REVIEW ON VOICE BASED EMAIL SYSTEM FOR BLIND PEOPLE

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ABSTRACT

Email technology requires visualawareness, it is exceedingly difficult to utilize for visually challenged people. However, not everyone has internetconnection. This is because, in order to access the internet, you must comprehend what is displayed on the screen. It serves no purpose if it is notseen. As a result, the internet is completely useless to the visuallyimpaired and illiterate. There will be a small microphone button on which the user must click to speak, and his/her speech will be converted to text format, which naked people can also see and read.

This paper aims at creating an email system that helps even new users or physically impaired peopleto use the system for communication without any previous practices. There is no use of keywords, only with the help of mouse actionsand voice conversion the email system works.

Keywords:— Email, Internet, Voice, Speech recognition, Physically challenged, Text to speech, Speech to text, Natural Language Processing.

INTRODUCTION

Nowadays everybody is connected to the internet. It is an inseparable part of our life. Itcontains all the information of individuals andday to day history. Communication andinteraction are possible mainly through the internet. Out of many technologies Email is the most common way of communication primarily for business and educational perspective. Although not all use net and haveaccess. This is due to lack of facilities, knowledge and money. The users should have vision to see and read the screen. For the physically and visually challenged people netis like a useless and unfamiliar thing. For blind people, the navigation system employs TTS (Text-to-Speech) technology to give voice navigation.

The software considers an instant messengersystem to facilitate interaction between blindusers and any other user on the network.

That's why this project is based on voice email which will help impaired people to communicate. Even the naïve users can access and send emails toanyone. It is completely based on the voice response. There is no prior knowledge required touse this. Everything is automatically prompting theonly thing is to give the responses of the voices toperform the actions.

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MOTIVATION

Voice based E-mail system architecture can be usedby visually challenged people efficiently. The contribution made by this research has enabled to send and receive voice-based e-Mail messages intheir native language with the help of a computer.

RELATED WORK

There are various approaches to build Voice Email. However, authors have used various techniques to evade detection and therefore this has led to a need fornew and better approaches that can provide more accurate results.

We proposed an application which accepts voice command as input and with the help of voice to text converter, the speech is converted to a command to the application. Based on the command, the corresponding action will be performed. The output isconverted from text to audio as speech through the text to speech convertor. This application has 3 modules which are Inbox, Sent mail and, outbox Inbox contains all received mails. Sent mail is to compose a mail through which speech is converted totext. Outbox is to keep a track of all send mails. Voicemail application, which is used to send email throughvoice. This application has several processing steps which involve processing the voice

using API, converting to text, processing the textusing API, converting to voice and connecting to the server using gmail API. This application uses a set ofGoogle API for text to speech and speech to text conversion. This system uses an Interactive Voice Response (IVR) between the user and the system. This mechanism interacts with the Email host systemin which it directs the user through enquiries. IVR system works with the pre-recorded audio voice which assists the users to proceed the application. This system allows the user to send and receive mailsthrough the voice assistant. This system works in 4 phases. Speech to Text, Text to Speech, IVR and speech recognition. To recognize the speech recognition software is used to recognize speech which has a vocabulary of phrases and words.

LITERATURE SURVEY

1.   **Paper Name:** [1]Voice Mail Architecture in Desktop and Mobile Devices for the Blind People.
Author: Tirthankar Dasgupta, Aakash Anuj, Manjira Sinha, Ritwika Ghose, Anu- pam Basu.
Abstract: The advancement in computer basedaccessible systems has opened up many avenuesfor the visually impaired across a wide majorityof the globe. Audio feedback based virtualenvironment like, the screen readers have helpedBlind people to access internet applications immensely.

However, a large section of visually impaired people in different countries in particular, the Indian sub-continent could not benefit much from such systems. This was primarily due to the difference in the technology required for Indian languages compared to those corresponding to other popular languages of the world. In this paper, we describe the Voice Mail system architecture that can be used by a Blind person to access Mails easily and efficiently. The contribution made by this research has enabled the Blind people to send and receive voice based e-Mail messages in their native language with the help of a computer or a mobile device. Our proposed system GUI has been evaluated against the GUI of a traditional mail server. We found that our proposed architecture performs much better than that of the existing GUIs.

2.   Paper Name: [2]A Review on Voice based E-Mail System for Blind.
Author: Paulus A. Tiwari, Pratiksha Zodawan, Harsha P. Nimkar, Trishna Rotke.
Abstract: Due to its simplicity and accessibility

Internet is widely used in almost all the communication applications. In the recent times, number of applications based on internet have been developed to make the communication as a more reliable and efficient in nature. Out of these numerous applications, E-mail is the most widely used and reliable way to communicate with each other. The usage of e-mail is quiet easy and lucid for regular users but when it comes to the user with visual defect, the system is yet very difficult to use. The current system is not useful for people with visual defect as the available system are based on the visual perceptions. There are huge up gradation in the technologies now a days, especially for the visually challenged people. Still the current emailing system is yet not upgraded for the use of visually impaired. This arises a significant need to upgrade the existing system to make it more useful for the visually impaired. Thus, in this study we present an email system working on the voice controlling principle for the people with visual impairment to deliver a simple and easy access to the email system.

3.   Paper Name: [3]Computer Graphics Access for Blind People through a Haptic and Audio Virtual Environment.
Author: R. Iglesias, S. Casado, T. Gutidrrez, J.I. Barbero.

Description: This paper describes a new Haptic Audio Virtual Environment to allow visually impaired people to have access to the three- dimensional graphic computer world through the sense of touch (using a new dual- finger haptic interface) and augmented by audio output and voice commands. Such system has been developed within the European project "GRAB". The new system provides an integrated plat- form for the design and development of audio-haptic applications in different fields (architecture, art, aeronautics, medicine). In order to demonstrate the validity of the approach, the project was specifically focused on the development of three ap-plications fir visual impaired people an adventure game, a city map explorer and a chart explorer. Both the new environment and the applications were tested by visually impaired people with different profiles (congenitally blind. advantageously blind, partially sighted,) to evaluate the usefulness and potential of these developments.

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The results of this validation confirm the validity of the system. Overall, it seems the GRAB system is feasible for these kinds of applications.

4.   Paper Name: [4]Human computer interaction(HCI) based Smart Voice Email (Vmail) Application - Assistant for Visually Impaired Users (VIU)

Author Name: Sherly Noel

Abstract: Communication development is creating a revolution in the current digital era. A formal or casual communication is now sent through email. The growth in digital technology has given immense opportunity to visually impaired person.

This application is developed to ease the process of email writing not only for visually impaired person but for everyone. Now human voices can also be given as input in-stead of typing on the keyboard. So, additional skill required for typewriting will not be necessary anymore. This application recognizes user voice and performs comparisons with pre- sample voice stored in the database and executes the voice command. Common day-to-day spoken words are used as command language. It focuses on reducing the load incurred in human memory. The proposed work aims to develop mechanism which converts Speech To Text (STT) for email composing and also converts Text To Speech (TTS) for reading emails. Google web kit API (Application Programming Interface) is used in this application for speech recognition.

5.   Paper Name: [5]The Design and Implementation of Voice Mailbox System Based on VoIP

Author name: Jingyang Wang , Peng Ren, Min Huang and Liwei Guo.

Abstract: With the rapid development of CTI and VoIP technology, more and more attention is paid to the voice mailbox based on VoIP which is a kind of important telecom value-added service. In order to reduce the voice mailbox system development cost and shorten its development cycle, a solution of the voice mailbox system based on digital voice card and VoIP is put forward in this paper. This paper intro-duces the system architecture of the voice mailbox system based on VoIP, clarifies the system function, and describes the realizations of schedule delivery message and manual service in detail. After the system running, the effect of it is good. It has a certain guiding significance to the relative projects' development based on digital voice card.

EXISTING SYSTEM

Simple e-mail systems are available in which only voice recognition & text-to-speech systems are accessible. There are various existing search engine which take request in form of text from user and retrieve the relevant documents from server and responds by displaying it in the form of text which is not possible for visually challenged people.

PROPOSED SYSTEM

The Proposed system will make the email system very easily accessible to visually challenged people and also help society. Authors proposed the system keeping one idea in mind that it should be easily accessible for all kind of persons. In this system the PC is going to be promoting the user to perform specific operation. Then user has to register using registration form and user will be assisted through voice commands. After registration user can login by speaking password and username when prompted by system. This username and password will be converted from speech to text and then user be authenticated by verifying the credentials with database.

A.   *Email Composer*

The email composer is shown in the fig. 1. which comprises of five modules. They are processing user voice input, comparing voice with pre-recorded sample, text writing, verifying the output text and send email. The input is given by the user through his/her voice. The application receives the input through suitable hardware and processes the voice. During processing, the voice input received is compared with the sample voice stored in the database. The Google WebKit API recognizes and converts voice to text. The text output gets typed in the designated text box from the voice command received. The user can verify the output text through speech by the headphone connected and edit the content, as necessary. Upon confirmation, the application sends the email from outbox.
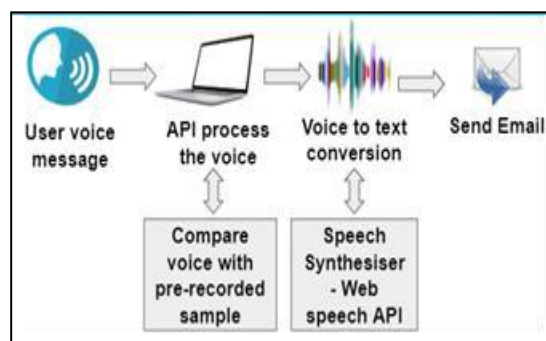

Fig1.Email Composer.

A.   *Application Modules*

The proposed application composed of the following modules:

a) User Voice: During registration process, the user has to store his voice as samples in the database. The voice samples are in the form of commands. This voice data will be used further to authenticate the user. The user provides voice command to the machine through microphone inbuilt or an external microphone attached. The microphone inputs the received voice command to the composer built in HTML. All the functions are carried out through simple voice commands.

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So, the user need not require to access keyboard keys and also not required to remember keyboard shortcuts.

B.   *Voice Processing:*

The application is built with google WebKit API which is used for voice recognition and voice processing. The input provided by microphone is fed into the API and it primarily performs two consecutive activities. The first activity is the conversion of voice to text and the second activity is to authenticate the user voice.

Web speech API is the speech synthesizer used in the proposed system. This speech synthesizer converts text to speech and voice to text. Interfaces like speech recognition interface and speech synthesis interface are used for voice processing execution. The voice is processed by recognizing its distance, pace, continuity and language. The processed voice result is stored in a string format into the database.

C.   *Comparing voice with pre-recorded sample:*

a)   The interface authenticates voice command by comparing it with sample voice stored in the database. *Voice to text conversion:* The speech synthesizer recognizes the following voice commands when commanded.

- "Compose Mail" - opens the email composer window
- "Edit To" – place cursor in To text box and type recipient email id
- "Edit Subject" – place cursor in subject text box and type the subject
- "Edit Body" - place cursor in email text area and type the dictated content
- "Mail Send" – send the email to the mentioned recipient
- "Mail Discard" – it discards the composed email
- "Read mail" – it reads the complete active mail content

The speech synthesis interface has inbuilt properties like pause, pending, speaking, resume, cancel, getVoice etc.

b)   *Send Email:* The voice command "send email" sends the composed email. Users have an option to read the composed email before sending it. The application takes the user domain address (e.g. @abc.com/org) registered during sign-in as sender address.
Read email: The voice command "read email" reads the received email. The email can be heard through the speaker or headphone connected to the device.
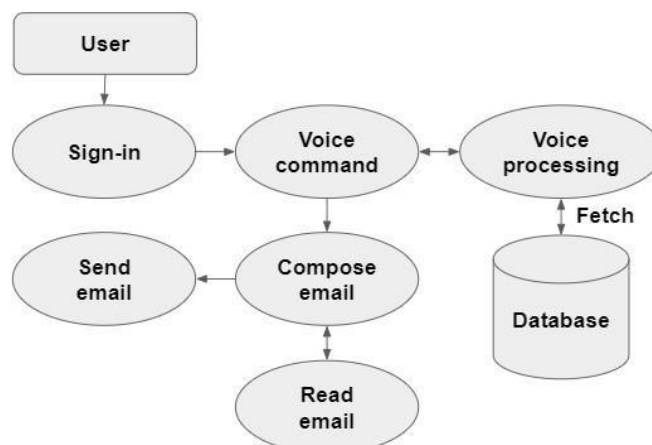
Fig 2. Application design for sending mail

DESIGN FLOW OF COMMAND PROCESSING:

The application starts with sign-in or user registration. The sign-in information once validated, it moves to user recognition. The application validates the user voice with the sample voice stored in database. If the application detects unauthorized user from internal process check, it skips to sign-in. The applications wait for the user voice command whether it is "compose email" or "read email". If the command given by the user is "compose email", the application opens the email composer upon validation and the user start to compose email. Further voice commands "edit to", "edit subject" and "edit body" are required to compose the email. The STT interface process the speech to text and inputs the content to its intended component. After composing the email, the user can read the composed email using the command "read email". The composed email is read to the user through text to speech interface. Finally, the composed email is sent to the mentioned recipient through "send email" voice command. If the command given by the user is "read email", the interface reads the email to the user through text to speech recognition. The user can sign-out from the application. The flow chart of design flow of command processing is shown in the fig. 4.

MERITS AND DEMERITS:

Merits:

o   Our proposed framework can also be easily applied in the problem of Text/instance retrieval.

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o   This system makes the disabled people feel like a normal user.

o   They can hear the recently received mails to the Inbox, as well as the IVR (Interactive Voice Response), technology proves very effective for them in the terms of guidance.

Demerits :

o   Cannot detect features from low quality Text.

o   Cannot detect features from low quality voice.

CONCLUSION:

o   This e-mail system can be used by any user of any age group with ease of access.

o   This system overcomes many drawbacks that were faced by visually challenged people such as sending and receiving emails. Success of this project can make an impact on developers motivating them to make something useful that can help visually challenged or blind people.

FUTURE SCOPE:

o   There is wide future scope of this system many enhancements can be done in the system such as including different languages, including functionality of accessing the deleted mails and spam mails.

o   Further-more sign language system can also be integrated with the system to make the system more scalable and robust.

o   We can also implement this system on android applications.

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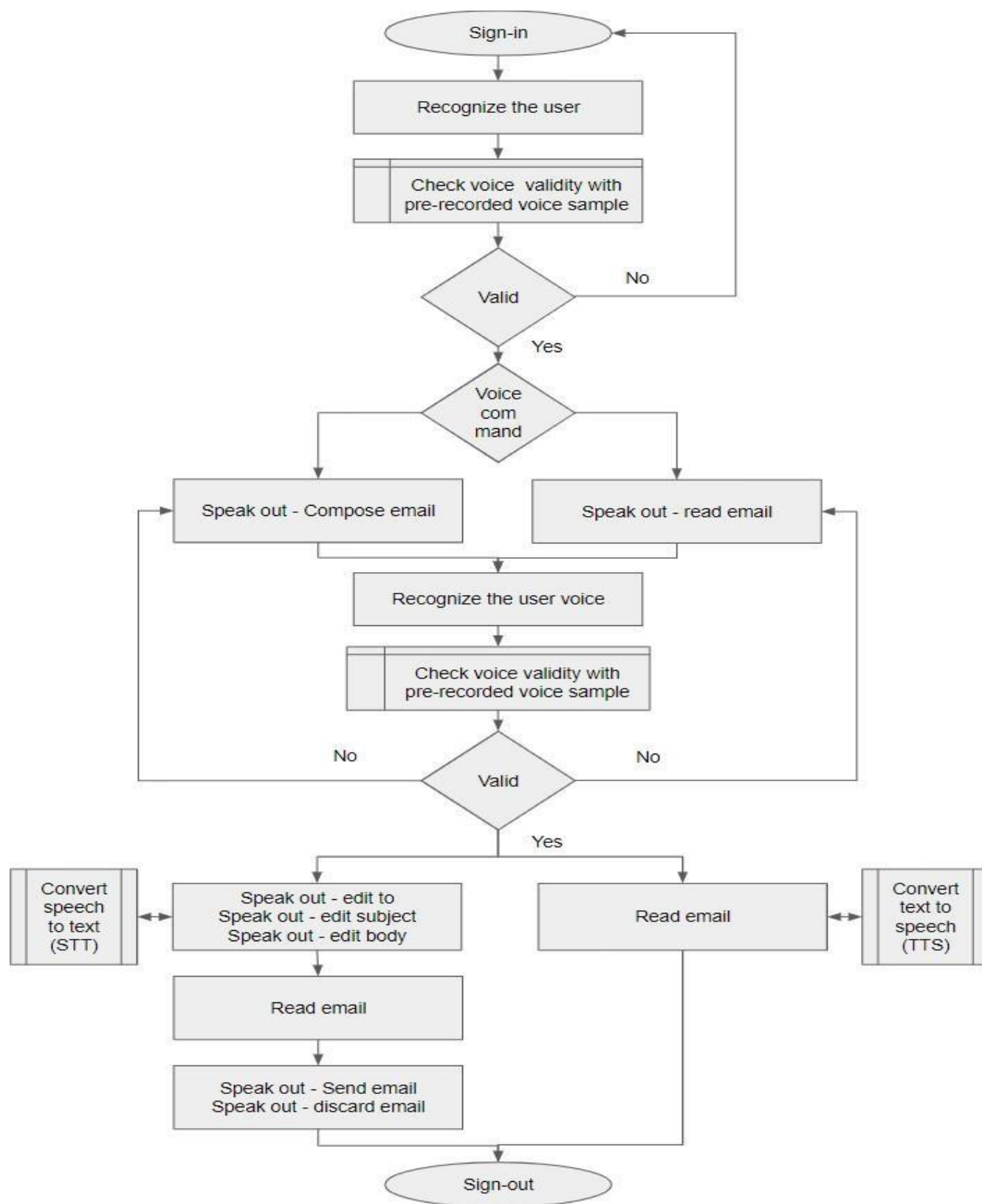
Fig 4 Design flow of command processing

ACKNOWLEDGMENT:

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