

Voice Based Email for the Visually Impaired

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ABSTRACT

E-mails are the foremost reliable approach of communication over net, for causing or receiving some necessary information. However, there's a special criterion for humans to access the net and also the criteria are you must be able to see. A survey shows that there are more than 285 million visually challenged people around the globe. That is, around 285 million people which is unaware of a way to use net or E-mail. So, forgiving an equal standing to visually challenged folks we've got return up with this project plan that provides the client (user) with ability to send mails using voice commands without the need of keyboard or any other visual things. This system can be used effectively by handicapped and illiterate people as it is based on TTS, STT CONVERSIONS and IVR technologies.

Keywords : TTS, STT CONVERSIONS and IVR

I. INTRODUCTION

The Internet is a vast network which connects millions across the globe in various ways. So, talking about communication over the internet the first thing that comes to thought, is, E-mails. E-mails are extensively used form of online communication, both formally and informally as well. Despite social media, E-mails being the very traditional form of communication have still been the best to date. But the purpose of any service is to serve all mankind, and hence, E-mails should also be such that, they can be easily used by people from all races of life. But Traditional E-mail Systems are accessible to several

but the visually impaired class on the globe, and also various other handicapped people. So, in order to remove this drawback, An E-mail System for the visually impaired individuals would be an incredible breakthrough. Hence, this application has been thought of. Talking of the application, the application will be a web-based E-mail System for visually impaired people. Using Interactive voice response (IVR), which would enable everyone to control their own mail accounts using their voice only and also, they would be able to read, send, and perform all the other user tasks which are offered by the traditional E-mail Systems. The system will prompt the user with voice commands to perform certain actions and the

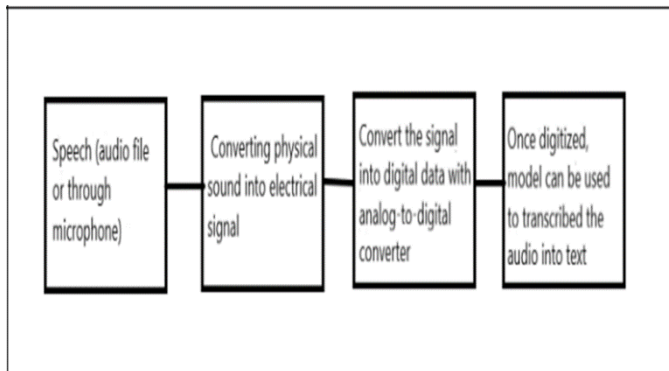
user will respond to the same with voice input. The main advantage of this system is the use of (text) keyboard is completely eliminated, which means, the user will have to respond through their own voice and mouse events only. Now you must be thinking that how will an impaired person will see the right position on the screen for doing mouse clicks event. But this system will perform actions based on the clicks only that is left or right click, it does not depend on the area(portion) of the screen where the cursor is placed before the click giving user the freedom to click anywhere on the screen.

II. METHODS AND MATERIAL

SPEECH TO TEXT:

Speech to Text conversion is that the method of changing spoken words into texts. This method is additionally known as Speech recognition.

Fig 1.1: Speech to Text Conversion Process.



A Speech-to-Text API synchronous recognition request is that the simplest technique for performing arts recognition on speech audio information. Speech-to-Text will method up to one minute of speech audio information sent during a synchronous request. Once Speech-to-Text processes and acknowledges all of the audio, it returns a response.

A synchronous request is obstructing, which means that Speech-to-Text should come a response before

process succeeding request. Speech-to-Text typically processes audio faster than real-time, processing 30 seconds of audio in 15 seconds on average. In cases of poor audio quality, your recognition request will take considerably longer.

Speech recognition, as the name suggests, refers to automatic recognition of human speech. Many speech recognition libraries are developed in Python. However, SpeechRecognition library, that is that the simplest of all the libraries are used.

TEXT TO SPEECH:

Text-to-speech (TTS) is additionally method that lets your laptop or phone browse the text out aloud to you. Text-to-speech is often used as a feature to assist those who have bother reading the text from screen, however it's conjointly convenient for people who need to be read on daily basis. People with visual and reading inabilities were the first adopters of TTS (Text-to-speech).

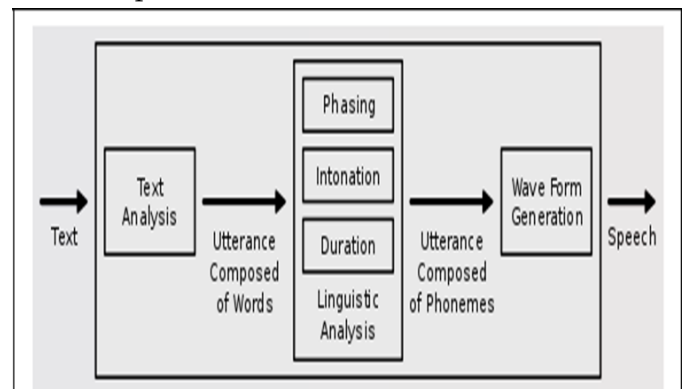


Fig 1.2: Text to Speech Conversion Process.

pyttsx3 is a text-to-speech conversion library in Python in contrast to various libraries, it works offline and is compatible with both Python 2 and 3. An application invokes the pyttsx3.init() works perform to urge a relevancy a pyttsx3. Engine instance. it is a very easy to use tool that converts the entered text into speech.

SMTP:

SMTP stands for Simple Mail Transfer Protocol. SMTP may be a set of communication pointers that permit package to transmit an piece of email over the net is named as Simple Mail Transfer Protocol. It's a program used for exchanging messages to other laptops or users send emails. It provides a mail exchange between users on a similar or completely different computers. It will send one message to at least one or additional recipients. causing message will embrace text, voice, video or graphics. It may send the messages on networks outside the net.

The main purpose of SMTP is employed to line up communication rules between servers. The servers have some way of characteristic themselves and asserting what reasonably communication they're attempting to perform. They even have some way of handling the errors like incorrect email address for instance, if the recipient address is wrong, then receiving server reply with a mistake message of some kind.

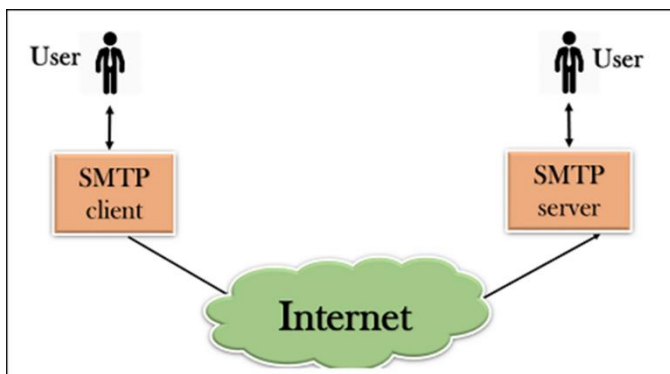


Fig. 1.3: SMTP

Python provides smtplib module, which defines an SMTP client session object that can be used to send mail to any Internet machine with an SMTP or ESMTP listener daemon. Here is that the detail of the parameters –

--host - this is often the host running your SMTP server. You'll be able to specify IP address of the host or a site name like gmail.com. this is often non obligatory argument.

--port - If you're providing host argument, then you wish to specify a port, wherever SMTP server is listening. Usually, this port would be 25.

--local_hostname – If your SMTP server is running on your native machine, then you'll be able to specify simply localhost as of this feature.

An SMTP object has an instance method called sendmail, which is typically used to do the work of mailing a message. It takes two parameters –

The sender – A string with the address of the sender.

The receivers – A list of strings, one for each recipient.

IMAP:

IMAP stands for Internet Message Access Protocol. It's associate in application layer protocol that is employed to receive the emails from the mail server. It's the foremost unremarkably used protocols like POP3 for retrieving the emails.

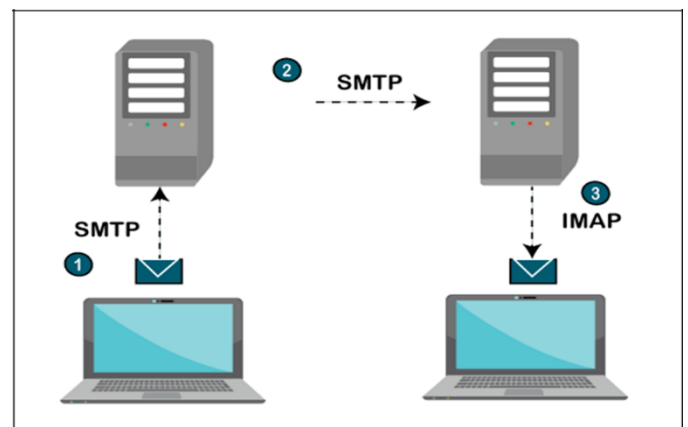


Fig. 1.4: IMAP

IMAP may be a client server protocol like POP3 and most different TCP/IP application protocols. The IMAP4 protocol functions only if the IMAP4 should reside on the server wherever the user mailboxes are set. In c the POP3 doesn't essentially need a similar physical server that has the SMTP services. Therefore, within the case of the IMAP protocol, the mailbox should be accessible to each SMTP for incoming mails and IMAP for retrieval and modifications. The IMAP

uses the Transmission management Protocol (TCP) for communication to confirm the delivery of knowledge and conjointly received within the order. The IMAP4 listens on a well-known port, i.e., port number 143, for an incoming connection request from the IMAP4 client. Python's client-side library called imaplib is used for accessing emails over IMAP protocol. IMAP stands for Internet Mail Access Protocol.

FLASK:

In order to register new users, and validate existing users during the login process, a database to store user details is required. This is created using Flask, SQLAlchemy. Flask-SQLAlchemy is a Flask extension that adds support for SQLAlchemy to the Flask application. SQLAlchemy, the Python Toolkit is a powerful OR Mapper, which provides application developers with the full functionality and flexibility of SQL. Object-relational mapping is a technique through which we can perform certain operation on RDBMS table. The ORM API provides a way to perform CRUD operations without writing raw SQL statements.

OS module:

The OS module in Python provides functions for interacting with the operating system. OS comes under Python's standard utility modules. This module provides a portable way of using operating system dependent functionality. The os and os.path modules include many functions to interact with the file system.

III. OBJECTIVES

- To provide the visually impaired people, a Voice Based Mailing application, a platform using which they can easily receive or send emails without any third person's help or interference.

- Using Interactive Voice Response, people will control their mail accounts using their voice only and would be able to read, send, and perform all the other useful tasks.
- Use of keyboard is completely eradicated, the user will have to respond in the form of speech itself.

IV. LITERATURE SURVEY

Name of Paper	Author	Findings
Voice based Email system using AI Voice based Email system	Rijwan Khan, Pawan Kumar Sharma Prof. Manasi Choche	Basic understanding of how the existing email system work and how we can resolve drawback of existing e-mail system using Artificial Intelligence huge number of people who cannot avail services of various other applications as well as email services due to they being visually impaired, so this project is being developed keeping in mind the hurdles faced by these people

V. EXISTING SYSTEM

The Existing system does not support any voice commands or audio facilities and therefore it is not suitable for visually challenged people. Also, various existing search engine which take request in form of text from user and retrieve the relevant documents from the server and respond by displaying it in the form of text which is not accessible by the visually challenged people. All operations in existing E-mail systems are dependent on mouse click events.

VI. PROPOSED SYSTEM

The Proposed system will make the Traditional E-mail systems easily accessible to visually challenged people and also be of great help to the society. The Proposed system is being implemented, while keeping one idea in mind that it should be easily accessible for all kind of individuals. This system is accessible by any individual, whether they be visually challenged or not in an efficient manner. The Proposed System will take care of user-friendliness of traditional users, and will also focus on user-friendliness of all kinds of individuals. In this system, the system is going to be prompting the user to perform specific operations to avail various services and if the user wishes to access various services then he/she has to perform that operation. Firstly, the user will have to register in the system through the registration form. The user goes to be assisted through voice commands, whereas while registering, all the mandatory fields to be filled are going to be scanned by the website; once the user would speak, it would get written automatically. After successfully registering, the user can log in by speaking the Username and Password when prompted by the system, this username and password will then be converted from speech to text and then the user will be authenticated by verifying the credentials with the database. Users can access various sections like Compose, Inbox, and Sent Mail after successful login.

VII. SCOPE OF THE PROJECT

- This type of system has great scope in the domain of HCI (Human Computer Interaction).
- The system would be beneficial to visually impaired people and it will help them to use modern day applications with ease.
- The Voice based technologies and NLP could be used in different applications as well such as gaming, robotics etc.

VIII. ARCHITETURE DIAGRAM

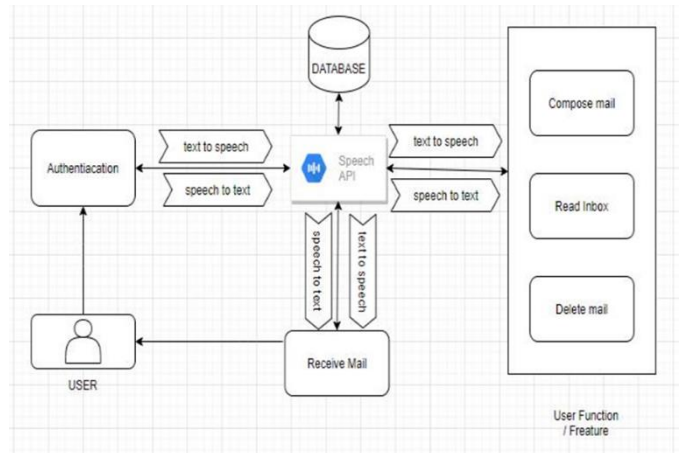
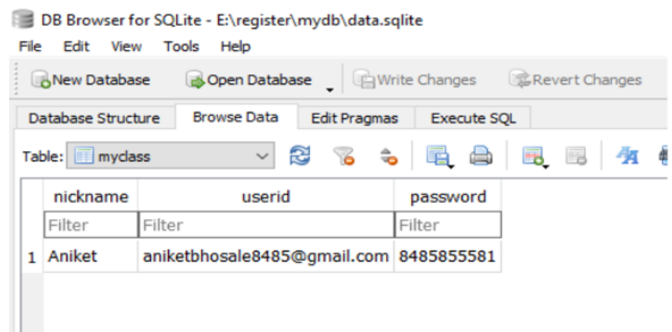
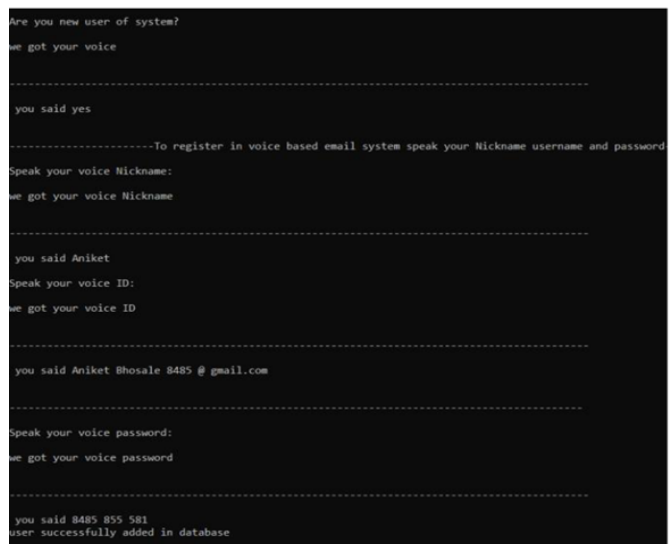


Fig 1.5: System Architecture

IX. PROJECT IMPLEMENTATION

MODEL 1

REGISTRATION:



MODEL 2

LOGIN:


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Speak your Login credential to login into Voice based email system:
Speak your login Nickname:
we got your voice Nickname

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you said Aniket
Speak your login Password:
we got your voice Password

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you said 848585581
You have enter correct password

you userid is aniketbhosale8485@gmail.com
You have successfully enter in system
    
```

**MODEL 3
COMPOSE MAIL:**

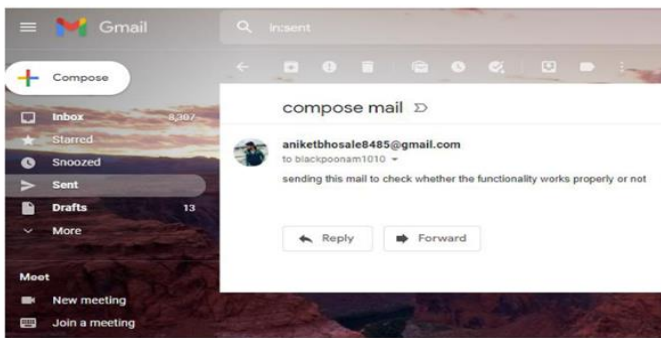
```

you userid is aniketbhosale8485@gmail.com
You have successfully enter in system

Choose your option:
:Speak one to compose mail
:Speak two to read inbox
we got your choice

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you said 1
listening..
Poonam
blackpoonam1010@gmail.com
listening..
compose mail
listening..
sending this mail to check whether the functionality works properly or not
    
```



**MODEL 4
READ MAIL:**

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Speak your Login credential to login into Voice based email system:
Speak your login Nickname:
we got your voice Nickname

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you said Poonam
Speak your login Password:
we got your voice Password

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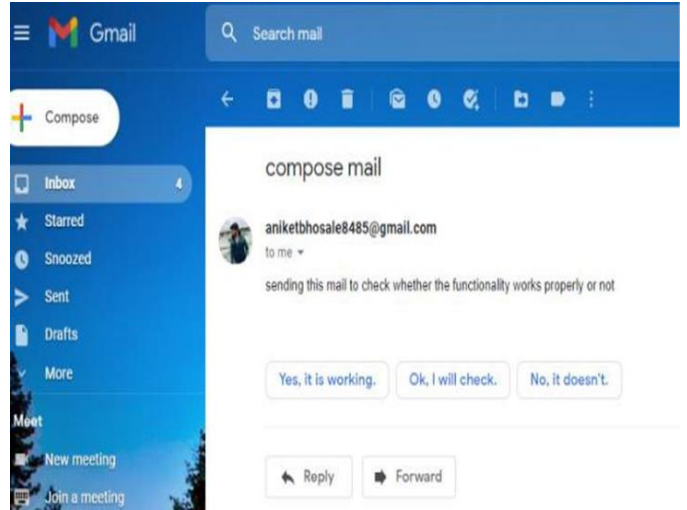
you said 9767950117
You have enter correct password

you userid is blackpoonam1010@gmail.com
You have successfully enter in system

Choose your option:
:Speak one to compose mail
:Speak two to read inbox
we got your choice

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you said Tu
Number of mails in your inbox :[b'14']
Number of UnSeen mails :('OK', [b'1 5 8 12 13 14'])
From: aniketbhosale8485@gmail.com
Subject: compose mail
Body :sending this mail to check whether the functionality works properly or not
    
```



X. CONCLUSION

This E-mail system can be used by any user of any age group having any physical disabilities with ease access. It has the features of speech to text as well as text to speech conversions with speech reader which makes designed system to be handled by visually impaired people considerably easy and efficient.

XI. REFERENCES

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