

# Voice Based Email for Blind

**Dr. Vijay Gaikwad, Vaishali Rajput, Uday Jaju, Adhip Jajoo,  
Sanika Jamdade, Sayali Jathar, Parikshit Jayale**

*Vishwakarma Institute of Technology, Pune, 411037, Maharashtra, India*

## ***Abstract—***

*Modern generations must utilize Internet technology to the utmost extent due to the rising use of technology and the endless options it offers. Email acts as the fundamental prerequisite because it is one of the most popular Internet functions. In addition to regular users, those who are blind or visually challenged still encounter difficulties when trying to utilize the internet, despite the existence of numerous screen readers. Thus, the purpose of this paper is to offer them voice aid. Along with email, voice assistance is available for several straightforward yet crucial daily-use programs, like calculators and music players*

*Keywords — Voice based Email, Visually impaired, Speech-to-text, text-to-speech, Speech recognition.*

## I. INTRODUCTION

The Internet is essential to today's communication landscape. The internet is the bedrock on which the modern world operates. In the absence of internet connection, nothing can be accomplished. Email, or electronic mail, is the most common People who are blind are unable to use the most common postal services that we use daily. A screen reader, automated speech recognition, speech to text and text to speech, a Braille keyboard, and other technologies are available to these visually impaired users to make these systems more user-friendly for them. These technologies could not provide the right response like a typical system, so they were not particularly helpful to those folks. The goal of Email based on voice input is to make it easier and more effective for visually impaired people to access emails. This application uses converters which converts voice input to text and vice versa, allowing anyone to read, write, and control their mail accounts exclusively using their voice.

## II. LITERATURE REVIEW

Aishwarya Belekar *et al.*[1] demonstrated email is one of the most widely used application of the internet which serves the basic prerequisites. In addition to regular users, those who are blind or visually challenged still encounter difficulties when trying to utilise the internet, despite the existence of numerous screen readers. Thus, the purpose of this paper is to offer them voice aid. Along with email, voice assistance should be made available for many common yet essential daily applications like calculators and music players.

Amritha Suresh *et al.*[2] focuses the fact that out of all the available communication tools, email is still the most popular one in the corporate sector. However, because all computer-based tasks depend on visual perception, all of these technologies are useless to those who are blind or visually handicapped. As it is estimated that 285 million people globally are blind impaired, it is vital to make online communication tools useful for them as well. This essay seeks to at creating an email system that makes it easy for them to use.

As per Bhushan.Chaudhary *et al.*[3] one of the necessities for daily life is now the internet. The internet is widely used by all people to access knowledge and information. However, accessing these text resources and using any online service might be challenging for blind persons. The range of opportunities available to persons who are blind or visually impaired has significantly increased with the introduction of computer-based accessible solutions. The screen readers and other audio feedback-based virtual environments have greatly aided blind individuals in using online apps. We outline the voicemail system architecture that a blind person can utilize to access emails quickly and readily.

Harivans Pratap Singh *et al.*[5] They stated that email is a technology that enables people to communicate with others by sending emails and also facilitates communication in the corporate world. In order to make this technology more accessible to people who are blind, researchers proposed a voice-based email system. This technique gives disabled the ability to communicate and fosters a great deal of strength and independence. Additionally, this design makes it easier for blind people to use email and use different transmission methods. This

voice-based email system will be using new technologies that disabled people may easily embrace, leaving behind the outdated methods.

Paulus A. Tiwari *et al.*[6] In order to provide simple and quick access to the email system for people with visual impairment, they reviewed an email system that operates on the voice controlling principle. They have given brief information on IVR and SR.

The paper of Sonali Malap *et al.*[7] aims to develop a voice based email system for visually challenged people to use the email system as efficiently as a normal user. The complete system is based on Text-to-speech (TTS). This system is made by using Python.

### III. METHODOLOGY/EXPERIMENTAL

#### *Synthesis/Algorithm/Design/Method*

The project proposes python-based application that is Voice based email for the blind which is basically for the blind people to interact with emails through their voice. The use of the keyboard in this project is zero. The Voice based Email System is based on the IVR (Interactive voice response) technology.

IVR is an automated telephone system in telecommunication that allows humans to interact with computers. It combines pre-recorded messages or text to speech technology with a DTMF interface, allowing the person to access information without a live agent. IVR replies by playing back the previously recorded audio to provide users further instructions. The system basically works on two principles:

- 1) Speech to text
- 2) Text to speech

The Voice based Email system takes the input from the user in the form of Voice. The system acquires the speech or voice during the run time through microphones and processes the speech to text. This is done through recognizing the speech.

To recognise spoken words and translate spoken language into writing, voice recognition uses computer science and linguistics. It enables the computer to comprehend human language. In Python, speech recognition incorporates acoustic modelling methods. To obtain the most major components of our speech, such as words and sentences, acoustic modelling essentially detects the phonetics in our speech. The process of speech recognition actually begins by using a microphone to transform the sound energy created by the user speaking into electrical energy. This electrical energy then is transformed from analog to digital form, and lastly to text. To fetch the emails from the Gmail account easyimap has been imported in the application. Easyimap will fetch all the emails from the account and will import to the application. The easyimap will display and speak emails in the application.

The conversion of text to speech is the most important part in the application. The emails which are received by the blind person in the text form should be converted to speech. So, this work is done using pyttsx3 library. Pyttsx3 is a text-to-speech conversion library. This library works offline and works with python 2 and python3. The pyttsx3 module supports two voices that is of a female and male which is provided "sapi5" for windows. There is built in function say() in pyttsx3 that takes string value and speak it out.

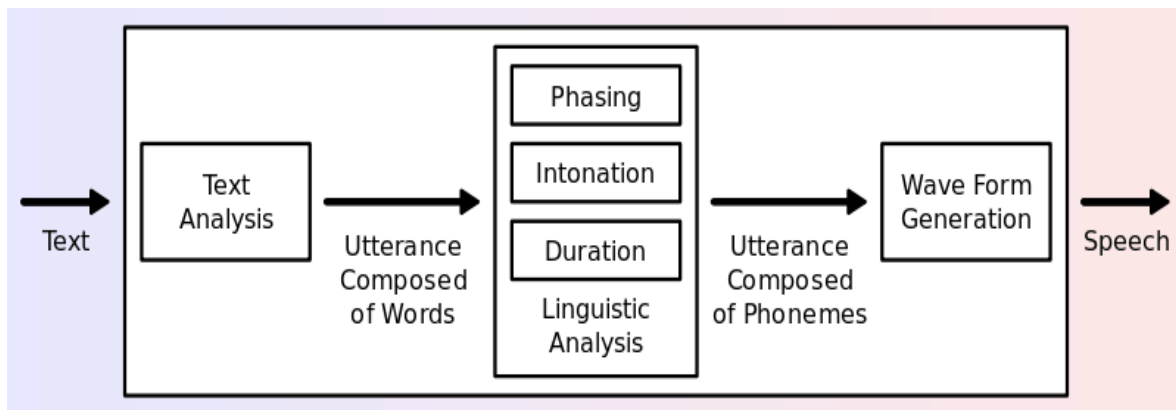


Fig. 1. Text to Speech Conversion

To transfer the mails from the application SmtP is used. SMTP is known as Simple mail Transfer Protocol. Its actual purpose is to set communication rules between servers. Software can send an electronic mail over the internet due to a set of communication protocols. Based on e-mail addresses, it is used to deliver messages to other computer users. Sent messages can be in text, voice, video, or graphic format. In python there is a smtplib module which is used in the application. To send mail to any internet-connected machine with an SMTP, the module defines an SMTP client session object.

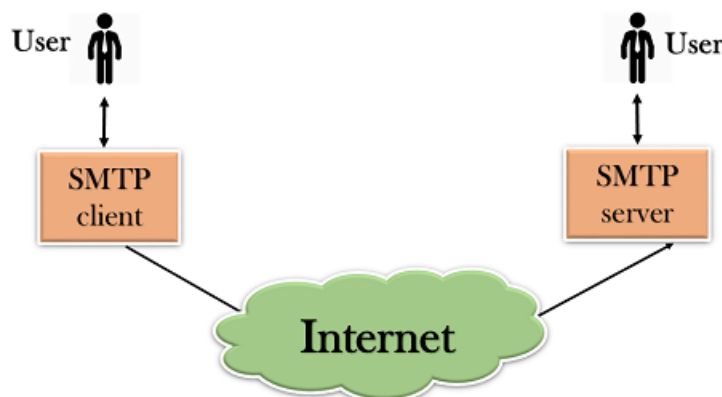


Fig.2. SMTP

#### IV. RESULTS AND DISCUSSIONS

We kept the system's continual prompting in a language they can comprehend because it is designed for visually impaired persons who are either new to computers or have very limited experience utilizing the tools available to help them use computers. By saying the action you want to do, you can choose it and the program will carry it out quickly without you having to glance at the screen to access anything. Speech synthesis techniques are used to translate text to voice production. Although it was initially created to help the blind read printed text, it is now commonly used to send financial information, e-mails, and other types of information to the general public over the phone. On portable devices like mobile phones, text-to-speech is frequently employed when giving instructions.

```
Hello
what do you want to do
Tell SEND to send mail    Tell READ to read inbox mail    Tell EXIT to exit
listening...
send
you choose to send a mail
please tell body of mail
listening...
how are you
your body
how are you
mail send
```

Fig. 3. Code Execution

## V. FUTURE SCOPE

A E-mailing is not a significant difficulty for those who have the gift of sight, but for those who do not, it poses a serious problem because it intersects with numerous professional responsibilities. This voice-based email system has many uses; including helping the blind understand their surroundings. For instance, the sound "Register Button" will play if the cursor is moved to the respective icon on the website. There are numerous choices for screen readers. Users had to remember mouse clicks, though. But in this project, the mouse pointer will clearly indicate the user's location, which will gradually eliminate this issue. This method places a greater emphasis on the usability of all users, including typical people, those with visual impairments, and illiterate.

## VI. CONCLUSION

It is proved that the model will function well and so satisfy the needs of the end users. Errors are precisely fixed after the system has been tested. This program will be accessed from one or more systems; hence it is tested with multiple login attempts. It entails creating and implementing a real-time email interaction system for people who are blind. We sought to create a solution that would make it simpler for blind people to efficiently use email services. Some of the shortcomings of the current email systems may be overcome with the aid of our program. The cognitive strain associated with knowing keyboard shortcuts and the placement of keys on a keyboard is decreased with this system because keyboard use has been eliminated. The user simply needs to listen to the voice commands given by the system and respond accordingly to carry out the necessary actions. The user must describe the operation in the email application for the system to carry out the further steps. When required, the system will prompt the user to speak information, and the user's details will be validated. It also benefits the crippled and the illiterate.

## VII. ACKNOWLEDGMENT

We would like to express our gratitude towards all those who motivated and helped us in the process of making this project. We are grateful to get the opportunity to do such amazing research about voice-based email for blind. We thank the Department of Engineering, Sciences

and Humanities (DESH) of our college Vishwakarma Institute of Technology and our guide Respected Vaishali Rajput ma'am for her valuable support, encouragement and guiding us in difficulties. We are grateful to the authors of the references and other literature referred to for this project. We would also like to appreciate all those who have indirectly guided and helped us in many ways.

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