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Research paper

A voice based text mail system for visually impaired

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Abstract

To develop a voice primarily based email system that will facilitate visually impaired individuals to access email in a problem free manner. Together with providing usage of mail services simply and with efficiency, the system also will cut back the psychological feature work that must be unremarkably taken by the visually impaired to recollect and sort characters using the normal Braille keyboards, which are accessible to them. The graphical user interface of this method has been evaluated against the interface of the traditionally accessible mail system. Not only for visually impaired, but also for people who are illiterate might have the benefit of this technique. The foremost crucial facet which will be thought of developing this technique is that the users of this technique does not have any basic information regarding the keyboard shortcuts used or wherever the keys are used for. All functions to be utilized in this technique are supposed to be easy mouse click operations creating the system very user friendly. This application proposes an android application, designed specifically for visually impaired individuals. This application provides a voice primarily based mailing service which provides them to browse and send mail on their own, without any guidance. The users ought to use certain keywords which can perform certain actions for e.g. Read, Send, Compose Mail, Address Book etc. This EMAIL system is utilized by a visually handicapped person to access mails easily and with efficiency. Therefore reliance of visually impaired on others for his or her own activities associated with mail are often reduced.

Keywords: *Voice based, Visually handicapped, Email System.*

1. Introduction

A voice mail system is a computer-based system that allows users and subscribers to exchange messages without typing. These systems are designed to convert a caller's recorded audio message in to text and then it will be sent to a recipient. It is mainly useful for blind people, as every official messages are only sent through mail they cannot text the message so our application helps them a lot. A voice mail system is also called as voice bank.

This system acts as an application which contains accessible user interface to select, play, and manage messages; a delivery method to either play or deliver the message otherwise.

Normal Gmail does not contain the voice recording option. In this project we are designing a record option and the recorded voice is converted to text and sent to the particular mail. Now a days many people are very busy, so they are interested in recording a message and sending it instead of typing it.

This type of application helps people in a way of time consuming and also perfect message will be received. This application is a user system interaction in which the system interacts with the user like it asks the user to enter the message and the entered message is displayed and also the system also asks to enter the recipient mail id and then it sends when we say to send the message.

The voice Activation Detection API is used to convert our audio in to text. The system also speaks i.e., response to user accordingly. This is done by using Answer Activation detection API.

The application consists of user interface that has a 2 text boxes, one is used for entering the message and the other is used for entering the recipient mail id. It consists of 2 buttons, one is to clear or edit the message and other is to send the message.

At finally after entering the system repeats everything what we have spoken. By this we can confirm that the exact message is texted or not.

Applock is designed especially for security purpose. It is an authenticator, which efficiently performs its task of providing additional security feature. It allows only genuine people to access the application.

Fingerprint authentication is available for smartphones which facilities fingerprint sensor or fingerprint option.

Communication is very difficult task for blind people or visually handicapped persons. Advancement in technology doesn't provide any upgrading in their life. Confidential data or important data is been shared in today's world through e-mails. As visually impaired people cannot able to read or text back a response to the message.

The proposed system helps the blind people in all positive aspects with advent invent in technologies. This is the primary idea for developing android application that helps them to send and read emails similar to normal people. The application uses text to speech and voice recognizer to send, read, forward and reply to emails using an android application in smart phones.

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2. Project Description

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 voicemail 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.

3. System Description

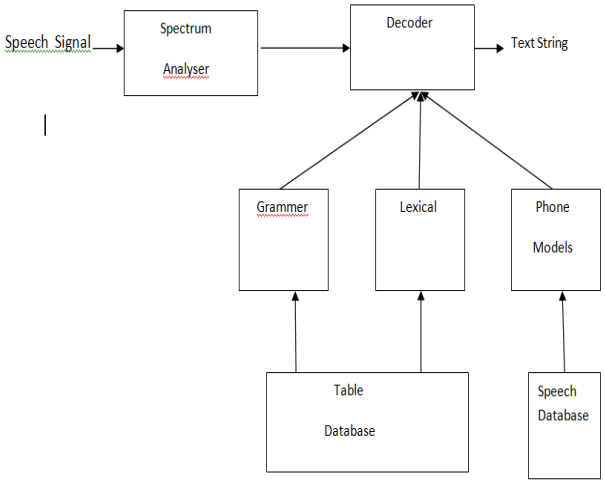


Fig. 1: Speech Recognition Architecture

The process of acquiring speech during run time through microphone, which process the speech with sample data to relate the text. The final related text will be stored in a file. This is being developed on android platform using Eclipse workbench. Our speech-to-text system directly receives and converts speech to text. It can be implemented in some other large systems, by giving users a various choices for entry of data. A speech-to-text system can also be used effectively for improving the accessibility of the system with entry of data options for blind or visually impaired, deaf or physically handicapped users.

4. Modules Description

The modules are:
1. **Applock.**
2. Sign up/Registration.
3. Sign in/Login.
4. A Textbox used for sender mail id.
5. A Textbox used for recipient mail id.
6. Subject box.

1. APPLOCK:
As there should be privacy for the application applock should be maintained compulsory. But the applock available in each mobile by default, so they can use it.

2. SIGNUP/REGISTRATION:
First the users who are going to use this application should be register with their valid email id, password and they should keep a 5digit numerical code as password.

3. SIGNIN/LOGIN:
When the user opens the application then it will ask the registered mail id and numerical password only. As it is mainly for blind people or visually impaired, we will be maintaining a numerical password.

4. A TEXT BOX USED FOR SENDER MAIL ID:
The system asks the user to enter the sender email id. As it has voice recognition application programming interface, which automatically enters the mail id in the particular textbox whenever the user speaks or reads it.

5. A TEXT BOX USED FOR RECIPIENT MAIL ID:
The system asks the user to enter the recipients mail id. In the same way when the user speaks, it automatically enters the mail id.

6. SUBJECT BOX:
A subject or message box is available in which the user can enter the message what they want to send or convey to the recipient.

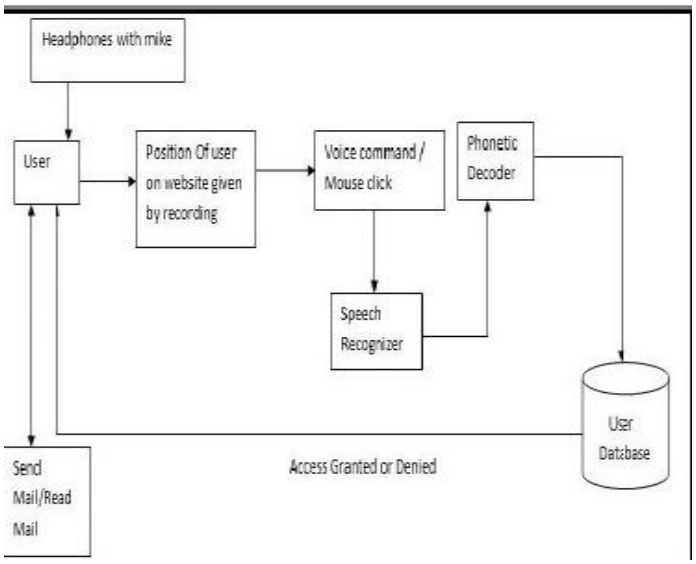


Fig. 2: System Architecture

5. 5. Experimental Results

CYCLOMATIC COMPLEXITY:
We are calculating the cyclomatic complexity for home page. Cyclomatic Complexity is software metric that provides a quantitative measure of the logical complexity of a program. It has a foundation in graph theory and is computed in this way.
The number of regions corresponds to the Cyclomatic Complexity is 3.
Cyclomatic Complexity, V(G) for a flow graph G, is defined as
V(G)= E – N + 2
where E is the number of flow graph edges, and N is the number of flow graph nodes.
V(G) =7-6+2
= 3
V(G) = P + 1= 2 + 1= 3

FLOWCHART FOR TESTING CYCLOMATIC COMPLEXITY:

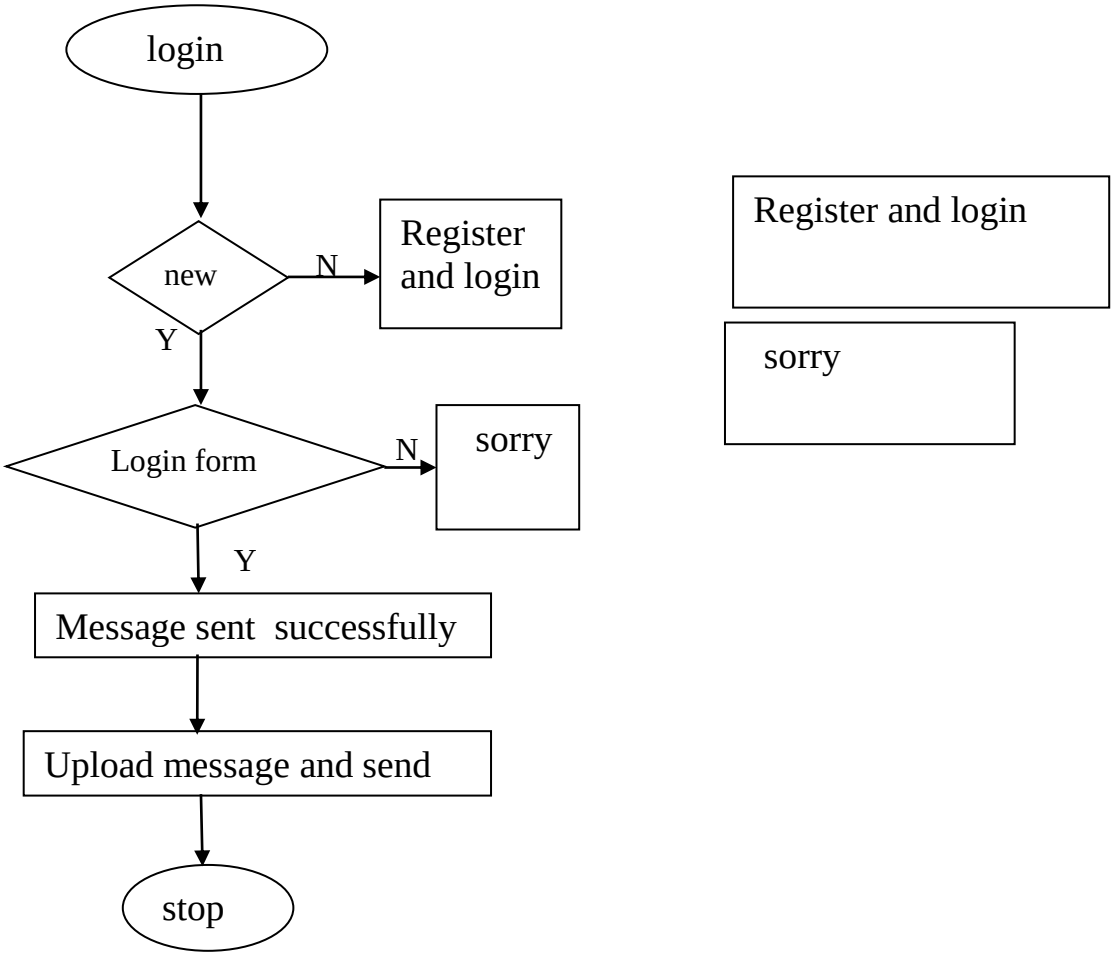


Fig. 3: Flow chart for cyclomatic complexity

REGISTER PAGE:
Here the user has to register with their username, gmail and password. It is one time registration. After registering, this will be fixed as their default from address.

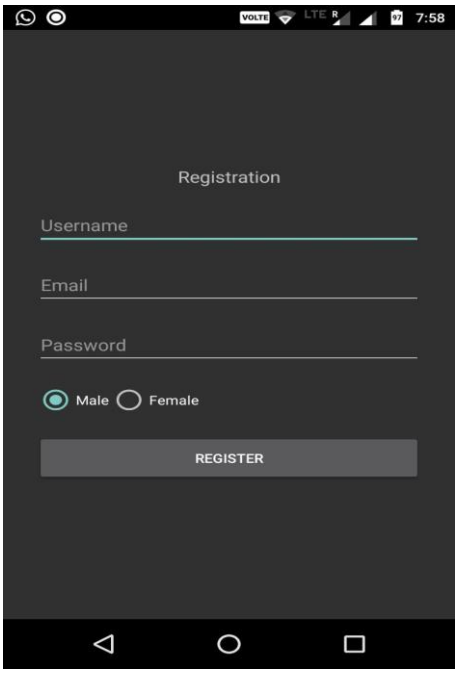


Fig. 4: Screenshot for register page

USER SCREEN
The user screen consists of the to address, Subject and content of message.

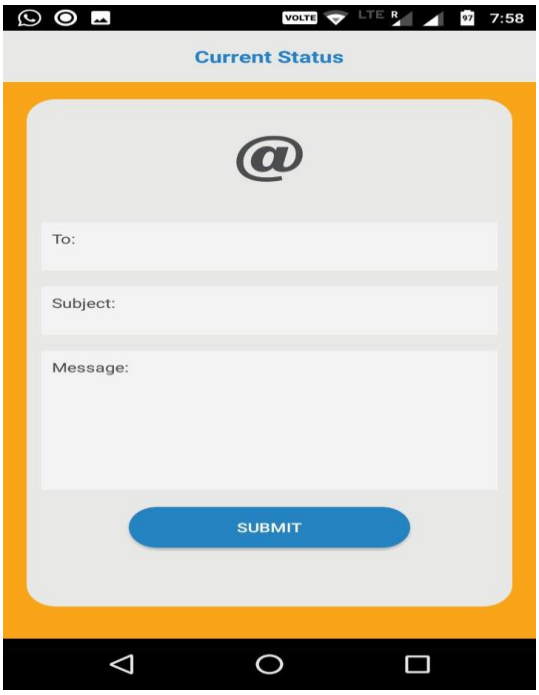


Fig. 5: Screenshot for Userscreen

USER SCREEN AFTER ENTERING DETAILS USING VOICE:
The user now enters the to address, subject and composed message using voice.

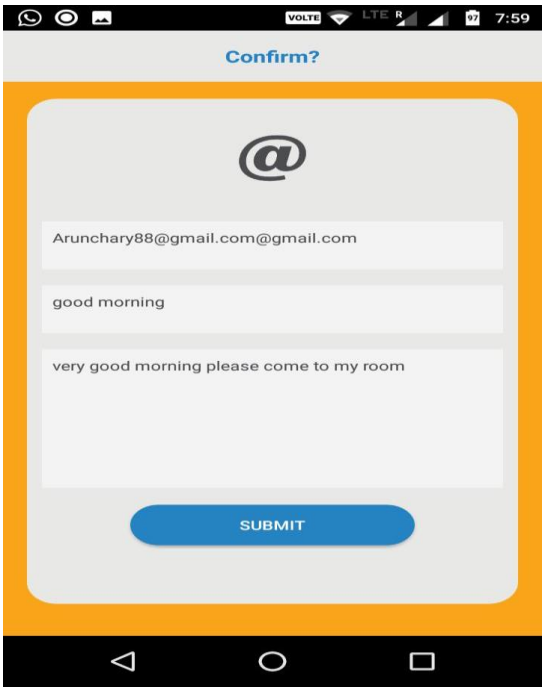


Fig. 6: Screenshot after entering user detail

MESSAGE SENT CONFIRMATION
Now a small message appears after the message has sent successfully.

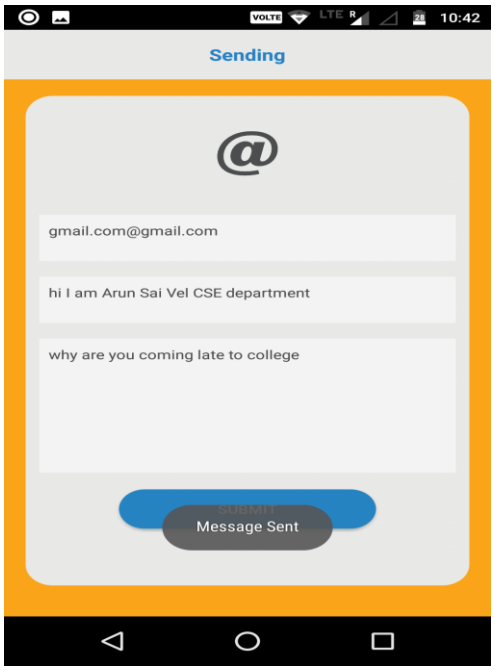


Fig. 7: Screenshot for confirmation message

6. Conclusion and Future Enhancements

We proposed an android application by designing specifically for visually challenged people. It provides a voice based mailing service where they could read and send mail on their own, without any guidance. Here the users have to use certain keywords which will perform certain actions for e.g. Read, Send, Compose Mail, Address Book etc. This EMAIL system can be used by a blind person to access mails easily and efficiently. Thus reliance of visually impaired on other people for their activities related to mail can be reduced.
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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