

VMAIL: Voice Based Email Application

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Abstract- With the advent of technologies in mobile phones, many technological solutions have been implemented for visually impaired so that they can utilize them, and get benefited by them. Considering it as a key idea we have built an android application that will help blind people to send and read emails as ordinary people do. In this research paper we describe the VMAIL system architecture for android platform that can be used by a Blind Person to access e-mails easily. The application uses 'text to speech' and voice recognizer to facilitate sending, reading, forwarding and replying to emails using an android smart phone. The Application provides a secured platform by including an additional feature of Applock for accessing the application, which is designed considering the convenience of a blind person.

Keywords- AppLock, Email, Speech Recognizer, Text to Speech, Vmail, Voice.

I. INTRODUCTION

285 million people are estimated to be visually impaired worldwide: 39 million are blind and 246 have low vision^[1]. Thus, it turned out to be the moral responsibility to give something back to society and use our technical knowledge to build an application for their benefit. The existing system's does not provide a complete voice based application leading to lack of privacy and security for a visually impaired person. So, there emerged a need to create a complete voice based application for such people so that they can send or receive the emails with ease providing security and privacy. Email has turned out to be an important part of formal communication in professional world. For people who can see, emailing is not a big deal, but for people who are not blessed with ability of vision it poses a key concern because of its intersection with many vocational responsibilities. Thus, VMAIL turns out to be an application through which they can send or receive emails not only easily but securely too. For security purpose an additional feature of App Lock was included. App Lock is a security module which acts as an authenticator. It is the second layer of security which allows only genuine user to access the application. The screen was divided into 6 equal parts keeping in mind blind people's convenience. They had to save pass-code first time while logging in by shaking their phone. Then every time the user signs in to the system, he has to type the pass-code to get access to the application. Since our application is voice based thus our user doesn't need to remember the keypad layout of their android phones.

II. EXISTING SYSTEM

There are a total number of 4.1 billion email accounts created until 2014 and an there will be estimated 5.2 billion accounts by end of 2018^[4] this makes emails the most used form of communication. The existing email systems don't provide any means of feedback or Talkback service. So, they cannot be used by visually challenged people. The voice based systems that have been developed till now are desktop applications. As visually challenged people do not prefer to have laptops and desktops, the use of such developed system are very limited. Even if the Braille keyboard is used, they have to remember the complex keyboard.

III. PROPOSED SYSTEM

The key opinion kept into consideration while developing the proposed system was accessibility^[5]. Such applications will be used efficiently by anyone whether he is able or disable. Unlike existing systems which focuses more on GUI friendliness of normal user, our system covers expectations of both normal as well as visually impaired group. The system consists of following components as depicted in Fig 3.1



Figure 3.1 System Architecture

A) VMAIL Android App

The basic function of the VMAIL application is to provide user with a simple way to perform email operations on his phone without compromising his security. The application is totally voice-based allowing blind person to send and receive emails on the go. It converts the user spoken voice into text and performs the action accordingly. It consists of voice confirmation i.e., confirming if the user has actually spoken the recognized

text or not, which minimizes the errors involved. It has the feature of address book which helps user to save the email as a contact and use that contact in future for sending the mail.

B) App Lock

App Lock is a security module which acts as an authenticator. It is second layer of security which allows only genuine user to access the application. The screen was divided into six equal parts keeping in part blind people's convenience. They had to save passcode first time while logging in by shaking their phone. Then every time the user signs in to the system, he has to type the passcode to get access to the application.



Figure 3.2 AppLock Demo

In Fig 3.2, the user has to enter correct passcode to get access to the application as shown in Fig. 3.2 .The provides the user with an extra layer of security.

C) SQLite

SQLite is a software library that implements a self-contained, server-less, zero-configuration, transactional SQL database engine [2]. It is the default database provided by Android. All the address book contacts along with email addresses resides on user's phone in SQLite database.

D) Java Mail API

The Java Mail API provides a platform-independent and protocol-independent framework to build mail and messaging applications. The Java Mail API provides a set of abstract classes defining objects that comprise a mail system. It is an optional package (standard extension) for reading, composing, and sending electronic messages. [3]

E) Backend

The VMAIL application is connected to the email provider using internet. The emails are sent using SMTP protocol, whereas, they are retrieved from the server using IMAP protocol. The Java Mail API interacts with the Google's SMTP and IMAP server through the internet to send and retrieve the emails. The communication is secured using HTTPS and SSL protocols.

IV. IMPLEMENTATION

The main aim of VMAIL is to help visually impaired people to enjoy the benefits of email and should be self-sufficient in sending and receiving them independently. Currently we have working module of VMAIL which works on instructions given specifically in English. For the future scope we can also design the VMAIL application working on other languages. The demo of this application was given to few members of NATIONAL FEDERATION OF BLIND Mumbai Ville Parle branch, whose screenshots are shown below. They gave us a positive feedback regarding the application. They found the application more useful as they do not need to remember the position of various keys as it is a voice based application, whereas for using the other applications via the talkback feature they need to remember the position of keys.



Figure 4.1 VMAIL Demo

In Fig 4.1, the user is listening to the voice commands of VMAIL application.



Figure 4.2 VMail Speech Recognition

In Fig 4.2, the user is speaking and the voice recognizer is recognizing the spoken text and giving appropriate command to the application.

IV. CONCLUSION AND FUTURE WORK

This paper proposes an android application, designed specifically for visually impaired person. This application 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. The VMAIL 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.

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