

Voice Based Email for Visually Impaired

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Abstract -E-mail is normally considered amongst the most popular communication channels. However, since all tasks that can be done on the device are focused on visual awareness, all these devices can be of little use to individuals who are visually impaired. With the introduction of cell phone technology, many technical solutions for visually disabled people have been developed so that they can use them and benefit from them. It will be created as a main concept technology to assist blind people in mailing and checking email in almost the same way that other people do. Speech has not been frequently used in electronics and computers due to the difficulty and wide range of speech signals and sounds. However, with modern procedures, algorithms, and techniques, it is easy to process speech signals and identify the text. Instead of using text-to-speech new tech, the programmer would not allow the user to use the keyboard and vice versa to send, read, forward, and reply to messages using a Smart phone. This app will be developed for the Android operating system. Our speech-to-text module obtains and translates speech to text directly. Speech recognition is achieved by connecting to Google's server through the Internet.

Key Words:Speech recognition, Email, Visually impaired, Voice, Text to Speech, User Friendly.

1.INTRODUCTION

For visually disabled individuals, the most popular mail services that are available today are of little use. This is due to the fact that these systems do not provide audio input. Since they are unable to imagine what is present on the screen, the necessary operations are very difficult for them to perform. As smartphones have become an increasingly important part of our daily lives, there has been an increase in demand for content that can be accessed via them. Smart phones give consumers improved strategies for communicating with their phones, but voice remains the most natural way of interacting. The demand for smart mobile phones offers a range of speech recognition applications. Google Voice Actions, and recently iPhone Siri, are apps that allow voice-based mobile phone control, such as sending texts and emails, listening to music, browsing

the web, and performing basic tasks. Voice Actions are available on any Android device running version 2.2 or higher, but Siri is only available on the iPhone 4S. There's also the matter of compatibility to take into account. Siri has the advantage of being able to work with a wide range of words and requests, as well as understanding and learning from natural language, while Google's Voice Actions can only be used with very specific voice commands. The main objective of this project application is to allow the user to enter spoken data and to send voice messages as the requested text message. While some screen readers are offered, these individuals face some minor difficulties as well. Screen readers talk about whatever material is on the screen and the user may have to use keyboard shortcuts to perform specific actions because the screen readers do not detect the position of the mouse. In this case, the user can quickly and efficiently control text messages using a speech recognizer without using the keyboard, minimizing time and effort expended.

2. PROPOSED PLAN OF WORK

2.1 Existing System:

Blind people do not send emails using the system during previous work. In nomadic daily contexts, the multitude of email types along with the capability setting allows their use. But in all sorts of individuals such as blind people they can't send the text, these emails are not useful. For blind people only, audio-based emails are preferable. They can respond to the audio instructions easily. It's really unusual in this method. So, this audio-based email is less likely to be made available to blind people.

2.2 Proposed System:

We characterize the architecture of the voicemail system that a blind person can use to quickly and effectively access emails. The aspect of this research has allowed visually impaired people to use a computer or smartphone to transmit and receive voice-based e-mail messages in their mother tongue. Our suggested device Interface has been assessed against a conventional mail server's GUI. We discovered that our proposed architecture outperforms the current GUIs.

3. METHODOLOGY

The following four types of technologies are used in this system:

3.1 STT (Speech-to-text):

Converter The device uses a microphone to acquire speech at run time and process the sampled speech to understand the spoken text. It is possible to store the recognized text in a register. We are using the Eclipse workbench to build this on the Android platform. Our speech-to-text scheme acquires and translates speech to text directly. It can support other larger systems, providing a different option for data entry to users. By offering data entry solutions for blind, deaf, or physically handicapped people, a speech-to-text system may also enhance system usability. The system of speech recognition can be divided into several blocks: feature extraction, database of acoustic models based on training data, dictionary, language model, and algorithm of speech recognition. First, the analog speech signal must be sampled or digitized at the time and amplitude axes. Even intervals are analyzed for samples of the speech signal. This time is normally 20ms, since the signal is called stationary at this interval. Extraction of speech features requires the creation of distinct vectors of speech characteristics that are evenly spaced. For estimating the parameters of acoustic models, feature vectors from the training database are used. The acoustic model defines the properties that can be identified by the basic elements. The basic element may be a phoneme for continuous speech or a word for recognition of isolated words.

3.2 TTS (Text to Speech):

Converter Using speech synthesis methods, converting text to voice output. While it was originally designed to help the blind read written content, it is now widely used to send financial information, e-mail messages, and other phone information to anyone. When giving directions on mobile devices, such as portable GPS technology, text-to-speech is frequently used to announce street addresses..Our Text-to-Speech Converter accepts as input a string of 50 text (alphabets and/or numbers) characters. In this, we have connected the controller to the keyboard and specified all the alphabets and digit keys on it. The speech processor has an infinite dictionary and can most of the time speak out almost any text given at the input. It has an accuracy of

above 90%, therefore. It is a hardware dependent microcontroller coded in the language of Embedded C. Further study is to be performed in order to refine different methods of text input, i.e. Using an optical sensor to read the text and translate it to speech in order to address almost all kinds of physical difficulties faced by people when talking.

3.3 IVR (Interactive Voice Response):

IVR is a cutting-edge technology that illustrates the interaction between the user and the system through the use of a keyboard to respond. Corresponding voice message IVR allows a user to communicate with a machine. Users can then send email to the host system using a system keyboard. Listening to the IVR allows them to conveniently service their own inquiries. Conversation In most cases, IVR systems respond with pre-recorded messages. Audio voice to guide users through the process. The system would require a lot of memory and a lot of things, and the audio would be pre-recorded.

3.4 Speech recognition:

Voice recognition software (also known as speech to text software) allows a person to use their voice instead of typing on a keyboard. Voice recognition can be used to dictate text to the machine or send commands to the computer. Speech recognition program makes it possible to write on a device easily. It is frequently helpful for people with disabilities who have difficulty using the keyboard. This app can also benefit those who have trouble moving thoughts to paper as it helps to take the stress out of the writing mechanics. Word recognition is computed as a function of time, so a word with a high recognition level is read faster than a book. This method of assessment suggests that understanding the context of the words being read is less important than the ability to identify them in a manner that allows for proper pronunciation. Word recognition is mostly tested in formats like flash cards with words presented in isolation, so context is often ignored. However, as with fluency, ease of word recognition allows for skills that aid comprehension of the text being read.

4. Design

2) Class Diagram:

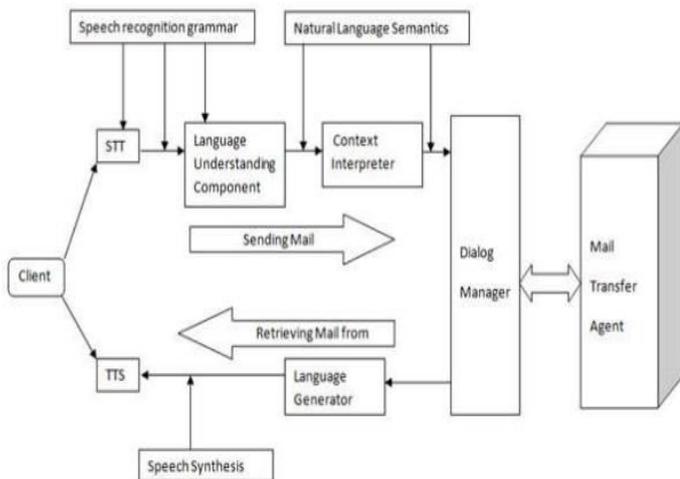


Fig1: Component diagram

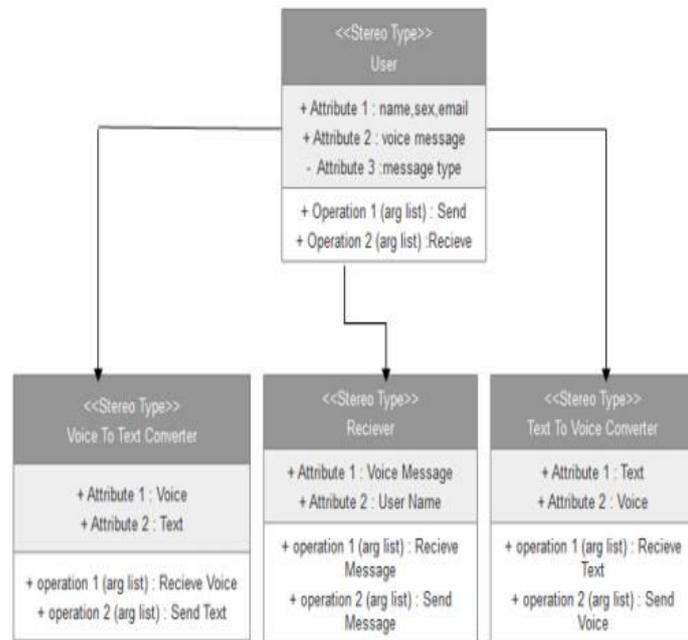


Fig3: Class diagram

5. Diagram

1) Use case diagram:

3) Sequence Diagram:

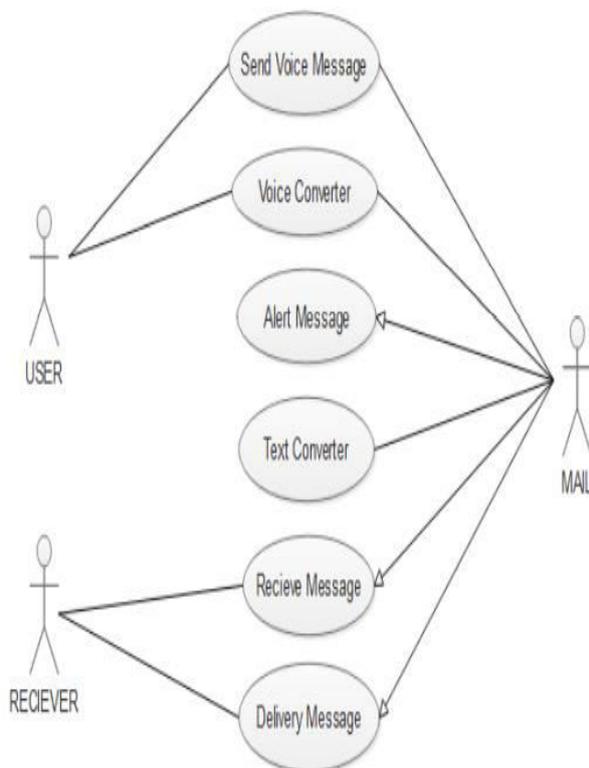


Fig2: Use Case diagram

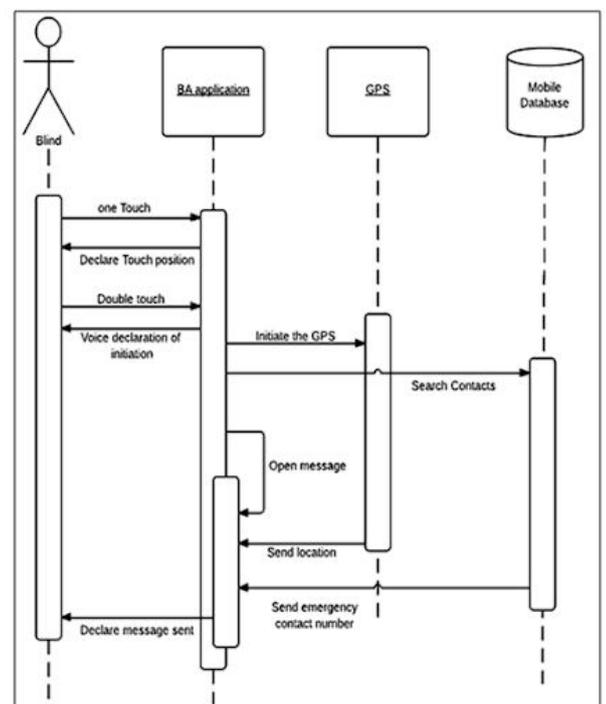


Fig4: Sequence diagram

4) Data Flow Diagram:

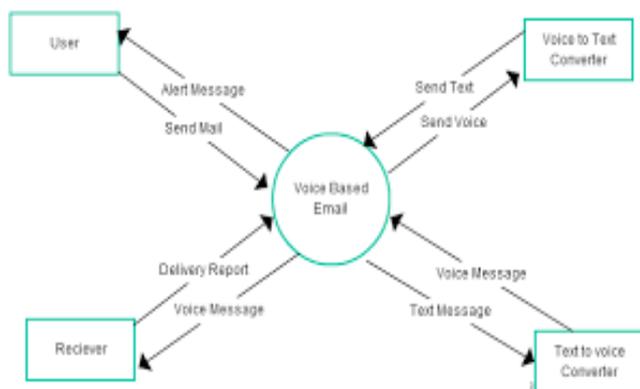


Fig5: Data Flow diagram

Login:

The user must sign into it with his Email address in this module. When a user install and launches the app for the first time, he will be presented with a list of Google accounts that are currently active on his device. He will be tried to log in with the account he decides.

Dashboard:

After logging in, the user has access to the dashboard, that mostly includes options for the ability to follow: Inbox, compose new mail, Sent mail, as well as User info. The user will state "inbox," "sent mails," "compose," or "user info," and the appropriate action will be taken.

5. REQUIREMENT SPECIFICATIONS

Hardware Requirements:

- System: 2.4 GHz Pentium IV.
- Hard Disk: 40 gigabytes.
- Drive Floppy: 1.44 Mb.
- Monitor: Color 15 VGA.
- Logitech: mouse.
- Memory RAM: 512 Mb.
- ANDROID: MOBILE

Software Requirements:

- Operating System: XP/7 Windows.
- Language coding: Java 1.7
- Tool Kit: Android 4.4 Beyond ANDROID 4.4
- IDE: Eclipse
- Front End: Java and Android
- Back End: MY SQL

6. IMPLEMENTATION

Registration:

It is the very first module of our procedure. Anyone who needs to use the app must either have or create a Gmail account. With his Gmail account, he can then use our application.

Compose Mail:

This is the option for creating a new email. This option will not operate in the same way which existing systems use. Rather, it will accept voice commands. The user will only need to provide input through his voice. There will be no need for keyboard shortcuts or typed input. The system will notify the user to tap anywhere on the screen and speak the recipient's email account, subject, and message body. After the user has entered all of the content, the system will read it aloud to ensure that it is correct. The user can re-enter the content if it needs to be corrected. Only after required inputs have been completed successfully, the system will prompt the user to say "yes" to confirm and send an email. The system will notify the user that the mail has also been successfully delivered after receiving the required response.

Inbox:

When the user says "Inbox," this screen will be displayed. A user will be informed of all new messages received, and the sender's name is read one by one. The user then instructs the sender whose email he would really like to read first. The system then looks out the sender's name, the subject, and the body of the texts.

Sent Mails:

This section maintains a record of the emails sent by a particular user. In case the user wants to access the emails that he has sent so far, he will be able to do so by

choosing the “Sent Mails” option available on the dashboard.

Draft:

This module holds emails who were unable to send things due to a number of factors, such as a poor internet connection. Most of these emails are saved as draughts. When an user leaves the window instead of sending out a message, the message is saved as a draft. The user will re-send the drafts as email to the desired address. Before the user deletes or delivers the email, it is saved as a draft. Once the draft has sent, it moves from draft to send mail folder.

Trash:

This module contains the mails which are deleted from inbox, sent-box or draft. After removal, emails are stored in the trash folder, where they're being retrieved as required. When mail is restored it return to its initial folder.

7. FUTURE-SCOPE, LIMITATIONS AND APPLICATIONS

- This application can be easily used by the users of any age group.
- The system has implemented Google Speech-to-Text and Text-to-Speech APIs. This makes the system convenient for use by visually impaired people.
- The people having typing problems can also take advantage of this system.
- Visually impaired people can use this Android application easily and efficiently.
- The individuals having typing problems can also take advantage of this system.
- This system will not work if the user is unable to speak out the content.
- The application will work only for Google accounts.
- Biometric verification is not yet implemented. Hence, security and privacy can be at stake when the user speaks out his credentials and message content.

8. CONCLUSION

This project proposes an android application, specifically developed for people who are visually impaired. This platform includes a voice-based mailing

service where they would read and send messages on their own without even any instruction. Here, users must use certain keywords to perform certain acts, e.g. Letter Sent, Mail Send, Mail Write. A blind individual can use MAIL to quickly and securely access emails. It is also possible to reduce the dependence of visually disabled people on other individuals for their mail-related activities.

9. REFERENCES

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