

Voice-Based Email Application for Visually Impaired People (VMAIL)

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ABSTRACT: Email users around the world have peaked up to 4 billion and so it is convenient to say that its highly trusted and efficient form of communication whether formal or informal but the reach of email is limited to the people with eyesight. Through this project, we are trying to widen its reach by making it available for visually impaired people also, so that their communication is not limited in any way. Using a V_{MAIL} application that is developed on Android using java language a visually impaired person can easily send and receive emails using a smartphone by simply giving commands which will be accepted by Google voice and processed further as it is using speech to text and text to speech. Above all, we have eliminated any use of the keyboard during the process of emailing so that it's more reliable to its users. The user will be guided by the Google voice in its process of sending the mail and can easily switch among different activities like compose, send, inbox, and logout and can say no to abort his process in between.

Key Words - Google API, Microphone, Speech to text converter.

1. INTRODUCTION

For people who can see, emailing is not a big deal, but for the people who are not blessed with the gift of vision, it postures a key concern because of its intersection with many vocational responsibilities. This voice-based email system V_{MAIL} has great application as it used by blind people as they can

understand where they are e.g. the system always asks users to choose an option whether to send, receive and check the mail through voice. User does not need to remember anything like mouse clicks. Rather this project will reduce this problem as a mouse pointer would read out where he/she lies. This system focuses more on the user-Friendliness of all types of people including regular people, visually compromised people as well as literate. Therefore, we came up with project V_{MAIL} for blinds which will help a lot to visually impaired People and also illiterate for sending their emails the user of the system doesn't need to remember any basic information about keyboard shortcuts as well as the location of the keys. V_{MAIL} provides the location where a user is prompted through a voice so that the user doesn't have to worry about remembering which mouse click operation he/she wants to achieve.

2. Ease of Use

Text to speech (TTS)

Text to speech is one of the cool features of android used by many content-driven mobile APPs. We are using the inbuilt function of Android which allows you to convert your text into a voice. You can convert the text to speech and it also supports speak text in a variety of different languages. Text to speech makes an android device read the text and convert it to audio out via the speaker. Android Text to speech supports multiple languages. Text to speech is a simple, powerful feature and easy to add in your

application. It can also be effectively used in mobile APPs dedicated to visually impaired people or in the educational app for kids or can be used in pronunciation learning apps etc.

Speech to text

There are many inbuilt functions in android one of them is Speech to text through which you can provide speech input to your app like adding voice navigation especially when you are targeting disabled people, filling a form with voice input, etc. In the background of how voice input works are, the speech input will be streamed to a server, on the server voice will be converted to text and finally, the text will be sent back to our app.

1. Existing system

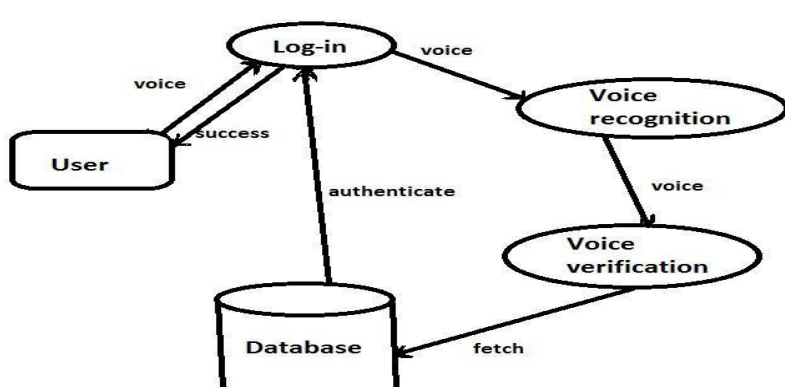
There are different kinds of email systems that provide various facilities. But these are helpful for a limited range of users. A group of blind people is not able to use these features. These systems are only able to convert voice to text format; text to voice is not available. To improve this problem, we have proposed a system that provides both facilities of voice to text and text to voice conversation.

2. Proposed system

The application is derived from the innovative ideas and is much different from the existing mail systems. The proposed system is an alternative to the existing system which has more features including voice to text and text to voice conversation. The proposed system focuses on reliability and user friendly. This system is helpful for visually impaired people. There is a big challenge of security related to authentication. For security purposes, fingerprint verification is used.

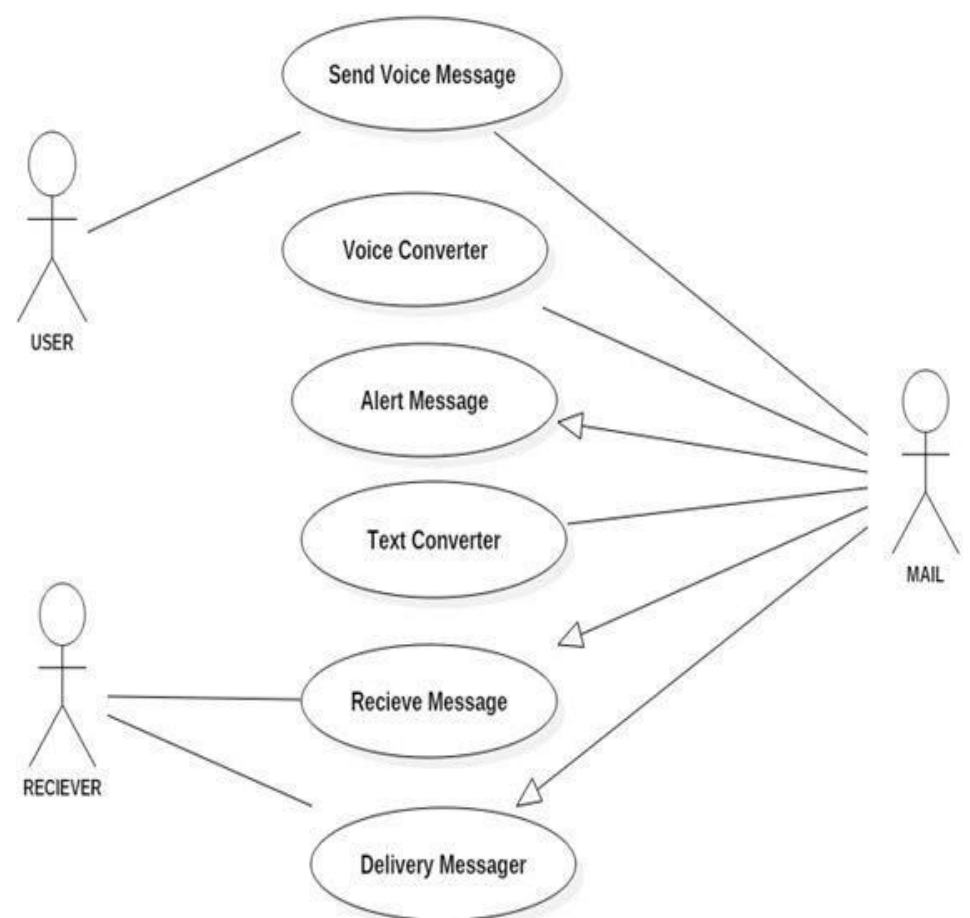
3. Design

Database Design:



This application maintains a database for the user to validate and store the mails of the user. The Realtime database is used to store the information of the user like username, password, and mails. When a user requests for any information then information is retrieved from the database. The application uses a Firebase real-time database. It is also called as NoSQL. It is fast and responsive as well as easy setup. The Firebase Realtime Database is cloud-hosted and data is stored in JSON format. It is synchronized in realtime to every connected client. When we build cross-platform apps with android, all of our clients share one Realtime Database instance and automatically receive updates with the newest data.

USE CASE DIAGRAM:



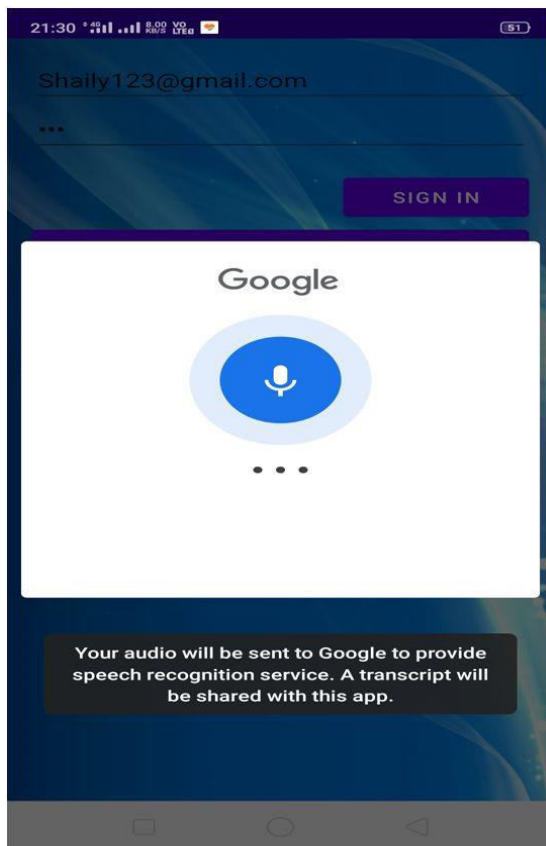
4. Implementation

Registration

This is the first module of the system. Any of the users who want to use the system should first register him/her to obtain his/her username and password. The registration module will obtain all the details about the user by voice commands given by the system were to fill which information. The user should respond through voice as the system requires. If the information is incorrect then the system will be telling you about re-enter the information again.

Login

This is the second module of the system. Once the registration is done the user can log in to the system. The login module will ask the user to provide a username and password. Here the process goes in a speech to text conversion of the user. The user is told to validate whether he/she entered details are correct or not. If the details are correct then the user is authorized and will enter the main page. Users will always be asked before performing any task. If the



user says YES then the action is performed accordingly.

ACCOUNT MODULE

Inbox

This module contains the emails received from other users. These mails are arranged in a sorted way based on what they received. The mails are saved in text format in the inbox. Users can convert these text emails into voice mail. When he clicks on the text to voice the convert button, the text is converted into voice.

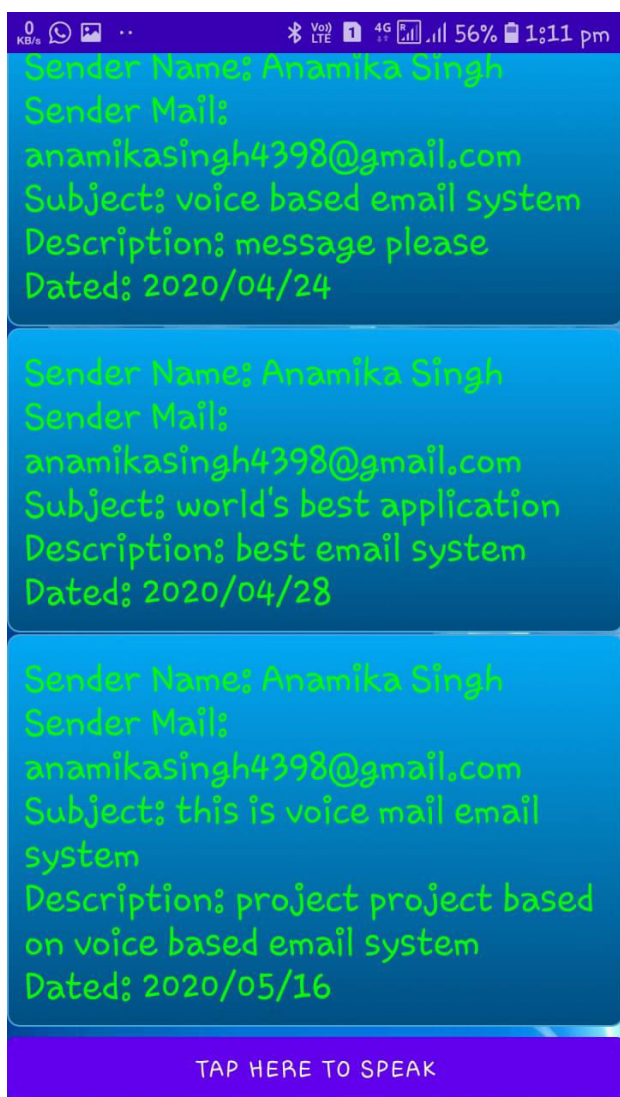


Compose mail

In this module, the user can compose mail by choosing the option of **Compose Mail** by voice. These are not only the most used mail function but also a very important feature of mailing systems. Without Compose, one cannot mail. Since the system is for those people who are not blessed with eyes. The system avoids using keyboard operations and composing mail is done on voice input and mouse operations. No typed input will be required, as the system focuses on simple mouse click operations. Users can record the messages by clicking on the small mic option present in front of every box. Here, the STT technology gets used, which means speech gets converted to text.

Sent mail

This module contains the mails which are successfully sent by the user to others. Users can decide whether to save or delete the emails from sent mail.



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Logout:

This module is used to inform the application that the current user wishes to end the login session. It ends the access to that particular account.

5. CONCLUSION

In this paper, we have designed a system that is helpful for visually impaired people to access email services efficiently. This system helps in reducing some drawbacks that were earlier faced by blind people in accessing emails. This application helps the user to reduce the cognitive load of remembering keyboard shortcuts. As the keyboard usage is eliminated, users do not have to remember the location of keys. The user only needs to follow the instructions through interactive voice commands and use mouse clicks accordingly to get responsive services offered.

6. REFERENCES

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