

# Voice based Email System for Visually Impaired and Differently Abled

Shashank Tripathi

PG Scholar

Dept. of Computer Science and  
Engineering, S.R. Institute of  
Management and Technology,  
Lucknow (UP)

Nidhi Kushwaha

Assistant Professor

Dept. of Computer Science and  
Engineering, S.R. Institute of  
Management and Technology,  
Lucknow (UP)

Puneet Shukla

Assistant Professor

Dept. of Computer Science and  
Engineering, S.R. Institute of  
Management and Technology,  
Lucknow (UP)

**Abstract:** As we know that internet has become the most commonly used communication medium these days. Every human being is widely accessing the knowledge and information through the internet. Today the world is running on the basis of internet. However, visually impaired and differently abled people face difficulties in accessing the information and using any service provided through the internet.

The advancement in computer based accessible systems has opened up many avenues for the visually impaired and differently abled people. Audio feedback based virtual environment like, the screen readers have helped these people to access internet applications immensely. However, still visually challenged and differently abled people find it very difficult to utilize this technology because of the fact that using them requires visual perception.

We describe the Voice Based E-mail System Architecture that can be used by these people to access e-Mails easily and efficiently.

This paper aims to develop voice-based email system for visually challenged and differently abled people to use email system as efficiently as normal user. The system will not let the user to make the use of keyboard and mouse instead will work on speech to text conversion and vice-versa. The complete system is based on Text-to-speech and Speech-to-text API's and Face Recognition for authentication process.

## INTRODUCTION

Internet has become the most commonly used communication medium these days. Today the world is running on the basis of the internet. Internet has made our lives easier, anything you need is just a click away. Electronic mail i.e. email is the most important part in day to day life. But some of the people in today's world don't know how to make use of internet, some are visually impaired or differently abled or illiterate. So, it goes very difficult to them when to live in this world of internet. Nowadays various technologies like screen readers, TTS, STT, etc., are available but these are not that much efficient for them. We need to enhance our technologies in order to make the use of internet handy for differently abled people. Therefore, we came up with our project as voice-based email system for visually impaired and differently abled people that will help them a lot and also illiterate peoples for sending their mails. The users of this system don't need to remember any basic information about keyboard shortcuts as well as location of the keys.

## EXISTING SYSTEM

The existing system uses mainly three type of technologies like STT (Speech to Text): here whatever we speak will be converted to text, TTS (Text to Speech): this is opposite of STT method, here the text written on the screen will be read by the system and IVR (Interactive Voice Response) IVR is an advanced technology describes the interaction between the user and the system in the way of responding by using keyboard for the respective voice message [1]. Also, mouse click events are used for operations [1][2][3]. When the user visits the site, he/she would first have to register into the website through registration form. User will be very well guided with the help of voice commands, while registering all the necessary fields to be filled will be read by site, by clicking on that box he/she would have to fill in them. For e.g. If cursor moves over register icon it would sound "register button", after clicking on register button it would give a voice notification like "you are on registration page" [1].

After registration, user has to go to login page and type user id & password which will be recognized through database enabling the correct user to get access to his/her account. After successful login the user would read the received mails present in inbox and also can send the mails [1][3].

Also, there will be an icon for logout, which would read as "logout" when mouse goes or rolls over it. So, when the user wants to logout from the system [1].

## PROPOSED SYSTEM

The proposed system is based on a completely novel idea, here the most important aspect that has been kept in mind while developing the proposed system is accessibility and security. A system is said to be perfectly accessible only if it can be used by all types of peoples whether they are normal, visually impaired or differently abled.

In term of security, in previous system, users are required to speak their password [1][3] but in the proposed system, we are using Face Recognition System to authenticate whether it is a valid user or not, also if the face recognition system fails to identify it as a valid user then system will ask user to Login (where user will have to speak their user name and password, which will be first word of user name plus his Id).

In term of accessibility, in previous system for visually impaired people, they have to roll the mouse all over the

screen to perform specific operations like for e.g. If cursor moves over register icon it would sound “register button”, after clicking on register button it would sound like “you are on registration page”. Also, there will be an icon for logout, which would read as “logout” when mouse goes or rolls over it. So, when the user wants can logout from the system [1].

But in proposed system for visually impaired people, the use of keyboard and mouse click operations are completed eliminated. The system will prompt the user which operation he/she wish to perform now based on user selection specific operation will be performed.

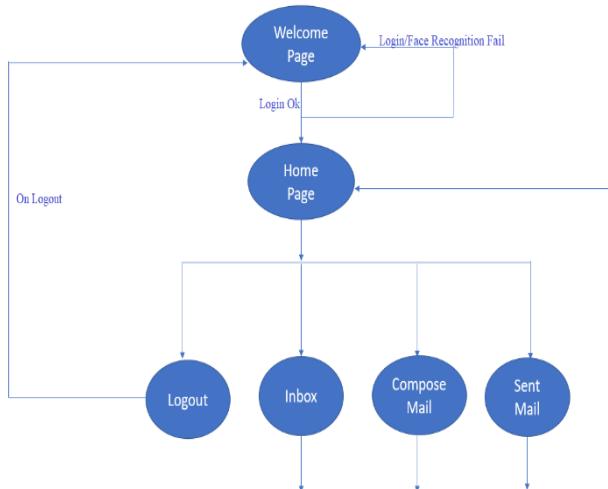
For e.g. When user wants to logout from the system, the user can say “logout”.

Note: Normal users can use keyboard and mouse control.

### SYSTEM DESIGN

The system is designed in Python and Tkinter, OpenCV is used for face recognition process, Google Web Speech API is used for speech recognition process and Pytsx3 is used for TTS (Text to Speech).

Below is the diagram of general design of system.



### IMPLEMENTATION

The system has below modules:

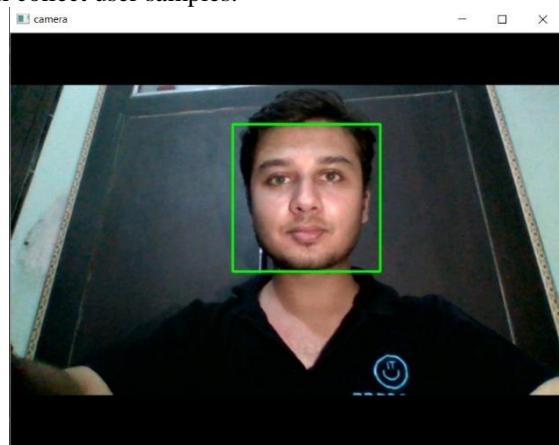
**Registration:** For new user who wants to use this system are first required to register themselves into the system. In the registration page, username, gender and address fields are to be filled by the user.

After filling all the details, a face recognition process will start which will capture user faces which will be used at time of login.

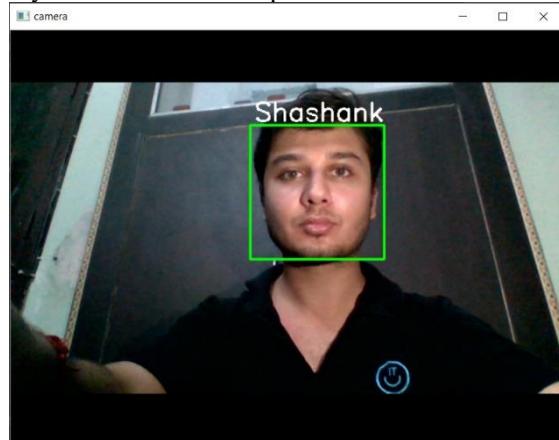
Normal and Differently abled people can fill the details by using keyboard and mouse control and then click Register button to register themselves and Visually Impaired people are required to use Speech recognition process to fill the details.



When user click register button or speak register then before registering all the details into the database a face detection and collection of sample process will start which will collect user samples.



**Login:** In Login phase, first a face recognition process will start which will try to identify the user, if the user is identified then he/she will be redirected to the Home page and if the process fails to identify it as authenticated user then system will ask user to provide his/her credentials.



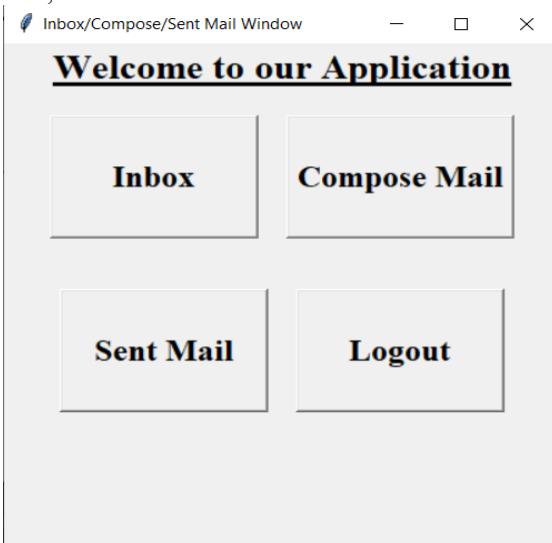
Here process identifies the user, so user will be redirected to the home page but if the process fails then below screen

will appear where user will have to speak their username and password.



**Home Page:** Once the user logs into his account, he/she will be redirected to Home Page where there are several options like Inbox, Compose Mail, Sent Mail and Logout. Normal People and differently abled can click to the respective buttons to use the service but for visually impaired they have to speak which service they would like to use.

E.g. If they want to use Inbox then they have to say “Inbox”, and same for rest of the services.



**Inbox:** In the Inbox window, user can view/listen all the mails which he/she have received so far.



**Compose Mail:** In the Compose Mail, user is required to fill To, Subject and Message fields, which they can fill either by using keyboard or mouse control or by using Speech to Text process.

When all the fields are filled by the user then user can click send button or speak send to send the message.



**Sent Mail:** In the Sent Mail window, user can view/listen all the mails which he/she have sent so far.



**Logout:** When user either click Logout Button or speak “Logout” then he/she will be redirected to the welcome page.

## CONCLUSION

In this paper, we have proposed a system which will help the visually impaired and differently abled people to access email services efficiently.

This system will help in overcoming some drawbacks that were earlier faced by the visually impaired and differently abled people in accessing the emails.

We have eliminated the concept of using keyboard and mouse control for them. However, normal people can still use keyboard and mouse control.

## REFERENCES

- [1] Pranjal Ingle, Harshada Kanade, Arti Lanke “Voice based e-mail System for Blinds” International Journal of Research Studies in Computer Science and Engineering (IJRSCSE) Volume 3, Issue 1, 2016, PP 25-30
- [2] Dhanashree.D.Zope, Pooja.B. Nevewani, Pooja.G.Teje, Nusrat Parveen “Voice Based E-Mail System for Blind People” International Journal of Scientific Research in Computer Science and Engineering Vol.5, Issue.4, pp.73-75, August (2017)
- [3] T.Shabana, A.Anam, A.Rafiya, K.Aisha “Voice based mail system for blinds” International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 1, January 2015