

# VMAIL-Voice Based Email for Blinds

Sneha Sara Aby<sup>1</sup>, Arya A<sup>2</sup>, Girija V R<sup>3</sup>, Devika Raj D<sup>4</sup>, Anagha K<sup>5</sup>

<sup>1,2,3,4,5</sup>*Department of Computer Science Engineering, College of Engineering, Adoor Pathanamthitta, Kerala, India*

**Abstract - The Internet is the method of communication in the present era due to its ease of use and accessibility. Email is the most convenient mode of communication used by the majority of the world population. Even though it is simple and lucid for regular users, blind people face difficulty in accessing it. The existing system works purely based on the events done by the users such as mouse click, keys entered through keyboard etc which need visual perception. The advancement of technology has not yet contributed much to email so that it is convenient to all users regardless of their physical imperfections. This project suggests an email system that relies on voice commands, consequently visually impaired people can email with ease. Blind people can use this web application to perform basic email operations such as compose mail as well as read inbox. The system reads out all the information so that the users need not be concerned about visual perceptions.**

**Index Terms – emails, blinds, voice system, web application.**

## I. INTRODUCTION

With the advancement in technologies, communication has become effortless and elementary. The Internet is the essence of modern communication systems. Electronic Mail or Email has a critical role in this breakthrough. Email has gained popularity not only for professional usage, but for personal usage as well. The root cause for this widespread popularity of Email is its simplicity. It is really trouble-free and simple to access Email systems. However, not all people may find it that simple. To access Email, one must know what is written on the screen. This makes Email not so easy for the Visually Challenged people. According to WHO, at least 2.2 billion people have near or distance vision impairment as of 26 February 2021 and according to NCBI, out of 253 million people with visual impairment, 36 million were blind as of 2015. Therefore, there is a need for an Email system that aids the visually challenged people to use Email seamlessly. Even though Braille keyboards,

screen readers, etc are available, they still have many drawbacks which makes them difficult for the blind to access. In our Project, we are developing a web based application which will completely solve this issue. Our VMAIL application is specially designed for visually challenged people with which they can access their mail accounts using voice commands and certain keystrokes.

This work is prepared by students of College of Engineering Adoor, APJ Abdul Kalam Technological University ; guided by Girija V R, Assistant Professor, Department of Computer Science, College of Engineering, Adoor.

## II. RELATED WORK

Simple e-mail systems are available, in which all the actions are done by using mouse click or keyboard. A visually im- paired person can't able to do these operations, because there is no option to read or compose mail without keyboard or mouse. Also, to access the mail one must know what is written on the screen. Various contributions are made regarding efficient and effective communication technologies for the visually impaired people.

In paper[1], the authors puts forward the idea of a Voice based Email system with technologies like STT(Speech-to-text), TTS(Text-to-speech) and IVR(Interactive Voice Response). IVR is a technology that allow users to interact with the system using particular keyboard actions for the respective voice commands.

Paper [2] describes the idea of a Voice based Email system using Artificial Intelligence(AI). Speech to text conversion is done using AI. Using Artificial Intelligence, it is possible to analyze natural language and convert it to machine readable format.

## III. PROPOSED SYSTEM

In our proposed system, a web application is developed for accessing mails that can be used by people with various visual difficulties. The major aim of our application is to make the blind users able to access their emails of popular email providers like Gmail, Yahoo, etc. The conventional email system is not at all suitable for blinds because all the operations are done by the use of mouse clicks and keyboard. Thus, this web application is completely different from the current system. It will be completely based on voice input and voice response mechanism. So the application focuses on efficiency more than appearance and what is displayed on the screen.

Through our application the user can access multiple emails such as gmail, yahoo, outlook etc. The system will be prompt- ing the user to perform the operations that are available in the system and all the mail operations will be done with voice commands.

One of the major advantages of our application is that, there is no need of using mouse clicks after login and the only thing

the user needs to do is press a key in the keyboard to start voice listening. In the proposed architecture we applied speech to text and text to speech conversion techniques for making it accessible to blinds.

Figure given below describes the architecture of our proposed system

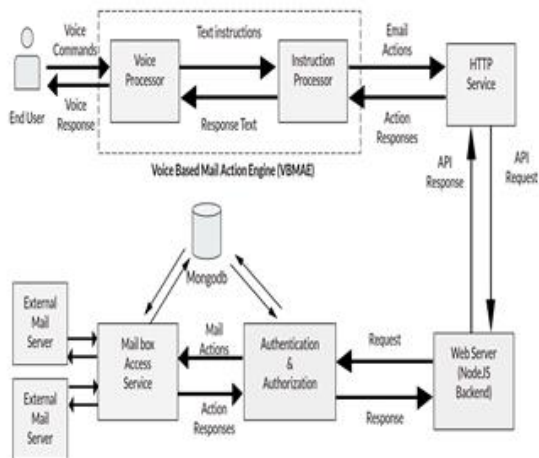


Fig. 1. Architecture

The user gives voice commands to the system. Voice commands are converted to text, according to which email actions are done. Server communicates with user using HTTP requests and responses. We have a document database to store user details. The system communicates with Mail servers using SMTP and IMAP protocols.

#### IV. DESIGN

##### • User Interface Design

User interface is designed using angular framework. VMAIL is a single page web application. Since our system focuses on visually impaired people, voice has the primary significance than vision.

##### • Database design

The datas regarding the registered users and their details are stored in a MongoDB database. A NoSQL database is used here since it is scalable and simple to use. During various basic operations, values get fetched, added as well as get updated in this MongoDB database with the help of an Object Data Modelling (ODM) called Mongoose.

##### • System design

Once logged in, the system works based on voice commands. User can activate system listening mode using a simple keystroke and can command which operation to be done. The application works as a two way communication system.

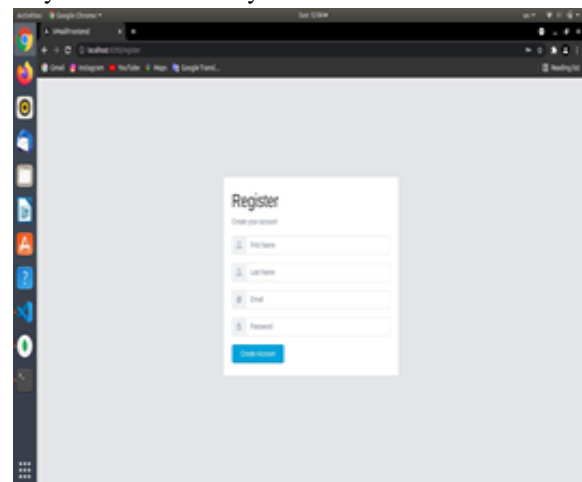


Fig. 2. Screenshot of Registration page

##### 2) Mail Configuration Module

##### 3) Mail Accessing Module

##### A. User Authentication Module

1) Registration: Users who wish to access VMAIL must register at first by providing their first name, last name, email and password. All this information will be saved in our database.

2) Login: Registered users can then login to the system using their email and password that they used at the time of registration. After successful login, users will be directed to the Home page of VMAIL.

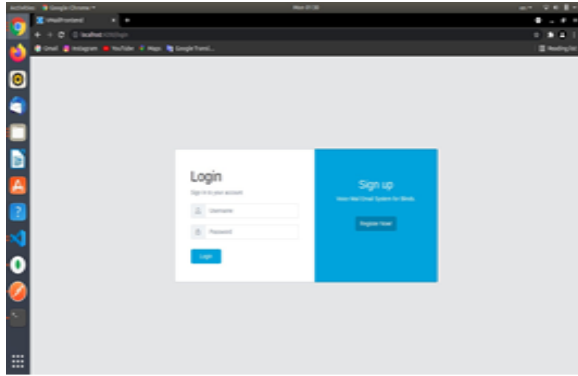


Fig. 3. Screenshot of Login page

## V. IMPLEMENTATION

Our system is primarily divided into three modules as follows;

### 1) User Authentication Module

#### B. Mail Configuration Module

This module deals with accessing different mail accounts by a single user. VMAIL provides users the provision to add and

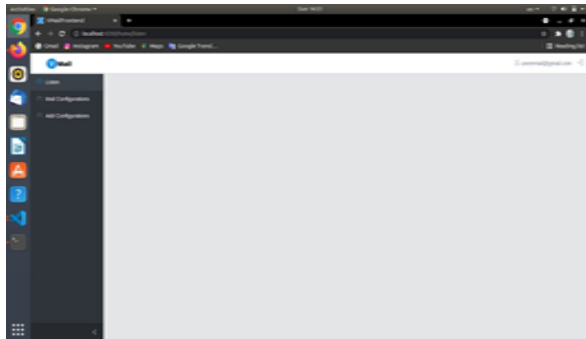


Fig. 4. Screenshot of Home page

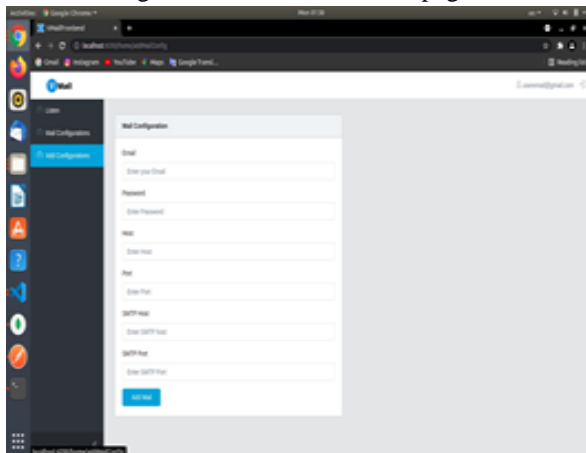


Fig. 5. Screenshot of adding new configuration access different mail accounts. The two main operations in this module are;

1) Add Mail Configurations: Here, users can add a new mail account to our system by providing email, password, host and port of imap, host and port of smtp. Password entered by the user will be encrypted before saving into the database.

2) Mail Configuration List: Users can list different mail configurations that they have already added to VMAIL. This will be read out if the user gives a voice command asking to list the configurations.

#### C. Mail Accessing Module

This module focuses on accessing mails through VMAIL. After login, user can select a mail configuration from the list of configurations that they have added. This can be done by voice commands. After that, they can perform operations like;

1) Inbox: This option lets user know about new mails received by the user. User can give a voice command and the application will read out all the received mails.

2) Compose: User can compose a new mail by giving the address of recipient, subject and content as voice input. After saying the command “send”, mail will be sent to the address specified.

IMAP is used to retrieve email messages from a mail server and SMTP sends mail to a mail server. We can use multiple email accounts using the application.

## VI. RESULTS AND DISCUSSION

The system gives the best results. The results reflect that V-MAIL is a better alternative for blind users due to its congruous and user-friendly interface design. The implementation results show an improved user experience, accuracy in task completion, and better control over interfaces in performing basic activities of managing emails. The solution is tested through an empirical study. Results showed that this email client helps blind people to send and receive emails with comfort and ease.

## VII. FUTURE SCOPE

Email is the most common and significant digital communication platform in this modern epoch. Nowadays email plays a vital role in personal as well as social life. So it is mandatory for an individual to access email. The proposed system can help a blind person to access basic email services without concerning what happens on the screen. The system

works as an assistant that helps blind people to operate basic mail services with a constant two way communication. The user can give commands to the system through voice after turning the system to listening mode. Turning the system into listening mode is not a big deal since it can be done using a simple keystroke. This system is helping hand for blind people to cope up in the field of digital communication.

### VIII. CONCLUSION AND FUTURE WORKS

In this paper we have proposed the idea of a Voice based email system for the visually impaired(VMAIL). With this the blind will be able to overcome their challenges in accessing email systems. We developed a web based email application that works using voice commands which makes it helpful not only for the visually impaired, but for the handicapped too. The system is interactive, easy to use and works with almost any machine with minimum requirements. As a future work, VMAIL can be implemented as an application in smartphones. Also, more voice recognition and security features can be added.

### REFERENCES

- [1] Pranjal Ingle ,Harshda kanade,Arti Lanke “Voice based Email System for Blinds”
- [2] Rijwan Khan, Pawan Kumar Sharma, Sumit Raj, Sushil Kr. Verma, Sparsh Katiyar “Voice Based E – Mail System Using Artificial Intelli- gence”
- [3] Sherly Noel ”Human computer interaction(HCI) based Smart Voice Email (Vmail) Application - Assistant for Visually Impaired Users (VIU)“
- [4] Navya Gupta , Aashish Dahran, Soumalya Ghosh ”Voice based email for blinds”
- [5] T Shabana, A Anam, A Rafiya, K Aisha “Voice based Email system for blinds”
- [6] Dhanashree D Zope, Pooja Nevewani, Pooja G Teje, Nusrat Parveen “Voice-based e-mail system for blind people”
- [7] Aishwarya Belekar, Shivani Sunka, Neha Bhawar, Sudhir Bagade ”Voice based E-mail for the Visually Impaired”
- [8] Ruchi Khedekar, Sonu Gupta ”Voice based Email System for Blinds”
- [9] Parkhi Bhardwaj, Gunjan Sethi ”Voice Based E-mail System for Visually Impaired: A Review”

- [10] Rohit Rastogi, Anshika Rajput, Archana, komal ”An Application of Voice mail: Email Services for the Visually Challenged Individual