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Voice Based Email System

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Abstract:- In today's world of luxuries and opulence, the Internet has become a basic amenity for the human kind. Everyone now-a-days is broadly gaining knowledge and information through the internet. Mostly, it is used for communicating with each other all over the world to our friends and family. And also it is used for accessing multiple activities e.g., reading news, learning new things, etc. As the technology is magnifying , it is getting easier for people to loom towards digital life and digital communication. There are various ways to connect with others through the internet in this modern era. Most of them are choosing the simplest way of communication i.e., Electronic mail (E-mail). E-mail is a primary way to send/receive a message from others over the internet.However, it is not reliable for a visually challenged person or an illiterate person to use this facility. In addition, this design can ease the process for blind people or an even illiterate person to access email and possible imparting functions. With some new changes , this voice-based email system will be more reliable and simply acceptable by purblind sole.

Keywords: *TTS (Text To Speech), STT (Speech To Text), API (Application Programming Interface), Imap (Internet Mail Access Protocol), SMTP (Simple Mail Transfer Protocol), gtts (Google Text To Speech).*

I. INTRODUCTION

All over the globe, the Internet is prospering as the best invention of the advanced world. Today's advanced periodis digital and also observes changes more frequently along with appealing the changes accordingly[4]. There are many ways to communicate with each other over the virtual world. One of the oldest and the foremost methods is E-mails. Many people still choose Emails as their primary method of communication whether it is for informal or even for business and formal purposes.

But not everyone in the world knows about the E-mail services and also do not even have an idea about it. But some people who do know about these services may not be able to use these facilities because the people could be visually impaired, purblind individuals , physically challenged or maybe an illiterate person[4].

To access the internet the person must be able to read what is written on the screen so, this makes the internet useless technology for visually challenged people. There is only one way by which a visually challenged person can send an Email i.e., they have to tell the entire message of the mail to a third person so that the third person can write/create the mail and send it on the behalf of the visually challenged person or even read the received mail for them to get the message from the sender.

There are also some inventions or tools for this problem, one of which is Braille Keyboards were introduced a while back, by which most of the visually impaired can be able to write emails and don't need a third person for any help[3]. But this is not entirely beneficial for each and every blind , because they should have the knowledge of how to read Braille and it takes up a lot of their time and the errors can't be erased. Lately, some screen readers bring up some light on this issue but again it is also not that reliable. Then finally Voice Based Emails Systems were introduced by various intellectuals all over the planet. But most of the existing systems on this topic use keyboard shortcuts or mouse clicks to send and receive the mails[1].

In this paper , we proposed a Voice Based System which is completely works on voice response and there will be no need of physical touch at all and our system is developed using STT and TTS.

II. RELATED WORKS

In this part, we provide afar- reaching analysis of the literature on the extant related technical problems.Many benefactions have been made for visually impaired people and so to give them chance in the area of connections through Emails.Following are the summary of every paper :

In paper [1], it is proposed that system will provide a registration page first, that will further assist to logging part through entering username and password.Mainly the system uses IVR for the inbox and composing a mail commands.And also for the designing part they have used Adobe Dreamweaver CS3, as it is an advanced technology. Lastly, it also has an Contact Us page by which the user can suggest any kind of feedback or complaint about a problem.

In paper [7], the user carries outa set of activities for the use of these facilities. First, the user is allowed to access emails and other multimedia functions with the help of Screen Reader functionality. The user is then redirected to the inbox page after the registration has been completed. Once the user is logged in, the user can carry out the normal operation of the mail system.Then it allows the user to compose or send a mail through voice input with some mouse click commands.

In paper [8], the users were going to the site firstly, it required them to register with the assistance of voice inputs. After the registeration the user's audio data will be saved in the database. And the user will get a user id and password after the completion the user logs in to receive an email in a

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system. The site is firstly centered on the idea of regulation and efficacy. Additionally, they give a "Contacts" page, where the user can provide any suggestions or any assistance they need.

In paper [9], it adds in such a way that it allows blind people to send and receive voice based email messages in various languages. The planning of this system executes much better than that of the existing GUIs. It can be run on both computer and mobile devices. It uses Java programming language in the proposed system. It also contains the three main modules in the system; those are: (a) Speech-to-text converter (b) Text-to-speech converter (c) Word Recognition.

In paper [10], they proposed the email system by doing the linkage between the application and Google's Gmail. The systems that provide their own user developed email services which consist of (a) Speech-to-text Converter (b) Text-to-speech Converter. The application uses the SMTP library that uses SMTP protocol for sending emails and POP3 protocol for receiving emails. The accuracy of speech-to-text is low in there system as there is a need to train the system. It is an application that can be used by illiterate people and the physically-disabled people also. The proposed system ensures the security of the user's data and also give users a feeling of secure mailing.

In paper [11], they proposed the system that has a function of the Tetra-Entry to control the favorability and the comfort of email activities.In the system it also has a blind friendly email client that provides the convenience to the user. The system converts the user's voice input to the text and then the text to the speech and then works on it.

III. SYSTEM DESIGN

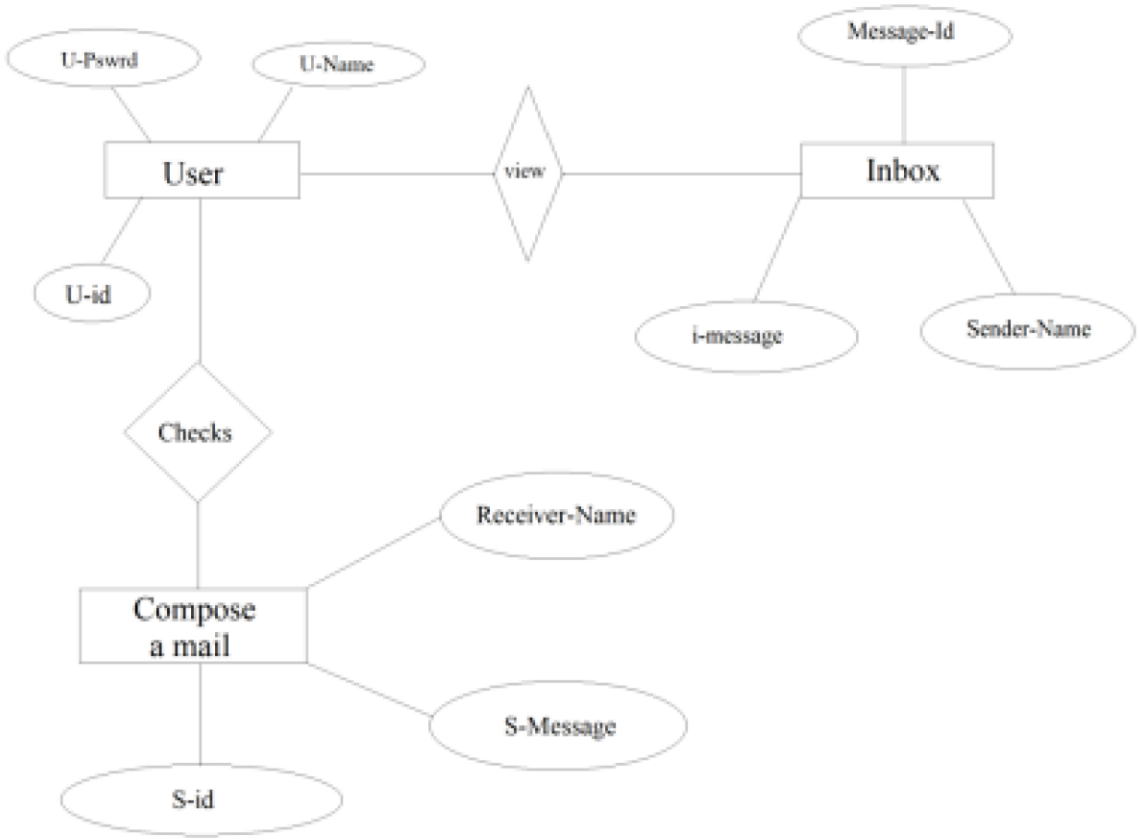

Fig. 1: ER Diagram of the System

The System will open up and a voice output welcomes you to the program. Then it will ask the user for two options i.e., compose a mail and check your inbox by a voice output. Then it asks for user input via voice ,if user choose first option i.e, compose a mail then it will ask for the message to enter and then the user speaks the message to be sent to the receiver and if the user choose second option i.e, check your inbox then it will read out the number of unseen mails and read out the latest one.

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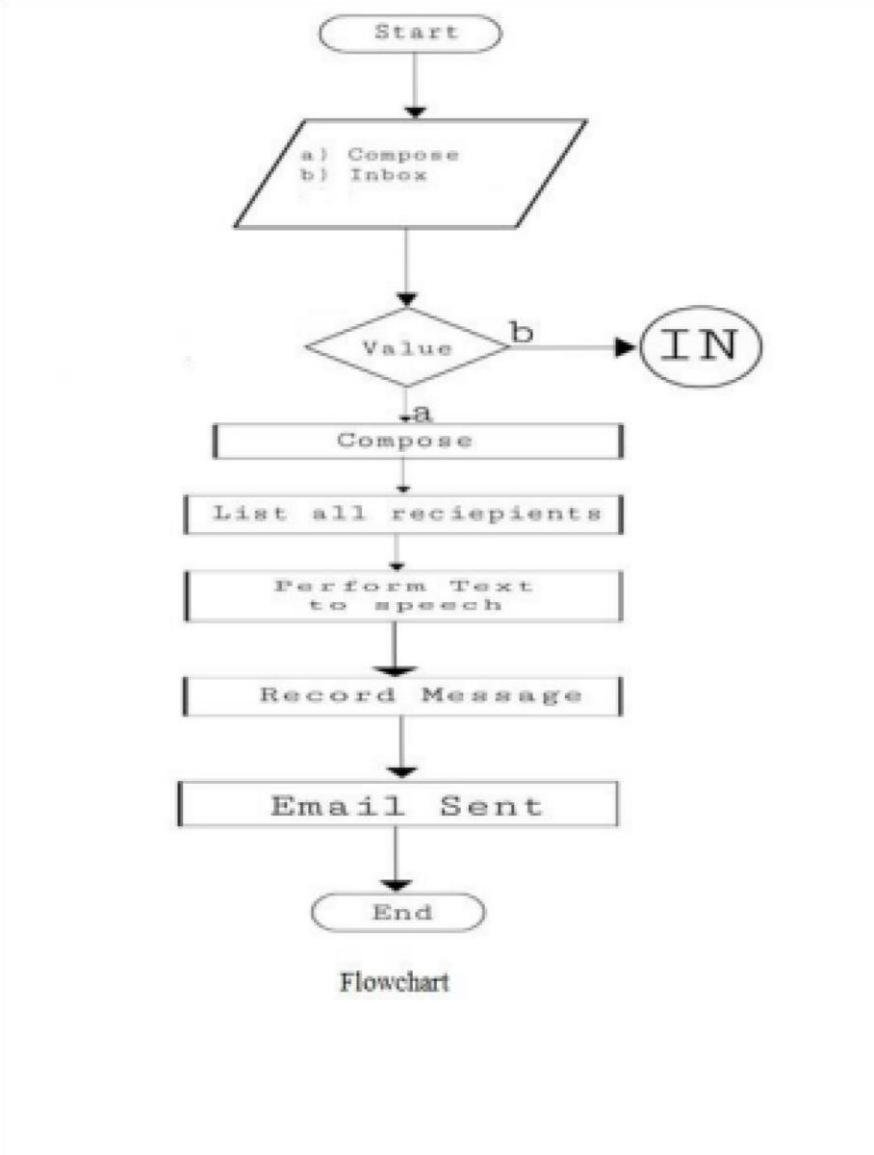

Flowchart

Fig. 2: Flowchart of the Proposed System

IV. IMPLEMENTATION

A. *Existing System*

Many technologies and systems are introduced to counter the problem of using electronic mail system but they doesn't give the overall solution for it. Some systems introduced previously have the mechanism of using keyboard inputs for email which would create difficulty for visually impaired people to work through it. And also in some system they has mechanism of mouse inputs that would also be a problem for blind people and to avoid some mouse clicks and keyboard stuff they introduce a screen recorder which is also not a good solution for the blind person to use the system more effectively. The existed system tried their best to do the system more user friendly by reducing the mouse or keyboard inputs and make the screen recorder more smart Here's come the drawback of the existed system that they doesn't totally work on the voice input and also the system is not designed to target the all kind of users so to overcome this problem the system has to be made which fulfill all the needs of the users,

B. *Proposed System*

The proposed system is based on a completely novel idea and the most important aspect that has been kept in mind while developing the proposed system is accessibility. A web system is said to be perfectly accessible only if it can be used efficiently by all types of people whether able or disabled. The existing system do not provide this accessibility. Thus the system we are developing is completely different from the existing system. Unlike the existing system which emphasizes more on the user-friendliness of normal users, our system focuses more on the user friendliness of all types of people including normal people, visually impaired people as well as illiterate people. When using this system the computer will be prompting the user to perform specific operations to avail of respective services then he/she need to perform that operation. One of the major advantages of this system is that users won't require to use the keyboard. All operations will be based on voice commands. This system will be perfectly accessible to all types of users as it is just based on simple speech inputs and there is no need to remember keyboard shortcuts. Also because of the IVR facility, those who cannot read had

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need not to worry as they can listen to the prompting done by the system and perform respective actions.

Following are some technologies that are used -

- Speech Recognition –Speech recognition is the process by which a computer (or other type of machine) identifies spoken words. Basically, it means talking to your computer, AND having it correctly recognize what you are saying. It is the ability of a machine or program to identify words spoken aloud and convert them into readable text.And uses a broad array of research in computer science, linguistics and computer engineering. Itis a python library for performing speech recognition with support for several engines and API online and offline.Here we are using Google speech API.
- Imap Lib –Internet Mail Access Protocol is a standard email retrieval(incoming) protocol. It stores email messages on a mail servers and enables the recipient to view and manipulate them as though they were stored locally on their devices. Imap enables users to organize messages into folders , flag messages for urgency or follow up , and save draft messages on the server. User can also have multiple email application that sync with the email servers to consistently show which messages have been read or are still unread.
- SMTP Lib Module – It stands for Simple Mail Transfer Protocol which handles sending emails and routing emails between mail servers. Python provides SMTP which define an SMTP client session object that can be used to send mails on any internet machines with an SMTP or E-SMTP listener daemon. It is mainly used to deliver emails from one domain to another domain, which is different from the user's domain.In simple terms, an SMTP email is just an email sent using the SMTP server.
- gTTS – It stands for Google Text To Speech and this library is used to interface with Google
- translate text to speech, and used for speech translation. It supports many languages like English, German, French, Hindi, Tamil, etc.The speech can be delivered in any one of the two available audio speeds, fast or slow. However, as of the latest update, it is not possible to change the voice of the generated audio.
- PyAudio – It is the library that is required if you want to use microphone input (also, you can easily use python to play the audio) and it provides python bindings for PortAudio, the cross-platform audio I/0 library.
- PipWin – It is a complementary tool for pip on windows. Pipwin installs unofficial python package binaries for windows provided by Christoph Gohlke .
- AvBin – It is a library that is used to decode functionality of videos and audios.
- Pyglet – It is a library for the python programming language that provides an object oriented application programming interface for the creation of games and other multimedia applications. It is a cross platform windowing and multimedia library for python. (AvBin is used by Pyglet).

V. RESULT

The system executes and opens up the home page where the program welcomes you by voice output "Project Voice Based Email for Blinds". Then the system will ask you to choose an option via voice input which are:

A. Compose a Mail:

After choosing this option, the system will let you record the voice to a text message that you want to send through email, and send it to the recipients shown below:

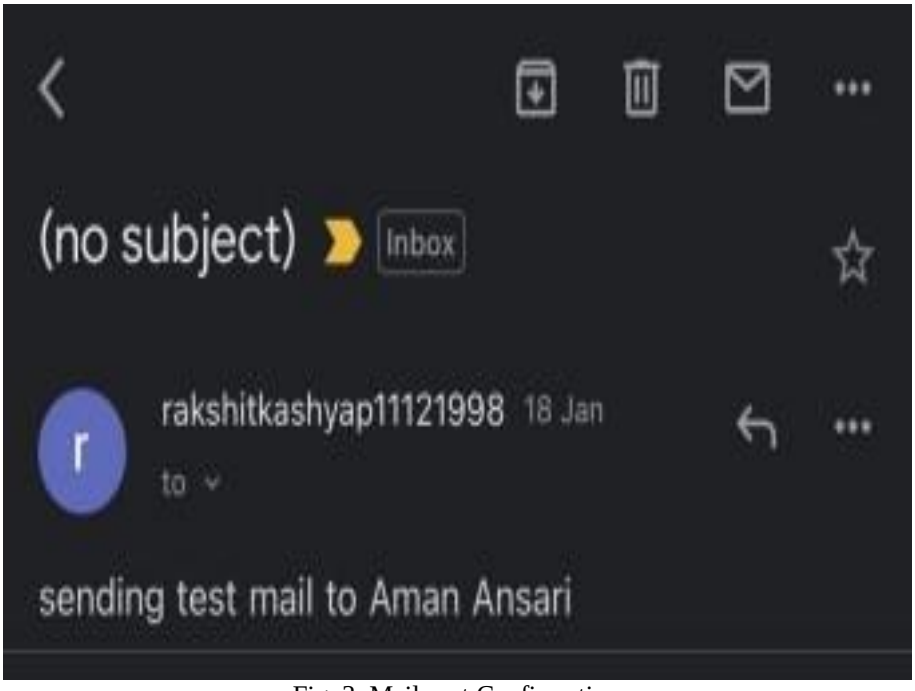

Fig. 3: Mail sent Confirmation

B. Check your Inbox:

After choosing this option, the system will tell you the number of unseen emails you have and reads your latest mail in the inbox through voice output as shown below:

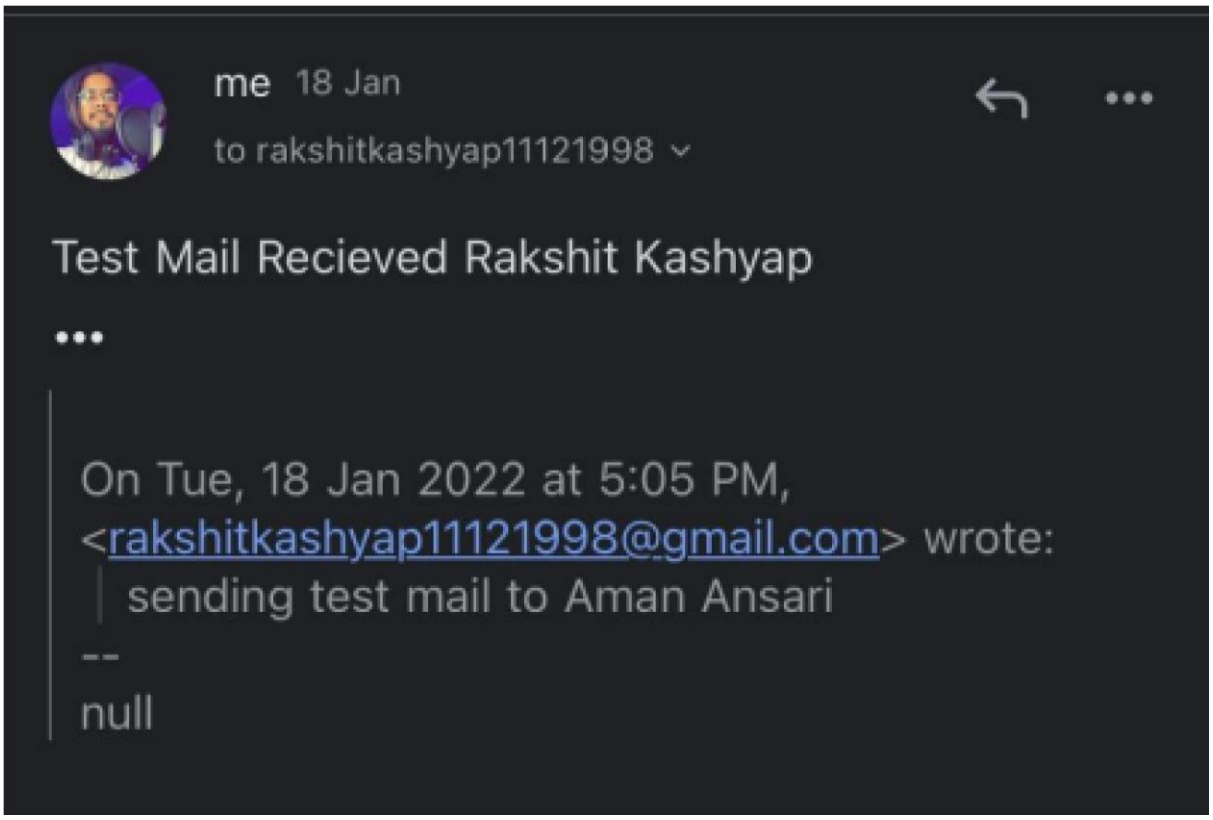

Fig. 4: Mail received Confirmation

Time taken by the system to send a mail is approximately 1-2 seconds.

Time taken by the system to fetch the number of mails from the inbox and read out the last mail is approximately 3-5 seconds.

Time taken by the system to convert from TTS or STT is approximately between 0-2 seconds.

VI. CONCLUSION

This e-mail system will be utilized by any user of any age group with facility of access. It has characteristics of speech to text as well as text to speech with speech reader which build produced system to be controlled by visually impaired person as well as blind person. For people who can see, electronic mailing is not a big deal, but for people who are not confounded with gift of vision it stance a basic concern because of its junction with many vocational responsibilities. This voice based email system has great implementation as it is used by blind people as they can understand what is happening on the screen. This system target more on user interactiveness of all types of users including regular users, visually compromised user as well as illiterate.

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