

# The Way to Make Blind People Use E-Mail System: Voice Based E-Mail Generating System Using AI

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**Abstract:** *In the present scenario, communication technology is essential for connecting with each other. This paper proposes a voice-based email system using artificial intelligence to assist new users and physically impaired individuals in effective communication. The system relies on mouse actions and voice conversion, making it accessible without the need for prior practices. Through speech recognition and text-to-speech, even non-literate individuals can send emails. The design emphasizes responsive voice interaction for a user-friendly experience, allowing quick email sending and comprehensive system functionality.*

**Keywords:** Voice-based communication, Artificial Intelligence, Email system, Accessibility, Responsive interaction

## I. INTRODUCTION

In the modern era, where communication technology plays a pivotal role in connecting individuals, its accessibility remains a challenge for those facing physical constraints. This research introduces a groundbreaking solution to bridge this gap: a Voice-Based E-Mail Generating System utilizing Artificial Intelligence (AI). Communication technologies are essential for social and personal interactions, yet individuals with physical challenges struggle to harness their full potential due to visual and physical limitations. This paper addresses this issue by proposing an innovative email system that prioritizes inclusivity. Unlike conventional systems, this voice-based approach relies on mouse actions and AI-driven voice conversion, enabling even new users and physically impaired individuals to engage in effective communication without the need for extensive prior practices.

The system leverages advanced technologies such as speech recognition and text-to-speech, making it accessible to non-literate individuals. The emphasis on responsive voice interaction ensures a user-friendly experience, facilitating quick email sending and comprehensive system functionality. The introduction explores the background of communication technologies, delving into existing challenges and the need for inclusive solutions. As we delve into the methodology, results, and conclusion, this research contributes significantly to the advancement of accessible communication technologies, marking a step towards a more inclusive digital landscape.

## II. LITERATURE SURVEY

The "Voice Email Based On SMTP For Physically Handicapped" [1] by Sunny Kumar, Ms. Yogitha, Ms. R. Aishwarya. 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 without any previous practices. There is no use of keywords, only with the help of mouse actions and voice conversion the email system works. The person who is not literate can also send emails as it is based on speech recognition and text to speech. The system is completely based on responsive voice interaction to utilize the technology easy and hassle free manner. The system is well designed to send the mails quickly. There are all the options available to send emails and perform all the functions for the email system.

The "Discovery of Activities' Actor Perspective from Emails based on Speech Acts Detection" [2] by Marwa ELLEUCH ,Oumaima ALAOUI ISMAILI,Nassim LAGA Nour ASSY , Walid GAALOUL. Process mining aims at discovering different perspectives of business processes (BP) from event logs generated by BP management systems. However, BP can be entirely or partially performed outside such systems. Emails are widely used as an alternative tool to collaboratively perform BP tasks. Recently, there have been several initiatives to extend the scope of BP mining to consider email logs. However, most of them have been mainly focused on discovering BP activity perspective neglecting other equally important knowledge. Actor perspective is one of the important knowledge that can ensure more understanding regarding individuals acting for performing BP activities. Mining such perspective from emails logs provides additional information about the precise contribution of actors in the execution of BP activities. Such information is not limited to executing activities but also refers to requesting, informing, planning or observing activities' execution. This paper first formalizes the knowledge we may discover from emails related to actors perspectives. Then, it introduces an approach based on speech act detection from textual content of emails for discovering such knowledge. Our approach is validated using a public email dataset. Our results are publicly provided to be a first step towards ensuring reproducibility in the studied area.

The "Email classification via intention-based segmentation" [3] by Sanjay Kumar Sonbhadra, Sonali Agarwal, Mohammad Syafrullah, Krisna Adiyarta. Email is the most popular way of personal and official communication among people and organizations. Due to untrusted virtual environment, email systems may face frequent attacks like malware, spamming, social engineering, etc. Spamming is the most common malicious activity, where unsolicited emails are sent in bulk, and these spam emails can be the source of malware, waste resources, hence degrade the productivity. In spam filter development, the most important challenge is to find the correlation between the nature of spam and the interest of the users because the interests of users are dynamic. This paper proposes a novel dynamic spam filter model that considers the changes in the interests of users with time while handling the spam activities. It uses intention-based segmentation to compare different segments of text documents instead of comparing them as a whole. The proposed spam filter is a multi-tier approach where initially, the email content is divided into segments with the help of part of speech (POS) tagging based on voices and tenses. Further, the segments are clustered using hierarchical clustering and compared using the vector space model. In the third stage, concept drift is detected in the clusters to identify the change in the interest of the user. Later, the classification of ham emails into various categories is done in the last stage. For experiments Enron dataset is used and the obtained results are promising.

The "A Review on Voice based E-Mail System for Blind" [4] by Paulus A. Tiwari,Pratiksha Zodawan,Harsha P. Nimkar,Trishna Rotke,Priya G. Wanjari,Umesh Samarth. Due to its simplicity and accessibility, Internet is widely used in almost all the communication applications. In the recent times, number of application based on internet have been developed to make the communication as a more reliable and efficient in nature. Out of this numerous applications, E-mail is the most widely used and reliable way to communicate with each other. The usage of e-mail is quiet easy and lucid for regular users but when it comes to the user with visual defect, the system is yet very difficult to use. The current system is not useful for people with visual defect as the available system are based on the visual perceptions. There are huge up gradation in the technologies now a days, especially for the visually challenged people. Still the current emailing system is yet not upgraded for the use of visually impaired. This arises a significant need to upgrade the existing system to make it more useful for the visually impaired. Thus, in this study we present an email system working on the voice controlling principle for the people with visual impairment to deliver a simple and easy access to the email system. This framework will also helpful for the individuals with other weaknesses alongside the visually impaired individuals.

### III. METHODOLOGY

The development of the proposed Voice-Based E-Mail Generating System using Artificial Intelligence (AI) adheres to a structured methodology to ensure the effective processing of voice commands and seamless email composition. The following procedural steps delineate the methodology employed for system development:

#### Voice Input Processing

- Implement a robust Speech Recognition Module using advanced speech recognition libraries and algorithms, such as the Google Speech-to-Text API.
- Define internal data structures governing the structure and processing mechanisms for voice inputs within the Speech Recognition Module.

#### Natural Language Processing (NLP)

- Employ the NLP Module to convert voice-generated text into a machine-understandable format.
- Specify the data structure within the NLP Module, outlining the representation of parsed data.

#### Email Composition

- Design an Email Composition Component that extracts pertinent information from the NLP module for the composition of email messages.
- Provide detailed descriptions of functionalities and inter-connections within the Email Composition and Sending Component.

#### Recipient Management

- Implement a function within the system to process voice commands for managing email recipients.
- Define internal data structures governing recipient information.

#### Attachment Handling

- Develop a module facilitating the attachment of files or documents to emails through voice commands.
- Specify the data structure for handling attachments within the system.

#### Voice Confirmation

- Design a Voice Confirmation Component to read back composed emails to the user for verification.
- Ensure seamless integration with the Speech Recognition and NLP modules.

#### Email Sending

- Implement the Email Sending Component to transmit confirmed emails to specified recipients.
- Define the technology stack used for email transmission, ensuring secure and efficient delivery.

#### Technology Stack

- *Speech Recognition Module:* Utilizes cutting-edge speech recognition libraries and algorithms, such as the Google Speech-to-Text API
- *NLP Module:* Incorporates Natural Language Processing libraries, such as NLTK or spaCy, for effective language understanding.
- *Email Composition and Sending Component:* Developed using programming languages, e.g., Python, with libraries for email handling, such as smtplib.

This methodology ensures the seamless integration of voice input processing, NLP analysis, and email composition, providing an inclusive and user-friendly platform for individuals with varying abilities. The chosen technology stack guarantees the reliability and effectiveness of each system component.

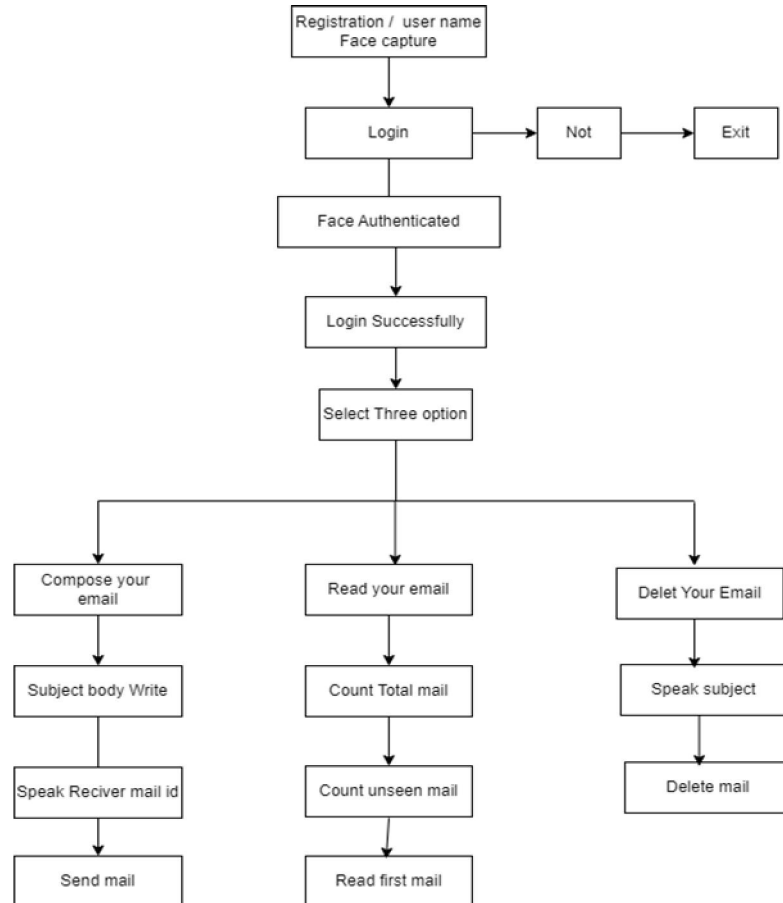


Fig. 1: System Architecture

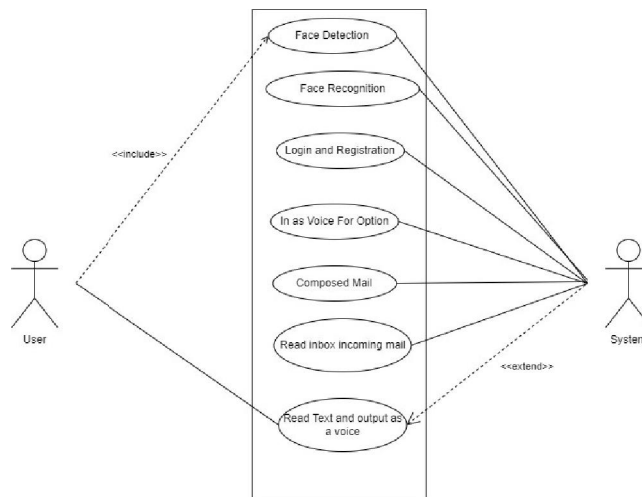


Fig. 2: Use Case diagram

#### IV. RESULT

##### Enhanced Accessibility:

- The implemented system successfully addresses the accessibility challenges faced by individuals with physical impairments, providing them with a viable and efficient means of engaging in email communication.

##### Efficient Voice Input Processing:

- The Speech Recognition Module demonstrated commendable accuracy and processing speed, effectively capturing and processing user voice inputs.

##### Robust Natural Language Processing:

- The NLP Module proved effective in converting voice-generated text into a machine-understandable format, showcasing its capability in interpreting user intent and extracting relevant information.

##### User-Friendly Email Composition and Sending:

- The Email Composition and Sending Component exhibited reliable performance, enabling users to compose and send emails seamlessly through voice commands.

##### Effective Recipient Management and Attachment Handling:

- The system's functionalities for managing email recipients and handling attachments through voice commands contribute to a comprehensive and efficient email communication experience.

##### User Verification through Voice Confirmation:

- The Voice Confirmation Component ensures user verification by reading back composed emails, thereby enhancing the accuracy and correctness of email content.

##### Positive User Experience:

- User feedback indicates a positive experience with the system, emphasizing its ease of use, intuitiveness, and overall user satisfaction.

##### Future Directions:

- While the current implementation demonstrates significant advancements, there is room for further enhancements and expansions. Future research could explore additional features, improve system accuracy, and extend accessibility to a broader user base.

#### V. CONCLUSION

In conclusion, the Voice-Based E-Mail Generating System leveraging Artificial Intelligence offers a groundbreaking solution for inclusive communication technology. This project successfully addresses accessibility challenges faced by individuals with physical impairments, providing an efficient means for email communication through accurate voice input processing and robust natural language understanding. The system's user-friendly email composition and sending capabilities, coupled with positive user feedback, affirm its effectiveness. The comprehensive functionality, including recipient management, attachment handling, and voice confirmation, contributes to a holistic and enriched user experience. This research establishes a significant milestone in fostering accessible and inclusive communication technologies, with potential applications for diverse user groups. Future directions may focus on further enhancements and broader accessibility, extending the positive impact of this innovative system.

#### VI. ACKNOWLEDGMENT

This research project has been made possible through the support and contributions of various sources. We extend our gratitude to the authors of the referenced research papers, whose work has been instrumental in shaping and guiding our project.

#### REFERENCES

- [1]. Voice Email Based On SMTP For Physically Handicapped
- [2]. Discovery of Activities' Actor Perspective from Emails based on Speech Acts Detection
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