

The Way to make Blind People Use E-Mail System: Voice Based E-Mail Generating System Using Artificial Intelligence

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Abstract - In today's world, effective communication is essential for connecting with others. Communication technologies play a vital role in improving social and personal interactions. When combined with the internet, these technologies make communication convenient. However, individuals who are physically challenged face difficulties in utilizing such technologies due to visual and physical impairments. While there have been advancements in technology, they are often inaccessible to these individuals. This paper aims to address this issue by creating an email system that is user-friendly and accessible to new users and those with physical impairments, without requiring extensive prior experience. The system operates solely through mouse actions and voice conversion, enabling even illiterate individuals to send emails using speech recognition and text-to-speech functionalities. The system relies on responsive voice interaction, ensuring a hassle-free and easy-to-use experience. It is designed to send emails quickly and provides all necessary options and functions for effective email communication.

Key Words: Speech Recognition, Text-To-Speech (TTS), Interactive Voice Response (IVR), Speech-To-Text (STT), Email, System for Physically challenged.

1. INTRODUCTION

Visually impaired individuals face significant challenges in utilizing technology due to its reliance on visual perception. Unfortunately, not everyone has the ability to use the internet effectively because it requires reading the text displayed on the screen. This limitation renders the internet useless for those who are visually impaired or illiterate. However, in this system, three key technologies are employed to address this issue. The first is Speech-to-Text (STT), where spoken words are converted into written text. By clicking on a microphone icon, users can speak, and their speech will be transformed into readable text format, allowing visually impaired individuals to access, and read the content.

2. Body of Paper

2.1 Problem Statement:

To the main problem of to implement this system is to help blind people to handle email system easily and help to read incoming mail and provide login security.

2.2 Proposed Solution :

Our system includes additional modules such as SMS and calling, which can be operated through voice commands. The main objective is to provide enhanced functionality specifically designed for handicapped individuals.

With this system, handicapped individuals can easily perform their tasks without requiring assistance from others.

The system promotes independence by empowering handicapped individuals to carry out their work on their own.

It utilizes Interactive Voice Response (IVR) technology to interact with users.

When users engage with the system, it automatically generates voice prompts to guide them through various actions.

The proposed system prioritizes user accessibility, ensuring that the email system is easy to use for all individuals.

2.3 System Design:

User Interface: The system will have a user interface that allows users to interact with the voice-based email system. This can be a web-based interface or a mobile application.

Speech Recognition: The system will use speech recognition technology to convert voice input into text. This can be achieved using libraries or APIs available in Python, such as Google Cloud Speech-to-Text.

Natural Language Processing: The text generated from the speech recognition process will be processed using natural language processing techniques. This can include tasks like sentiment analysis, intent recognition, and entity extraction. Python libraries like NLTK can be used for this purpose.

Email Composition: Once the user's voice input is converted into text and processed, the system will compose the email by extracting relevant information such as recipient email addresses, subject, and body content. Python's SMTP library can be used to send the email.

Text-to-Speech: To provide a voice-based experience, the system will convert the composed email into speech using text-to-speech technology. Python libraries like pyttsx3 or gTTS can be used for this purpose.

Email Delivery: The composed email, now in speech form, will be sent to the recipient's email address using the standard SMTP protocol. The system will establish a secure connection using HTTPS for data transmission.

Email Retrieval: Similarly, when a user wants to retrieve their emails, the system will connect to the email server using standard protocols like IMAP or POP3 over HTTPS to retrieve the emails. The received emails can then be converted into speech using text-to-speech technology and presented to the user.

Security: The system will ensure the security and privacy of user data by using encryption protocols such as HTTPS for secure communication and user authentication mechanisms.

Overall, this system architecture leverages standard software components like HTTPS, SMTP, and Python to enable voice-based email functionality. The combination of speech recognition, natural language processing, and text-to-speech technologies allows users to compose and retrieve emails using their voice, providing a convenient and hands-free email experience.

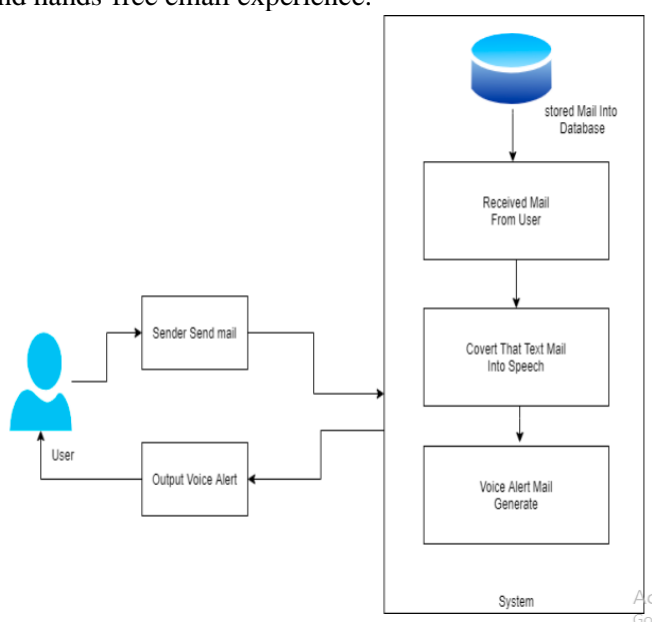


Fig 1. System Architecture

2.4 APPLICATIONS:

- This Voice Based Email system is built so that blind people can use the email services independently.
- These systems use Speech to Text and Text to Speech converters for the conversion of speech to text and vice versa.
- Due to its simplicity and accessibility, Internet is widely used in almost all the communication applications.

3. LITERATURE SURVEY AND RELATED WORK

1. Paper Name: Voice Email Based on SMTP For Physically Handicapped

Description: In the present scenario, everybody needs communication technology to connect with each other. Communication technologies are significant these days for the betterment of social and personal interaction. The combination of technologies with the internet makes communication easy. However, the person who is physically challenged suffered a lot to utilize this technology due to visual and physical difficulties. There are many technologies advancements have come though it is not possible to use like normal users. This paper aims at creating an email system that helps even new users or physically impaired people to use the system for communication.

2. Paper Name: Discovery of Activities' Actor Perspective from Emails based on Speech Acts Detection

Description: The given paper introduces the first formalization of knowledge extracted from emails regarding actors' perspectives. It describes a method that utilizes speech act detection in email text to uncover this knowledge. To validate the approach, a publicly available email dataset was used, and the results obtained are shared to promote reproducibility in this research domain.

3. Paper Name: Email classification via intention-based Segmentation

Description: This paper presents a novel dynamic spam filter model that considers changes in user interests over time. It utilizes intention-based segmentation to compare text document segments instead of the entire document. The model follows a multi-tier approach, including part of speech tagging, hierarchical clustering, vector space model comparison, and concept drift detection. The Enron dataset was used for experiments, and the results obtained are promising.

4. Paper Name: A Review on Voice based E-Mail System for Blind

Description: In this study, we introduce an email system that operates on the principle of voice control, specifically designed for people with visual impairments. This framework aims to provide a simple and easy way for visually impaired individuals to access and use the email system. Additionally, this system can also be beneficial for individuals with other disabilities, in addition to those who are visually impaired.

CONCLUSION AND FUTURE SCOPE

We put forward our project to pave a way for the blind people to easily access their mails with good interactive manner and we use speech to text and text to speech method in our project. Our project helps the blind people handle or access email easily.

This project is the best applicable for physically challenged people. One who is unable to read and write for the communication. The system is based on IVR voices and there is no use of keywords. Only mouse click operations are performed to initiate the operations.

This project is the best applicable for physically challenged people. One who is unable to read and write for the communication. The system is based on IVR voices and there is no use of keywords. Only mouse click operations are performed to initiate the operations. The only thing to keep in mind is to follow the instructions to do the right actions. The system is quite efficient and accessible to utilize for the communication for the blind people. There is no need to write or type the messages in the inbox of the email only through your voice's communication is possible.

There can be wide scope of the system with its functionalities. It can consist of options for reading deleted and spam emails. The system will be more in demand if it will be accessible in all the regional languages. It will promote interaction at a higher level as it will require nothing special to use the system. It can be designed in more advanced ways by adding options of voice call and short messaging services (SMS).

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