



V-Mail for Visually Challenged

Rayini Amrutha Varshini^[1], Tellabati Bhargava Sravani^[2],
Saripudi Srilatha^[3], Utpala Blessy^[4], Prabhakar Dupati^[5].

B. Tech Student, Department of CSE, KKR&KSR Institute of Technology and Sciences, Guntur, AP, India.^{1, 2,3,4}

Associate Professor, Department of CSE, KKR&KSR Institute of Technology and Sciences, Guntur, AP, India⁵

Abstract: In today's world communication has become so easy due to integration of communication technologies with internet. However, the visually challenged people find it very difficult to utilize this technology because of the fact that using them requires visual perception. Even though many new advancements have been implemented to help them use the computers efficiently no naive user who is visually challenged can use this technology as efficiently as a normal naive user can do that is unlike normal users, they require some practice for using the available technologies. This paper aims at developing an email system that will help even a naive visually impaired person to use the services for communication without previous training. With the help of this tool the voice can be transformed into text and from text to voice. This project will completely eliminate the use of keyboards and we would be able to access the things only by using our voice and mouse click. The normal person can also be used this system for read purpose. The system will not let the user make use of keyboard instead will work only on mouse operation and speech conversion to text. Also, this system can be used by any normal person also for example the one who is not able to read. The system is completely based on Interactive Voice Response (IVR) which will make it user friendly and efficient to use.

Keywords: Speech to Text, Text to Speech, IVR, Speech Recognition.

I. INTRODUCTION

Internet is considered as a major storehouse of information in today's world. No single work can be done without the help of it. It has even become one of the defect methods used in communication. And out of all methods available email is one of the most common forms of communication especially in the business world. However not all people can use the internet. This is because in order to access the internet you would need to know what is written on the screen. If that is not visible it is of no use. This makes internet a completely useless technology for the visually impaired and illiterate people. Even the systems that are available currently like the screen readers TTS and ASR do not provide full efficiency to the blind people so as to use the internet. As nearly 285 million people worldwide are estimated visually impaired it become necessary to make internet facilities for communication usable for them also.

1.1.Objectives

- To create a professional application for blind people to work with E-mail.
- Easy access of mail for blind people.
- Outdoor communication is harder task for blind people. So, this help blind people to use emails.
- This application is created because it helps to use the advanced technologies

1.2 Proposed system

Earlier, blind people does not send email using the system. The multitude of email types along with the ability setting enables their use in nomadic daily contexts. But these emails are not useful in all types of people such as blind people they can't send the email. Audio based email are only preferable for blind peoples.

They can easily respond to the audio instructions. In this system is very rare. So, there is less chance for availability of this audio-based email to the blind people. This mainly helps the physically challenged people like handicapped and blind people.

A voice mail system architecture provides a way for visually impaired to access e-mails in most easy and efficient manner. Friendliness in Graphical User Interface can be understood easily. The user no need to remember any keyboard shortcuts. This application can be used by both normal people and physically impaired people.

1.3 Tasks

Text to Speech

The main feature of this system is to convert speech into relevant text. When user gives input in form of voice, that voice is received by the sensor or microphone and translated into text by using API. In this process, all the characters, numbers and symbols are translated.



Speech to Text

Another task of this system is to re-translate the text into equivalent voice format. This process is known as computer speech recognition or automatic speech recognition. There is a microphone which take voice as input, a speech recognition software and a soundcard to pronunciation the texts.

II. LITERATURE SURVEY

“Voice Based System in Desktop and Mobile Devices for Blind People”, 2014. Today in the information age computer has become an integral part of every body’s life. We use a computer to hear songs, read something, accessing information from the internet. We use computer everywhere. But the information access and computer handling has to be done with the mouse and keyboard and by reading all the things present on the screen and then deciding what to do making it a visual process means we need eyesight to handle the information on the computer i.e. if we want to read news from the internet we have to first open a browser and then open a website to read news and then follow the links to read specific news.

D. Kiran Kumar, “User Interface for Visually Impaired People” The research work deals with the design and implementation of Speech recognition device using Raspberry Pi for essential usage to visually impaired people. Now a day’s blind people are increasing enormously so, the main objective of their search is to provide a simple, cheap, friendly user, and compact device for visually impaired people to use multimedia applications of operating system like text, music player and dialing system by interfacing GSM module. All the above are implemented in a low cost Raspberry Pi board. Thus a goal of producing a compact device has been designed at low cost using offline speech recognition. TharaniK. K, “Voice Based Mail Attachment for Visually Challenged People”, 2017. Internet has become one of the basic amenities for day-to-day living. Every human being is widely accessing the knowledge and information through internet. However, blind people face difficulties in accessing these text materials, also in using any service provided through internet. The advancement in computer based accessible systems has opened up many avenues for the visually impaired across the globe in a wide way.

III. EXISTING SYSTEM

There are a total number of 4.1 billion email accounts created until 2014 and there will be estimated 5.2 billion accounts by end of 2018. In 2020 we can expect the number of email users to climb to 4 billion. According to the recent email marketing statistics, the predicted user growth rate for the next four years is 3%, which is around 100 million users more each year. This makes emails the most used form of communication. The most common mail services that we use in our day to day life cannot be used by visually challenged people. This is because they do not provide any facility so that the person in front can hear out the content of the screen. As they cannot visualize what is already present on screen they cannot make out where to click in order to perform the required operations.

For a visually challenged person using a computer for the first time is not that convenient as it is for a normal user even though it is user friendly. Although there are many screen readers available then also these people face some minor difficulties. Screen readers read out whatever content is there on the screen and to perform those actions the person will have to use keyboard shortcuts as mouse location cannot be traced by the screen readers. This means two things; one that the user cannot make use of mouse pointer as it is completely inconvenient if the pointer location cannot be traced and second that user should be well versed with the keyboard as to where each and every key is located. A user is new to computer can therefore not use this service as they are not aware of the key locations.

3.1 Limitations of Existing System

The most common mail service that we use in our day to day life cannot be used by visually challenged people due to some difficulties:

1. One that the user cannot make use of mouse pointer as it is completely inconvenient if the pointer location cannot be traced.
 2. Second user should be well versed with the keyboard as to where each and every key is located.
- A user who is new to the computer can therefore not use this service as they are not aware of the key locations.

IV. METHODOLOGY

Step 1 : Initially user has to speak out his username and password of the V-Mail

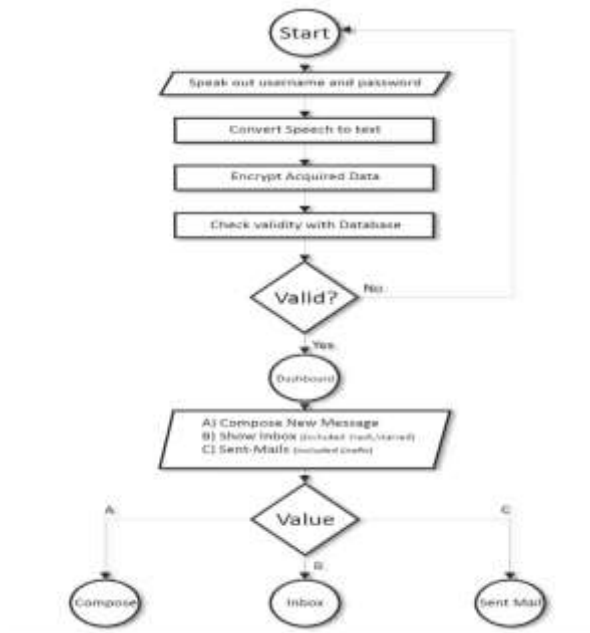


Step 2 : Now, that entered details will be converted to text format and the acquired data is encrypted

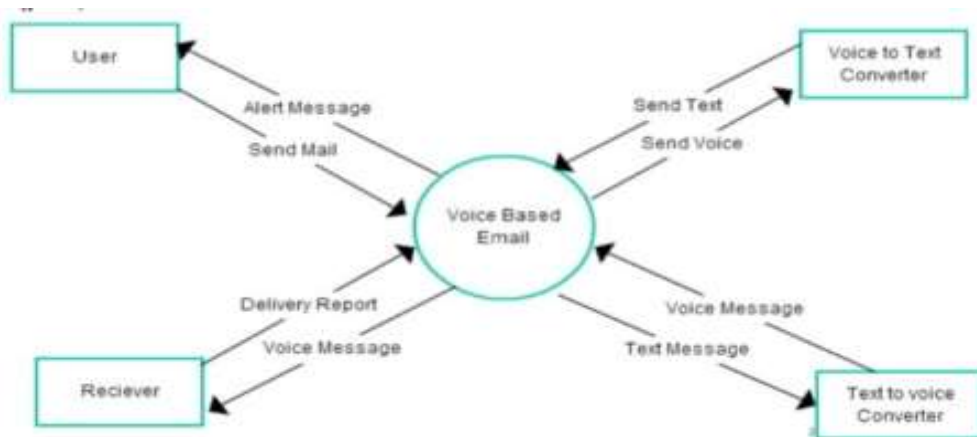
Step 3 : Entered credentials are validated with the data stored in database. If the data entered is valid then the user is promoted to the Dashboard of the V-Mail, otherwise it returns to login page.

Step 4 : After successful login, user has to choose the required option. Based on the selected option user will be taken to further step.

V. FLOW CHART



VI. DATAFLOW DIAGRAM



VII. IMPLEMENTATION MODULES

- **Registration** : This is the first module of the system. Any user who wishes to use the system should first register to obtain username and password.
- **Login** : Once the registration is done the user can login to the system. This module will ask the user to provide the username and password. This will be accepted in speech.
- **Forgot Password** : In case where an authorized user forgets the password and thus is not able to login he/she can select forgot password module.
- **Home Page** : The user is redirected to this page once log in done successfully. From this page now the user can perform operations that the user wishes to perform. The options available are:
 - **Inbox** : This option helps the user view all the mails that has been received to his/her account. The user can



listen to mails he/she wants to by performing the click operation specified by the prompt.

- **Compose :** This is one of the most important options provided by the mail services. Since the system is for visually challenged people and keyboard operations are completely avoided composing mail would only be done on voice input and mouse operations. No typed input will be required.
- **Sent mail :** This option will keep a track of all the mails sent by the user. If the user wants to access these mails, this option will provide them with their need.
- **Trash :** This option will keep a track of all the mails sent by the user. If the user wants to access these mails, this option will provide them with their needs.

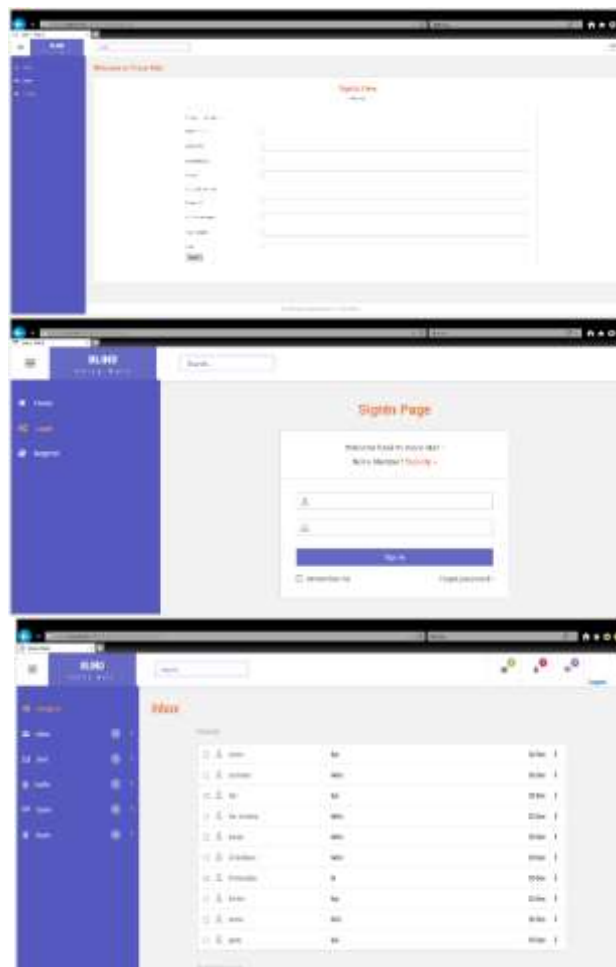
• INTERACTIVE VOICE RESPONSE

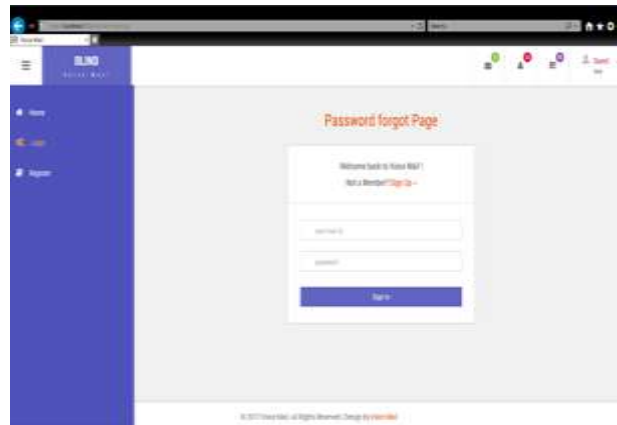
Interactive voice response(IVR) is a technology that allows a computer to interact with humans through the use of voice. In telecommunications, IVR allows customers to interact with a company's host system via a telephone keypad or by speech recognition, after which services can be inquired about through the IVR dialogue. IVR systems can respond with pre-recorded or dynamically generated audio to further direct users on how to proceed.

- **TEXT TO SPEECH:** The main feature of this system is to convert speech into relevant text. When user gives input in form of voice, that voice is received by the sensor or microphone and translated into text by using API. In this process, all the characters, numbers and symbols are translated.
- **SPEECH TO TEXT:** Another task of this system is to re-translate the text into equivalent voice format. This process is known as computer speech recognition or automatic speech recognition. There is a microphone which take voice as input, a speech recognition software and a soundcard to pronunciation the texts.

VIII. RESULTS

The results from the desktop Application are represented with pictures of each page of the desktop Application.





IX. CONCLUSION

In this paper we have designed a system which is helpful for visually impaired people to access email services efficiently. This system helps in reducing some drawbacks that were earlier faced by the blind people in accessing emails. We have eliminated the concept of using keyboard shortcuts along with screen readers which will help reducing the cognitive load of remembering keyboard shortcuts. Also any naive user who does not know the location of keys on the keyboard need not worry as keyboard usage is eliminated. The user only needs to follow the instructions given by the IVR and use mouse clicks accordingly to get the respective services offered. Other than this the user might need to feed in information through voice inputs when specified.

X. FUTURE ENHANCEMENT

The major drawbacks of the application can be used as the future enhancements for this project. There are two major drawbacks in this application i.e., the exact voice recognition and the image or document attachment. So in the future enhancement, we can add the image or document attachment for the sender.

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