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Multi-lingual Voice based Email System

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ABSTRACT

The process of Communication has become so easy due to the integration of various technologies with the Internet. The Internet has now become one of the basic needs of day-to-day living. However, visually impaired people face a lot of problems in dealing with these services provided over the network. Even though many new advancements has been introduced, the visually impaired people find it very tough to take advantage of these technologies as a normal user may. Although, screen readers and audio feedback virtual systems have helped them immensely. Therefore, this paper aims at developing an E-mail system that will assist the visually impaired person to access these services efficiently. This architecture will also cut on the cognitive load taken by the user in typing the characters and also handicapped and illiterate people.

Keywords: E-mail, Visually impaired, Communication, Internet.

1. INTRODUCTION

In today's world, the internet is considered to be the major source of information. No work can be done without its assistance. Electronic mail plays one of the most important roles in our daily lives. However, not everyone can take advantage of this service. The blind and the illiterate cannot benefit much from it as they would not be able to see what's on display or understand what's written making Internet completely useless for them[3]. Various technologies such as ASR, TTS, STT etc.[1] are also not efficient for them. As around 284 million people around the globe are visually impaired and many more illiterate, it makes it necessary to make internet facilities for communication benefiting them.

Therefore, we have come up with this project as Multi-lingual voice-based e-mail system that would help these people by allowing them to communicate with the system to send and read e-mails in any language they are comfortable with. The user doesn't need to remember the location of the keys on the keyboard and can use the system effectively by performing simple mouse click operations. As a result, the cognitive workload of the user will get reduced and the people can access e-mail in a hassle free manner.

2. EXISTING SYSTEM

There are a total of 4.9 billion email accounts created till date and there will be estimated 6 billion accounts at the end of 2020, this makes emails the most used form of communication[2]. But it cannot be used by a major part of the population such as visually challenged or not so literate people. The most common communication system cannot find its way into the lives of these people. The reason behind this lies in the fact that they cannot visualize what is written on the screen and hence they need a way to read out the content written over there. So the ultimate solution is audio feedback. The system available nowadays use screen readers. They can read information displayed on the desktop in a sequential manner or it prints information on Braille printer. But they require the use of the keyboard as mouse pointer cannot be traced and to recognize and remember all the characters of the keyboard is not possible for visually impaired people [4]. Another known problem with screen readers is that they can only make out the basic HTML content on the screen and so advanced web pages would pose in as a problem which in turn will require degrading the quality of web page. To overcome all these drawbacks of existing systems, we need a system purely based on voice. This will also help to make this communication facility more user-friendly and interactive for a new computer user.

3. PROPOSED SYSTEM

The proposed system is based on the existing system. Accessibility is one of the most important aspects of developing this system. The system should be universally accessible to everyone irrespective of the physical in capabilities of the person. The existing

systems do not provide high accessibility and thus we are developing this system which is an upgrade to the existing system. Unlike existing systems which focuses more on GUI friendliness of normal user, our system covers expectations of both normal as well as a visually impaired group. The most important advantage of this system is that the user doesn't have to worry about how to use the keyboard because all the operations are based on simple mouse clicks. The system will also be advantageous for the illiterate who cannot read or write.

Given below is the System Architecture of our Web Application. When the user will visit our application, he would have to login to his respective Google mail account. Once access is granted, he will be further able to view his inbox for received emails. He will also be able to compose a new mail to be sent to another user over the globe by just using his voice and simple basic mouse click operations.

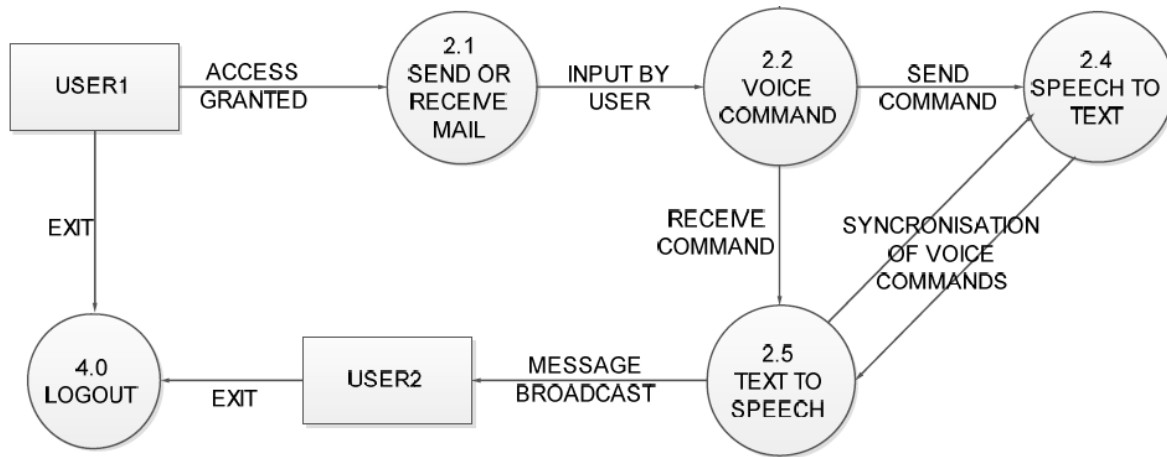


Fig. 1 System Architecture

4. IMPLEMENTATION

The e-mail system developed by us includes the following modules –

4.1 Home Page

This is the first module of the system. It is the home page of the web application which consists of a Navigation Bar having options of Home, About, Login and Contact, using which the user can navigate through the web application. It also consists of a slider which gives a small overview of the system.

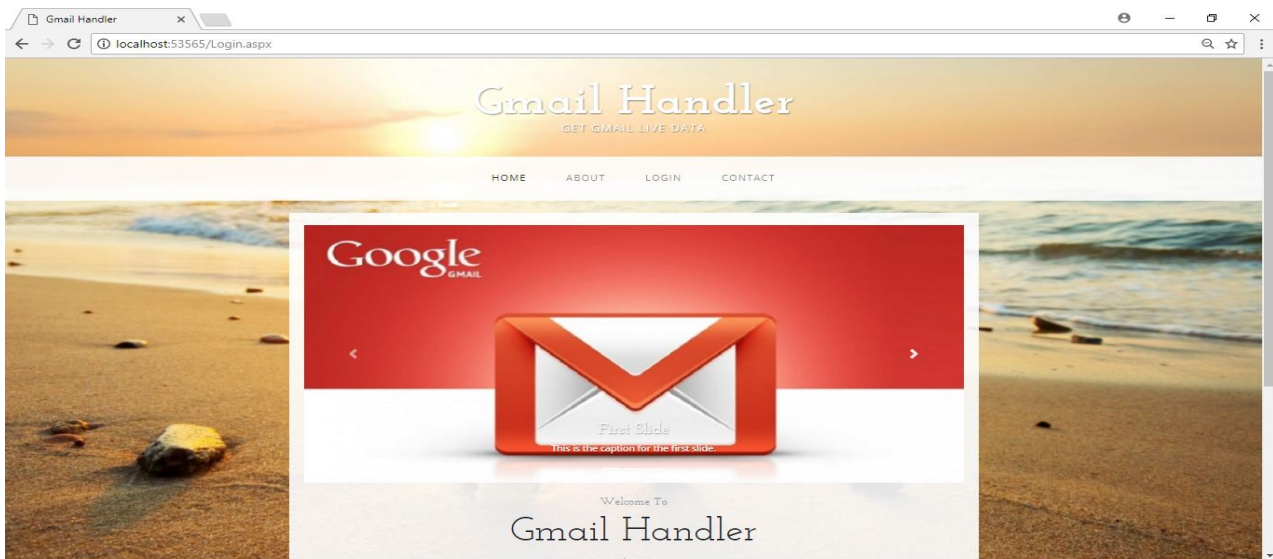


Fig. 2 Home Page

4.2 Login

Here the user can login to the system using their Gmail Username and Password. Login module will ask the user to provide username and password. The user enters the details by speaking into a microphone and then login to their email platform. Here the process of speech to text conversion takes place. It is preferable to use the system in a quiet environment to get more accurate results.



Fig. 3 Login Page



Speak User Name

Speak

Fig. 4 Username



Speak Password

Speak

Fig. 5 Password

4.3 Inbox

The users who have successfully logged into their accounts can also check their inbox for new and old messages they have received from other users. They can also click on a particular e-mail to further open it.

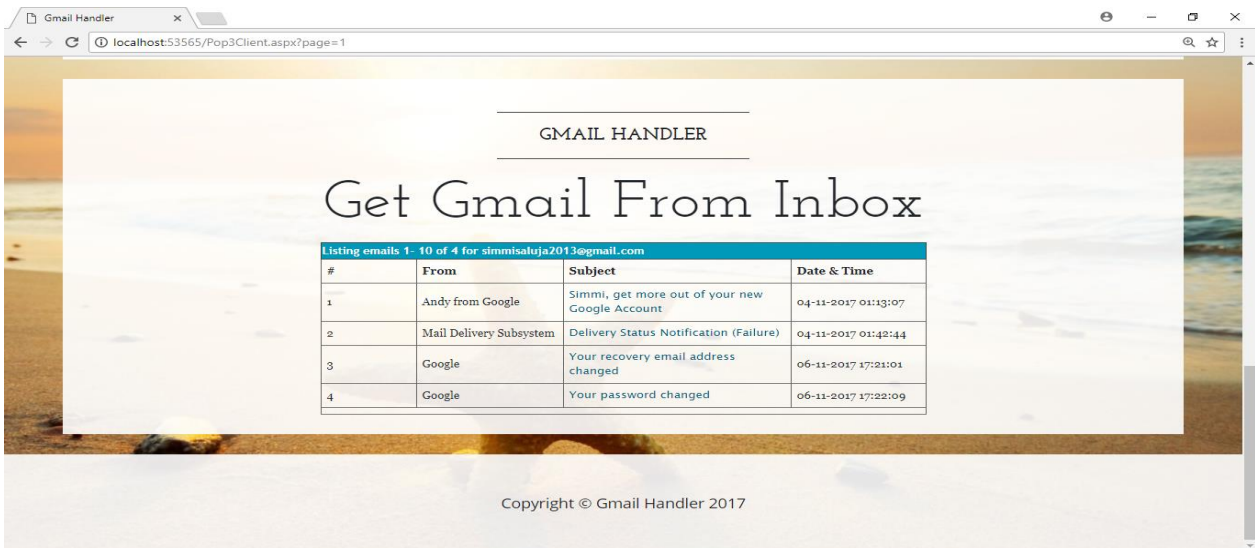


Fig. 6 Inbox I

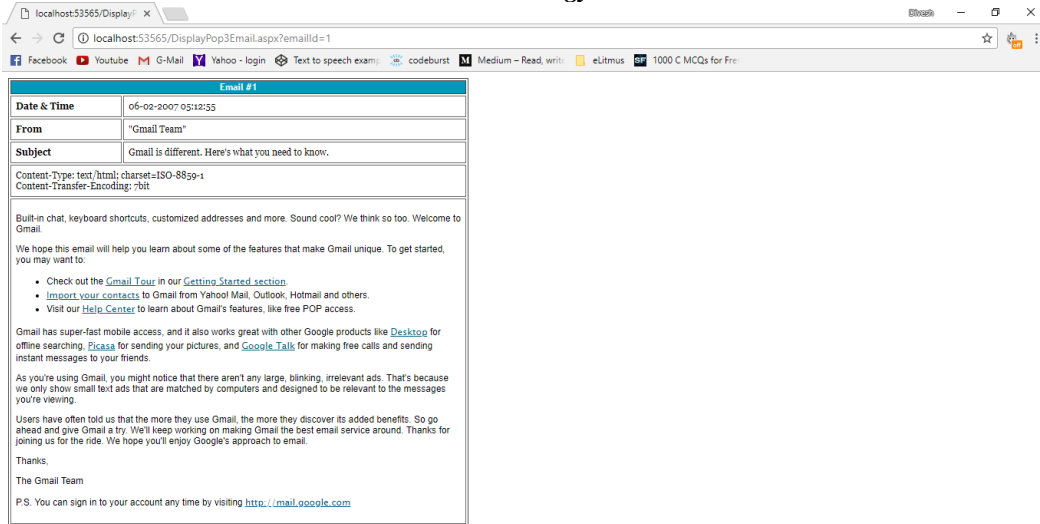


Fig. 7 Inbox II

4.4 Compose

After the user has successfully logged into their account, they can compose an email to be sent to other users present around the globe. The compose mail option can be accessed by clicking on ‘Compose Mail’ present on the Navigation bar.

The application asks for the receiver’s username, subject and the message description separately, which can be entered via a microphone. The process of speech to text conversion takes place here as well.



Speak Email ID of Others User

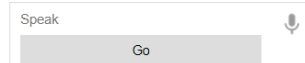


Fig. 8 E-mail address of recipient



Speak Subject

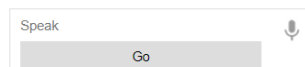


Fig. 9 Subject



Speak Description

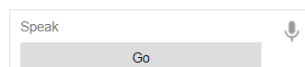


Fig. 10 Description

Once the user has given the required details to send the mail, the following page will be displayed showing all the information as given by the user.

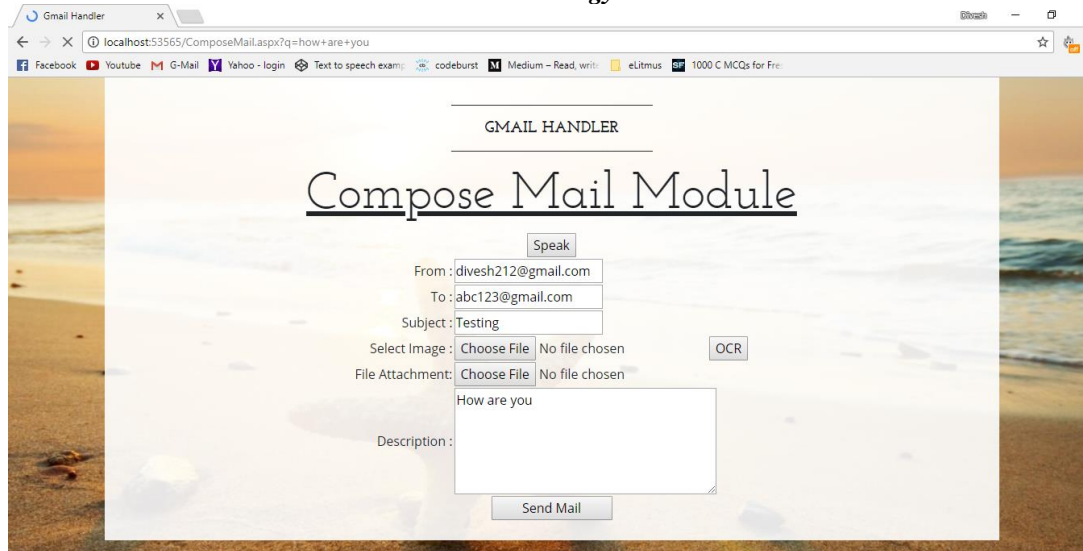


Fig. 11 Compose

After this, the user is provided with several other options to do along with sending the e-mail. The user can take advantage of these features according to their needs. The options provided to them are –

- a. **SPEAK** – When the user clicks on the ‘Speak’ button, the system reads out the details entered by the user via a speaker or headphone. This option can be used to verify the details of the user and check whether the system correctly understood the specifications of the e-mail as spoken by the user.
- b. **ATTACHMENTS** – If the user wishes to send a text file, image, document etc. along with the message description, he/she can attach it by clicking on the ‘Choose File’ button with the File Attachment option. They can now select a file from their local computer and attach it.
- c. **OCR** – It stands for Optical Character Recognition. It is a technology that is used to convert the documents such as Images, PDFs, scanned documents, files etc. into searchable and editable data. So, for example, if the user has to edit the information written on a paper and send it via e-mail, he/she can scan the paper, select the scanned document by clicking on ‘Choose File’ button with the Select Image option and click on ‘OCR’ button. The data present on the paper will get converted into editable text and displayed in the Description section.

The user can finally click on ‘Send’ button and send the e-mail to the given address.

5. FUTURE SCOPE

E-mailing is not a big deal for people who are able to see, but it is a major concern for people who are not gifted with the ability of sight. This voice-based e-mail system has great application because it prevents the user from using the keyboard as most of the operations on the system can be performed through voice and few simple mouse clicks. Also, the system can be converted to different languages (Spanish, Russian, Mandarin etc.) with which the user is comfortable and also has the capability to recognize these languages and convert it to the appropriate text. The system is advantageous for both visually impaired and the illiterate people.

6. CONCLUSION

There is no age restriction on people who can use this e-mail system. It has the features like conversion of speech to text and text to speech and compatibility with several other languages apart from English which makes it possible for visually impaired and illiterate people to use it with ease.

7. REFERENCES

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