Voice-Based Email System for Blind and Physically Handicapped People

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Abstract – 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 suffers a lot from utilizing this technology due to visual and physical difficulties. There are many technological advancements that have come through it is not possible to use them like normal users. There are all options available to send emails and perform all the functions for the email system.

*Key Words***:** Email, Internet, Voice, Speech Recognition, Physically challenged, Text-To-Speech

1. INTRODUCTION

The application will be a Python-based application for visually challenged people using IVR (Interactive Voice Response) thus sanctioning everyone to control their mail accounts using their voice only and able to read, send, and perform all the other useful tasks. The system will ask the user with voice commands to perform certain actions and the user will respond to it. The main advantage of the system is that the use of the keyboard is completely eliminated, the user will have to respond through voice only.

The VMAIL system can be used by blind people to access mail easily and adeptly. Hence dependence of the visually challenged on other individual for their activities associated with mail can be condensed.

2. OBJECTIVE

Because this device requires visual sight to operate, visually impaired persons find it extremely difficult to use. Not everyone, though, has access to the internet. This is due to the fact that you would need to understand what is printed on the screen in order to access the internet. It is useless if that is not visible. For those who are illiterate or visually disabled, this renders the internet a totally worthless piece of technology. Three major categories of technology are employed in this system, specifically: Speech-to-text, or STT, converts what we say into text. The user will notice a small microphone button that they must click in order to record their speech

and convert it to text format that is visible to others who are not clothed.

2.1 METHODOLOGY

- **User Sign-in :**- Our project uses a voice-only login module that requires the user to provide their password and email address. After providing the email address and password then the user logs in to their account.
- **Selecting a Choice** :- The programmer asks the user to press Enter to compose a message or the Space bar to view the user's logged-in email address's inbox. Call the compose mail() function to compose a mail if the user presses Enter.
- **Composing Email :-** This module requests that the email's content be sent after requesting the email's subject. The sender mail address to which the subject and contents are to be sent is then requested.
- **Reviewing the Inbox** :- The user is first prompted to identify the precise user whose message needs to be read. The system then reads the message's subject and content.
- **Text to Speech** :- Import the gTTs (Google text-to-speech) module before using this feature. This function creates a.mp3 file from the text that is passed to it.
- **Speech to Text**:- This function takes speech detected by the system microphone, converts it to text, and stores the result in a variable.

This project is proposed for the betterment of society. This project aims to help visually impaired people be a part of growing digital India by using the internet and also aims to make the lives of such people quite easy. Also, the success of this project will encourage developers to build something more useful for visually impaired or illiterate people, who also deserve an equal standard in society. Individuals with typing problems can also take advantage of this system.

Text to speech: Using text-to-speech conversion, the blind person will hear the second email that is in their inbox read aloud. In addition, we speak in Marathi, Hindi, and English.

3. SYSTEM REQUIREMENTS:

Hardware Requirements
- RAM minimum required is 8 GB
- Hard Disk : 40 GB
- Processor : Intel i5 Processor
- Coding Language : Python Version 3.5
- Operating System : Windows 10

Software Requirements:
- Operating System : Windows 11
- IDE : PyCharm, Spyder
- Programming Language : Python

4. SYSTEM DESIGN

The system is voice-driven. The user will hear a voice message where they are on the website when they have navigated through every legal area. Ordinary people have the option to disable this feature if they so choose. In DFD diagrams, the system workflow is specified.
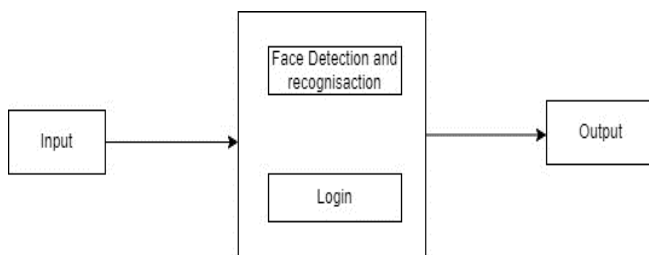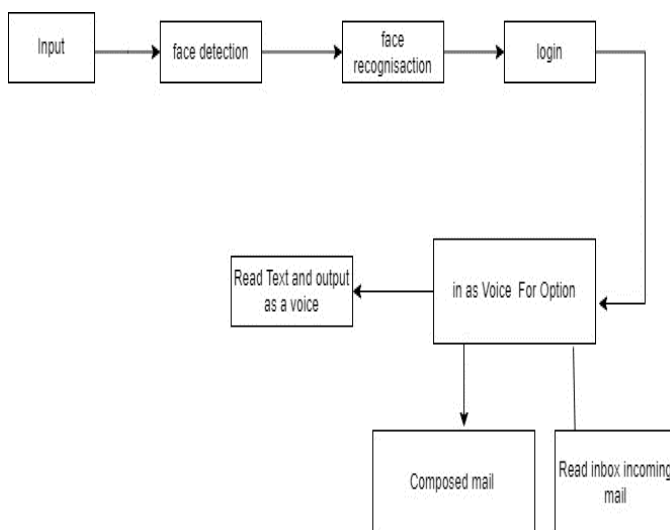

Fig.1.1. DFD Level 0

Fig 1.2. DFD Level 1

4.1. SYSTEM ARCHITECTURE

We are currently developing the system. In order to access our website, the user must first register and log in with their face. Thus, the user has the ability to select options, receive actual mail, record voice messages, compose emails, and delete emails. Face recognition is used in the Mailbox Framework for authentication. Voice is translated into text, operations are carried out, and finally text is converted into voice and outputted as voice. The framework for face recognition and authentication is completed and saved in a database. The voice command feature will provide excellent guidance for the user.
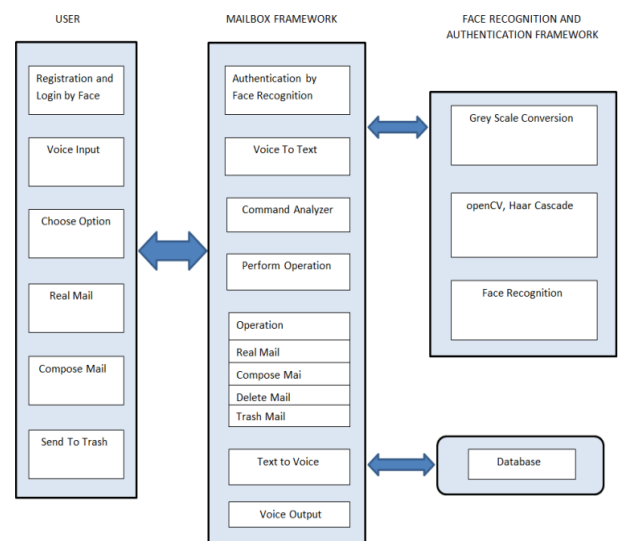

Fig 1.3. System Architecture

5. CONCLUSIONS

It is determined that the system will function effectively and meet the needs of the end user. Errors are precisely eliminated after the system has been tested. Since this application will be accessed from one or more systems, it has been tested to log in from multiple systems. It entails creating and putting into use a real-time email interaction system designed for people with visual impairments. We intend to create a system that will enable those who are visually impaired to efficiently access email services. Our application can assist in mitigating certain shortcomings of the current email systems. This system eliminates the need for a keyboard, which lessens the mental strain of having to remember keyboard shortcuts.

6. FUTURE SCOPE

This system has wide scope for enhancement in the future, including the ability to support more languages. Additionally, this system can be improved to send audio and video attachments, which will be especially helpful for those who are blind or visually impaired. Additionally, the system can be integrated with a sign language system to increase its robustness and scalability.

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