering pune, india.

Siddhant Herale, Student, Dept of Computer Engineering, Genba Sopanrao Moze College of Engineering pune, india.

Vaishnavi Kamble, Student, Dept of Computer Engineering, Genba Sopanrao Moze College of Engineering pune, india.

ABSTRACT :

With the growing reliance on digital communication, email has become an essential tool for both personal and professional correspondence. However, visually impaired individuals face significant challenges in accessing and managing emails due to the predominantly text-based interfaces. Recent advancements in speech recognition and text-to-speech (TTS) technologies have paved the way for the development of voice-based email systems, enabling hands-free email interaction. This paper presents a comprehensive review of various methodologies proposed in recent research for designing and implementing voice-controlled email systems. The reviewed systems integrate automatic speech recognition (ASR), natural language processing (NLP), and interactive voice response (IVR) to facilitate seamless email composition, reading, and management through voice commands. Additionally, some models incorporate AI-driven emotion detection, face recognition for authentication, and attachment handling capabilities to enhance user experience and security. Despite these advancements, challenges such as speech recognition accuracy, security vulnerabilities, and limited support for complex email functionalities remain prevalent. This paper highlights the strengths and limitations of existing approaches and identifies potential future research directions to improve accessibility, security, and efficiency in voice-based email systems. Keywords: speech recognition, text-to-speech, interactive voice response, voice-based email.

INTRODUCTION

Email is a fundamental communication tool, widely used for professional and personal interactions. However, visually impaired users face significant challenges in accessing email services due to textheavy interfaces that require keyboard and screen navigation. Existing assistive technologies, such as screen readers and braille keyboards, provide limited accessibility and require a learning curve to address these challenges, researchers have proposed voice-based email systems that utilize speech-to-text (STT), text-to-speech (TTS), automatic speech recognition (ASR), and interactive voice response (IVR). These technologies enable users to compose, read, and manage emails using voice commands, eliminating the need for traditional input methods. Some implementations also integrate AI, NLP, and face recognition for security and efficiency.

Despite these advancements, challenges such as speech recognition accuracy, security vulnerabilities, and handling attachments remain. This study reviews various voice-based email solutions, highlighting their strengths, limitations, and potential improvements for enhanced accessibility and usability.

LITERATURE SURVEY:

Latha L et.al [1], this paper proposed a system that uses an android speech to text which can recognize 10 languages and android text to speech which can speak multiple languages. This



ISSN: 0970-2555

Volume : 54, Issue 4, No.1, April : 2025

proposed system is an android application for composing, reading, sending and receiving emails. Uses android speech recognizer is used for Speech to text conversion, android TTS engine is used for Text to speech conversion, API's and keys, and Human presence detection system (detects motion around mobile within 6meters and if detected give buzzer and LED blinks) to ensure user's privacy. This paper stated that when this application starts, the first step is the manual registration process which asks for information like name, address, birth date and contact number. After successful registration, the user is given options like send mail, set alarm, location finding, etc. The keyword "mail" should be said to enter the mail module then keyword "help" should be said to know all modules available. In this case options given are compose mail (option which takes voice input of mail id of receiver and message content), search mail (option to find mail of user's interest) and get mail (this option reads first three mails in inbox and read it for user). Some of the drawbacks is that human detection sensors can't be fit into phones (It can be fit into phones after its size is reduced using nanotechnology).

Dr. S. Brintha et al [2], proposed a system with TTS and STT to read and record symbolic linguistic representations like phonetic transcriptions. The architecture of the system includes two modules namely interface selection and mailing option, the first module selects the type of users that is blind user or sighted user. And the second module includes the simple mailing options to perform all tasks.

Ms. R.D. Chavare et al. [3], The authors proposed Voice E-mail for the blind using text to speech, interactive voice response, and speech to text. The Speech-to-Text system, sometimes called Automatic Speech Recognition, takes spoken words and turns them into written ones, making it much simpler to jot down ideas in an email. The system reads out the sender, the topic, and the content of the relevant mail when the Text-to-Speech module produces an audio result for the corresponding mail that was entered. It offers a voice-based mailing service so that people with vision impairments can read and send matching emails on their own, independent of other people. It requires some background knowledge of keyboard keys.

Jain. V. et al. [4], this research proposes a voice -based email system that visually impaired people can use to easily access email. With the aid of technology, this initiative aims to assist people who are blind in sending and receiving voice mails. The advancements in text-to-voice email delivery.

PROPOSED SYSTEM :

Our proposed system is designed to help visually impaired individuals send emails easily and independently. With this system, they won't need any assistance for their email tasks, making communication more accessible. It uses Interactive Voice Response (IVR) technology, allowing users to interact with the system using voice commands. This makes the process smooth and user-friendly, ensuring that even those with limited or no vision can manage their emails effortlessly. By providing more functionality for people with disabilities, this system helps bridge the gap in digital communication and promotes inclusivity. Once the user opens the system, they are prompted to enter their registered email ID and password for authentication. Since this system is primarily designed for blind or visually impaired users, voice-based password input is supported for accessibility. The system provides text fields for entering the sender's and recipient's email IDs. With the integrated voice recognition system, users can simply speak the email addresses, and the system will automatically enter them into the respective fields. Additionally, a subject and message box are available where users can dictate the content they wish to send, ensuring a fully voice-driven email composition process. This hands-free approach enhances accessibility and convenience for visually impaired users.

In electronic mail, it uses a protocol called the SMTP protocol for sending voice emails. The sending of emails relies on a technology called SMTP (Simple Mail Transfer Protocol), which is simple to use and ensures that the e-mails are quickly forwarded by the SMTP server. When you



ISSN: 0970-2555

Volume : 54, Issue 4, No.1, April : 2025

configure an email client to sync with your Gmail account, a page prompts you for your Gmail SMTP details. SMTP is used to get sync with Google mail server. The emails are available upon request. Similar practises are used in our system, which allows customers to request that emails be downloaded. Our system also includes the functionality of attaching files,. that are supported by email.

AIM AND OBJECTIVES:

Aim:

The primary aim of this project is to develop a voice-based email system that enables visually impaired individuals to send, receive, and manage emails independently using voice commands, eliminating the need for external assistance and promoting digital inclusivity.

Objectives:

Enhance Accessibility:

Provide a user-friendly email system that allows visually impaired users to communicate without relying on traditional graphical interfaces.

Implement Voice Commands:

Integrate Interactive Voice Response (IVR) technology to enable hands-free email operations, including composing, reading, and sending emails.

Ensure Ease of Use

Develop a simple and intuitive system with minimal complexity, making it accessible even to users with limited technical knowledge.

Convert Speech to Text & Vice Versa

Utilize speech recognition and text-to-speech conversion to facilitate seamless communication.

Promote Digital Independence

Empower visually impaired users to perform email-related tasks without external assistance, fostering self-reliance.

Improve Security & Privacy

Ensure user authentication and data security to maintain confidentiality while handling emails.

Integrate with Existing Email Services:

Make the system compatible with popular email platforms for better usability and real-world application.

Increase Awareness & Inclusivity

Encourage technological advancements that bridge the communication gap for differently-abled individuals and promote social inclusion.

SCOPE OF PROJECT

The development of computer-based accessible solutions has created numerous opportunities for blind and visually impaired individuals worldwide. However, most traditional systems rely heavily on visual interfaces, making them difficult for visually impaired users to navigate. The proposed voice-based email system addresses these limitations by offering a fully voice-command-driven approach, ensuring greater accessibility and ease of use. Unlike existing systems, which prioritize graphical user interfaces, the proposed system enables users to perform essential email functions such as composing, deleting, sending, and reading emails using voice commands. It is implemented using Python and designed to be highly user-friendly and compatible. Users can interact directly with the system by issuing commands like "compose an email," "display the email ID of the last three unread messages," and "read a specific email." This system is inclusive, catering to visually impaired, illiterate, and general users alike, whereas traditional email platforms are primarily designed for sighted individuals. For people who are blind or visually impaired are the main topic of this study. This study offers a text-to-voice and voice to- text email access method for those who are



ISSN: 0970-2555

Volume : 54, Issue 4, No.1, April : 2025

blind. This enables persons who are blind to send mail using voice control instead of a keypad.

METHODOLOGY:

A. Speech-to-Text:

A Speech-to-Text (STT) converter is a technology that transforms spoken language into digital text using Automatic Speech Recognition (ASR). It analyses audio signals, phonetic patterns, and linguistic data to generate accurate text output. This technology is particularly beneficial for visually impaired users, allowing them to control systems through voice commands instead of relying on keyboard shortcuts or screen readers. In a voice-based email system, users can speak their usernames and passwords for authentication and navigate through inbox, sent mail, and email composition using voice commands. The speech recognition process consists of multiple stages, including feature extraction, an acoustic model database (trained on speech data), a dictionary, a language model, and a recognition algorithm. By enabling hands-free interaction, STT enhances accessibility and usability for visually impaired individuals.

B. Text-to-Speech

Text-to-speech converter helps in obtaining output from the system. When any operation occurs in the system the resulting output is in text format but it is useless for visually impaired people. So, the text is then converted to speech and is heard by them. It is very useful as it does not require pressing keyboard shortcuts or anything else for outputs displaying. In Voice based email system, when the user gives instructions to read the inbox mails or sent mails then the text-to-speech is also used on devices such as portable GPS units to announce street names when giving directions.

C. Interactive Voice Response

Interactive Voice Response (IVR) is an advanced technology that facilitates interaction between users and a system by responding to voice inputs or keyboard commands. It enables users to communicate with an email host system through voice commands, reducing the need for manual navigation. Once the IVR dialogue is activated, users can easily make inquiries and perform various functions. These systems respond with pre-recorded audio messages, guiding users through different options and assisting them in completing tasks. To ensure seamless interaction, the pre-recorded audio.

D. Speech Recognition

Speech recognition is a technology that enables machines to identify and process spoken words and phrases, converting them into a machine-readable format. Basic speech recognition software has a limited vocabulary and can only recognize predefined words or phrases. Additionally, it often requires clear and precise pronunciation to ensure accurate identification. Advanced speech recognition systems, however, use machine learning and natural language processing (NLP) to improve accuracy and handle varied accents, speech patterns, and background noise effectively.

CONCLUSION :

We have designed a method that will make it easier for those with visual impairments to use email services effectively. This approach may assist in overcoming several obstacles that blind people previously encountered while trying to access emails. Screen readers, which might lessen the cognitive strain of memorizing tasks, have been removed. The major goal of developing the kind of system outlined in the study is to increase the sense of community among those who are blind in this little environment. This e-mail system can be used by any user of any age group with ease of access. It has the feature of speech to text as well as text to speech with speech reader which makes designed a system to be handled by a visually impaired person as well as blind people. This app will help the Blind People to sending the mail through voice. The app will be used by Blind People,



Volume : 54, Issue 4, No.1, April : 2025

Handicapped, as well as normal.

REFERENCES :

[1] Sneha Sara Aby, Arya A, Girija V R, Devika Raj D, Anagha K, December 2021, VMAIL-Voice Based Email for Blinds, Volume 8 Issue 7, National Conference on Smart Systems and Technologies (NCSST) ISSN: 2349-6002.

[2] Chaitali Patil, Shifa Shaikh, Ashutosh Shahane, Tushar Jadhav, Prof. Abhay Gaidhani, 1 January 2022, Voice Based E-mail System for The Visually Challenged, International Journal of Creative Research Thoughts (IJCRT), Volume 10, ISSN: 2320-2882.

[3] Ms. R.D. Chavare, Ms. S.B. Ketkale, December-2023, VOICE BASED E-MAIL FOR BLIND,

Volume 05, International Research Journal of Modernization in Engineering Technology and Science (IRJETS), ISSN: 2582-5208.



ISSN: 0970-2555

Volume : 54, Issue 4, No.1, April : 2025

[4] M. R. Pradhicsha, M. Vasanth, V. Renita, Dr. P. Lakshmi Harika, 07-July-2022, Voice Based Mail System for Visually Impaired, Volume 11, International Journal of Engineering Research & Technology (IJERT), ISSN: 2278-0181.

[5] Gagana, Brundha, Nita meshram, January-2023VOICE BASED EMAIL FOR VISUALLY IMPAIRED, Volume05, International Research Journal of Modernization in Engineering, Technology and Science (IRJMETS)e-ISSN:2582- 5208.

[6] Pranjal Ingle, Harshada Kanade, Arti Lanke, 2016, Voice based e-mail System for Blinds, () ISSN 2349-4859, Volume 3, International Journal of Research Studies in Computer Science and Engineering (IJRSCSE), ISSN 2349-4859.

[7] Mamatha, Veerabhadra Jade, J. Saravana, A. Purshotham, A. V. Suhas, August- 2020, Voice Based E-mail System for Visually Impaired, Volume-3, International Journal of Research in Engineering, Science and Management (IJRESM), ISSN: 2581-5792.

[8] Parkhi Bhardwaj, Gunjan Sethi, Dec 2020, Voice Based E-mail System for Visually Impaired: A Review, Volume 07, International Research Journal of Engineering and Technology (IRJET), e-ISSN: 2395-0056.

[9] Prof. Swati B. Raut, Mr. Piyush Mehta, Mr. Pranav Jambhulkar, Mr. Dhananjay Dongare, Mr. Himanshu Patil, May 2023, Voice based E-mail system for Visually Challenged People, Vol. 8, International Journal of Novel Research and Development (IJNRD), ISSN: 2456-4184.

[10] ASHWITHA SHETTY, MEGHA MANJUNATH NAIK, NAYAK ASHMITHA SURESH,

SACHIN, SANJEEVI KUMAR P, May 2022, Review on Voice Based Email System for Visually Impaired, Vol. 11, International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE), ISSN: 2278-1021.