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# Voice Based Email for Visually Impaired Person

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***Abstract: Digital communication's growing importance creates barriers for visually impaired users who struggle to use visual interface-based email systems for both access and email management. The proposed Voice-Based Email System has been developed to serve visually impaired users with complete voice command access for sending and receiving and managing their emails. Both Speech-to-Text (STT) and Text-to-Speech (TTS) technologies enable voice input and automated speech feedback within the system to operate without keyboard or screen dependence. Through the intuitive voice-guided interface users can perform actions such as registration, log in and message reading along with email viewing and sending. Through integration of Google Gmail API with Python-based voice recognition this system offers accessibility for independent email communication among visually impaired users.***

***Keywords: Voice-Based Email, Visually Impaired, Speech-to-Text (STT), Text-to-Speech (TTS), Email Accessibility, Voice Recognition, Assistive Technology, Digital Communication, Gmail API, Inclusive Computing.***

## I. INTRODUCTION

The Virtual Voice-Based Email System is designed to help visually impaired users manage emails using spoken commands instead of typing. By integrating speech-to-text (STT) and text-to-speech (TTS) technology, it converts email content into voice format, ensuring seamless access. Unlike conventional mail services and screen readers, this system offers a more intuitive and user-friendly experience, enabling users to compose, send, receive, and manage emails effortlessly through voice instructions. This innovation enhances accessibility, promotes inclusivity, and makes email communication stress-free for visually impaired individuals.

The objective of this project is to develop a voice-based email system that enables visually impaired individuals to send, receive, and manage emails using voice commands. This system eliminates the need for traditional text-based interactions, making digital communication more accessible and inclusive.

With the increasing reliance on digital communication, email has become an essential tool for personal and professional interactions. However, visually impaired individuals often face challenges in using conventional email platforms that require reading and typing. Screen readers and accessibility tools provide some assistance, but they can be complex and difficult to navigate for many users.

Email solutions that use voice commands and text-to-speech technologies enable users to work with emails through verbal instructions alone. Users manage their emails with voice commands eliminating the need to see a visual interface for composition and editing. The system improves accessibility by giving visually impaired users the ability to communicate at an elevated level of efficiency while maintaining independence.

The system integrates Natural Language Processing (NLP) and speech synthesis to ensure accurate voice recognition and seamless interaction. Security features such as voice authentication can be implemented to protect user privacy and prevent unauthorized access. Additionally, integration with cloud-based email services ensures smooth and real-time email management.

By providing a hands-free and accessible solution, a voice-based email system improves digital inclusivity, promoting equal opportunities for visually impaired individuals in education, employment, and social interactions. This technology bridges the communication gap and fosters a more inclusive digital world.

## II. LITERATURE SURVEY

The rapid advancement of technology has made the Internet an essential tool, with email being a crucial communication medium. However, visually impaired individuals face challenges in accessing emails despite existing screen readers. This paper proposes a voice-assisted email system to enhance accessibility. Additionally, it extends voice support to essential daily applications like Calculator and Music, ensuring a more inclusive digital experience. [1]

The Internet has become a vital tool for communication and information access. However, visually impaired individuals face challenges in utilizing online services. Advancements in computer-based accessible systems, such as screen readers and voice-based search engines, have significantly improved accessibility. This paper presents a voice-based email system that enables blind users to send and receive emails efficiently using voice commands. The proposed system enhances digital inclusivity, ensuring seamless communication for visually impaired individuals. [2]

Internet access is essential for daily communication, but visually impaired users face challenges in using online services. Existing assistive technologies require training, making them less accessible for naive users. This study proposes a voice-based email system that enables blind individuals to send and receive emails using voice commands, clicks, swipes, and gestures instead of a keyboard. Speech-to-text conversion ensures seamless interaction, enhancing accessibility. The system supports native languages, promoting independent communication for visually impaired individuals and those with additional disabilities. [3]

Communication is essential for global connectivity, with technologies like email, messaging apps, and SMS integrated into the internet. While email has replaced traditional letters, it primarily relies on visual perception, making it challenging for visually impaired users. With around 20 million visually challenged individuals worldwide, technology should cater to their needs as well. This project aims to develop an Android application that enables visually impaired users to send and receive emails using voice commands. To enhance privacy, a hardware device with a human detection sensor can be integrated using nanotechnology. [4]

As technology advances, vocal communication and digital interactions are becoming more common. Email remains the most widely used method for communication, especially in encrypted corporate exchanges. However, visually impaired individuals face challenges in accessing this technology. To address this, a fully speech-based messaging system using AI and Python is proposed, enabling blind users to send emails effortlessly. This innovation empowers visually impaired individuals by providing seamless and secure communication. With advanced voice-based technology, they can interact just like any other user, enhancing accessibility and independence. [5]

In today's world, communication has become seamless with the integration of internet-based technologies. However, visually impaired individuals struggle to use these services as they require visual perception. While assistive tools exist, they often need prior training, making them less accessible for naive users. This paper proposes a voice-based email system that allows even inexperienced visually impaired users to communicate effortlessly without prior training. The system replaces the keyboard with mouse actions and speech-to-text conversion for easy interaction. It is designed for both visually impaired and illiterate users, ensuring an intuitive and efficient experience through interactive voice response. [6]

This paper proposes a speech-based mailing system for visually impaired users, enabling them to operate Gmail using voice commands. It provides essential functions like composing, sending, receiving, deleting, and searching emails within a pre-registered Gmail account. The system utilizes text-to-speech and speech-to-text modules to enhance accessibility. Unlike conventional email systems designed for graphical user interface convenience, this approach

prioritizes blind users, ensuring seamless and independent email communication. [7]

This paper presents a voice-based email system designed for visually impaired users to access emails effortlessly. The objective is to enable them to send and receive emails using voice commands with the help of computers. The system employs voice-to-text and text-to-voice conversion, allowing users to interact without a keyboard. It leverages Python libraries and IVR technology to facilitate seamless communication. This approach ensures greater accessibility and independence for visually impaired individuals in email communication. [8]

## III. PROPOSED METHOD

This system provides an accessible email experience for visually impaired users using Speech-to-Text (STT) **and** Text-to-Speech (TTS) technologies. It eliminates the need for a traditional graphical interface by allowing users to navigate their email accounts entirely through voice commands. The system ensures that users can register, log in, read, and send emails using simple spoken instructions. It also integrates voice authentication and email management functions to enhance usability and security.

**Below are the steps for proposed method:**

1. **User Signup / Registration** – The user provides details such as name, email ID, and password through voice input. A voice-based OTP verification is used for authentication.
2. **User Login via Voice Command** – The system recognizes the user's speech, verifies credentials, and grants access.
3. **View Email** – Users can listen to email summaries (sender name, subject) and navigate through emails using voice commands like "Next Email" or "Read Email from [Sender]."
4. **Reading Email** – The system reads out the full email body using TTS. Users can pause, replay, or skip parts of the email.
5. **Sending Email** – Users dictate the recipient's email, subject, and body. After confirmation, the email is sent via voice command.

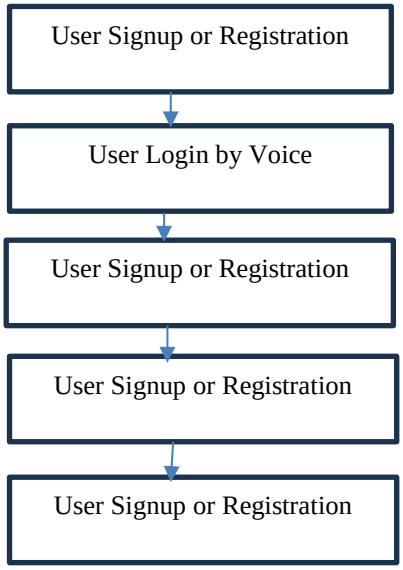


**Fig.3.1 Flowchart of proposed Method**

## IV. RESULTS ANALYSIS

Voice based email system using NLP technique has been successfully designed using python software and Django web application. Proposed system uses voice to text and text to voice generation process to make visually impaired people to use this service.

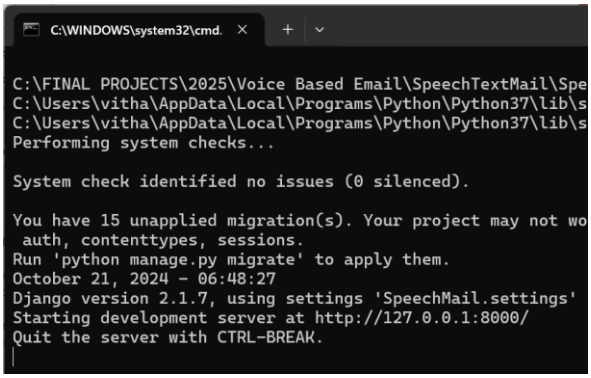


Fig.4.1 Django Server has been Started

Above image shows that the proposed system is running on local host computer using Django framework. Django framework gives the url for accessing from local host the services. This url can be pasted in any browser to start the application. Below is the main page when we enter this url in any browser.

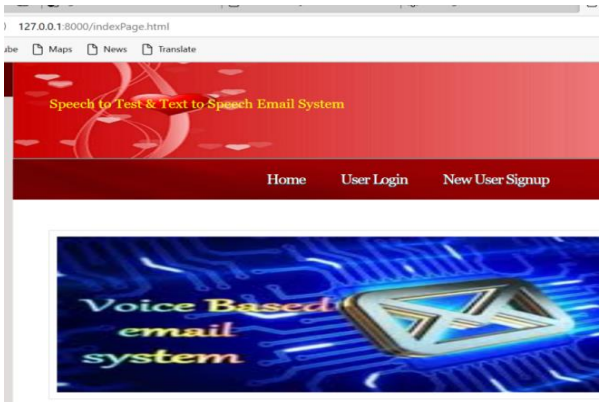


Fig.4.2 Main Page of the Application (index Page)

Above page is obtained as an index page (main page) when url is entered in any browser. This page has three options as 'Home', 'User Login' , 'New User Signup'. Home is the main page access option for this application. 'New User Signup' option gives user to register with the application by entering the details. 'User Login' option gives registered users to access the proposed application. These options are accessed by voice of the user.


Fig.4.3 New User Signup Page

Above new user signup page takes user details such as email ID, Password , Contact number , gender and Adress from user and saves the details in MySql database. These details are verified while user login.

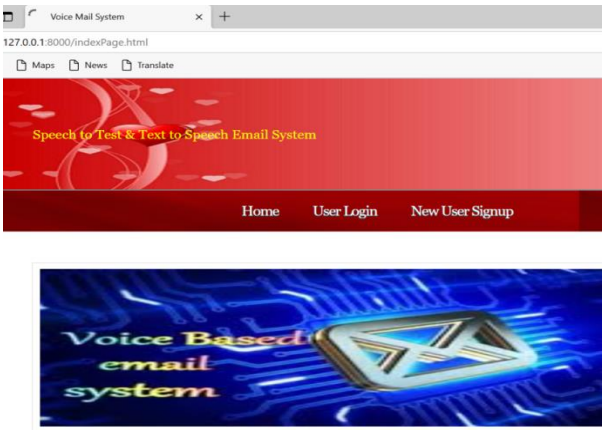


Fig.4.4 Click on User Login

In above page , application ask user details and the entered details will be checked with database. If credentials matched with database, then user will get below page,

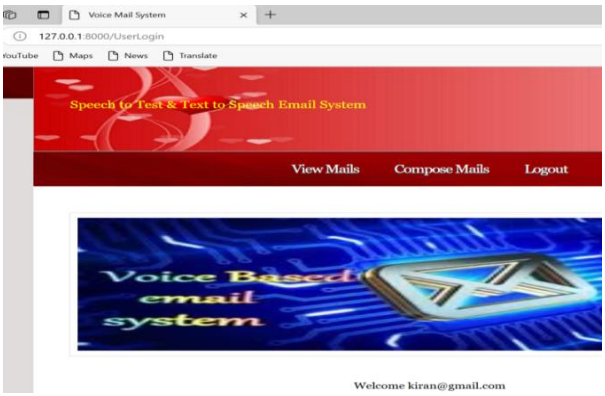


Fig.4.5 After Successful Login This Page Will Be Seen

After successful login of the user , user will get below options such as 'View mails', 'Compose Mail' and 'logout'. Using view mails , user can see all the recent emails obtained. Compose mails will give option for user to write an email.

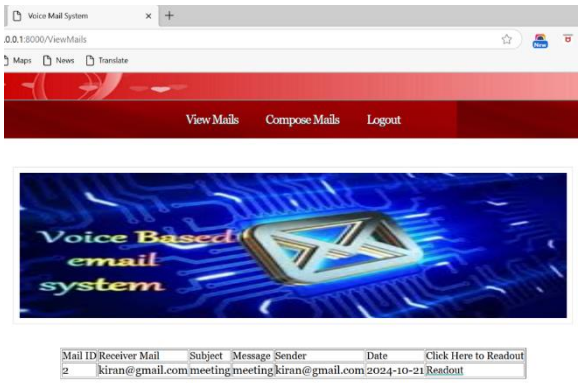


Fig.4.6 View Email

In view email option user can get details of sender email, subject, message, sender, sent date and Readout. The emails obtained are shown in this page. Using Readout button we can listen to the voice email. Similarly, physically handicap person also can use this application for both reading and compose.

## V. CONCLUSION

The proposed Voice-Based Email System provides an efficient, inclusive, and accessible email communication platform for visually impaired users. By eliminating the need for traditional input devices and leveraging voice recognition, this system significantly enhances ease of use and independence. The integration of STT, TTS, and secure voice authentication ensures smooth and secure email management. This approach bridges the accessibility gap in digital communication, allowing visually impaired individuals to **interact seamlessly** with their emails. Future enhancements may include multilingual support, AI-driven voice assistance, and improved security to further optimize usability and efficiency.

## REFERENCES

1. Belekar, Aishwarya, Shivani Sunka, Neha Bhawar, and Sudhir Bagade. "Voice based E-mail for the Visually Impaired." *International Journal of Computer Applications* 175, no. 16 (2020): 8-12.
2. Harshasri, Mullapudi, Manyam Durga Bhavani, and Misra Ravikanth. "Voice based email for blind." *International Journal of Innovative Research in Computer Science & Technology (IJIRCST) ISSN* (2021): 2347-5552.
3. Kumar, Rahul, Vaishali Singh, Nikhat Akhtar, V. Verma, and Shivam Srivastava. "Voice Based Email System for People with Visual Impairment." *ResearchGate* 4 (2022): 476-484.
4. Latha, L., B. Babu, and S. Sowndharya. "Voice based email with security for visually challenged." *International Journal of Engineering and Advanced Technology (IJEAT)-ISSN* (2020): 2249-8958.
5. Rajput, Gaurav Kumar, Sachin Sharma, Bibhu Prasad Dash, Meraj Farheen Ansari, Pawankumar Sharma, and Surendra Kumar Shukla. "The Way to Make Blind People Use the Email System: Voice Based Email Generating System Using Artificial Intelligence." In *2023 International Conference on Artificial Intelligence and Smart Communication (AISC)*, pp. 1120-1123. IEEE, 2023.
6. Mamatha, A., Veerabhadra Jade, J. Saravana, A. Purshotham, and A. V. Suhas. "Voice based e-mail system for visually impaired." *International Journal of Research in Engineering, Science and Management* 3, no. 8 (2020): 51-54.
7. Sharma, Aditi, Visal Ahmed, Shivika Sharma, Bristi Jana, and Kritika Rani. "An effective approach to speech-based email assistance for visually impaired people." In *2022 8th International Conference on Signal Processing and Communication (ICSC)*, pp. 32-35. IEEE, 2022.
8. Jain, Viram, Krithika AK, Rachana N. Shenoy, and Muzameel Ahmed. "Voice Based Email for the Visually Impaired." In *Proceedings of the International Conference on IoT Based Control Networks & Intelligent Systems-ICICNIS*. 2021.
9. Bhore, Nivedita, Shraddha Mahala, Komal Acharekar, and Madhavi Waghmare. "Email System for Visually Impaired People." *INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT) NTASU–2020* 9, no. 03 (2021).
10. Tiwari, Paulus A., Pratiksha Zodawan, Harsha P. Nimkar, Trishna Rotke, Priya G. Wanjari, and Umesh Samarth. "A Review on Voice based E-Mail System for Blind." In *2020 International Conference on Inventive Computation Technologies (ICICT)*, pp. 435-438. IEEE, 2020.