



AN INTERACTIVE EMAIL FOR VISUALLY IMPAIRED

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Abstract- An interactive email system for visually impaired is a concept that assists the visually challenged people to access their email like any other common people. This paper explains the design and implementation of such an interactive system for visually challenged people. Web accessibility stands as the inclusive practice of creating web based applications that can be used by people of all kind. When web applications are perfectly prototyped, implemented, and edited, all sort of users can have mutual license to information functionality also that can be facilitated without reducing the usability of the application for normal users. The very basic and important need for using the internet is accessing emails. Micro systematic applied research has been done on how a visually challenged user can have an access to his emails and this paper completely concentrates in filling a few gaps in doing that.

Keywords: email assistance for visually challenged, IVR, text to voice converter, dpi (dots per inch) etc.,

I. INTRODUCTION

Interfacing System is generally for human computer interactions. Everyone can access their information through emails using internet. They can send and receive any stuff in the form of text document, pictures, audio, video, etc. using email using the internet. Almost everyone can have equal access to information only when the web application is perfectly designed and developed. Moreover its very tough for the visually challenged users to access their email. We put forward our project to pave a way for visually challenged people to easily access their mails with a good confidential manner. When web applications are perfectly modulated, created, changed, all users can have equal opportunity access to information and functionality. They can be facilitated without decreasing the usage of the application for people with no disabilities. Our project interactive email system for visually challenged is based on the area Artificial intelligence. Artificial intelligence is developing machines or software with intelligence that focus on the solution of specific problem. Now the particular problem is to make the visually challenged to access the emails of their own without expecting others help. In our project, the visually challenged people can access their email with the help of voice that is given by the application going to be created. This can be fulfilled by the method used in our area of research. This can be fulfilled by the method used in our area of research. A strong satisfying natural language processing system would accept natural language user interfaces and the capture of knowledge straight away from

the human-written scripts, like Internet texts. Some legal applications of natural language processing consist of information backup and machine translation. A basic method of processing and extracting meanings from natural language is by means of semantic indexing[1]. Increase in processing speed and then economical cost of data storage makes indexing the large volumes of abstractions of users input very efficient.

II. EXISTING SYSTEM

The pre dominant mail service can be used by only a normal person. HTML formatted emails are not created with accessibility in mind. For the visually challenged password is not secured in the email system. The visually challenged people cannot view the screen to read out the content, since all the web applications has been designed till date depends on the use of normal people. The existing mail service does not provide flexible access to the visually challenged people. Because they are in written format and there is no read out option to hear the mail that is received to their mail address. Despite we have screen readers to access the desktop application for the people who have that disability since they do not have application to access the web application. The main use of using the internet is to communicate with others and to interchange their information which is provided by email service. Still the existing system of mail service fails in providing the



flexibility to the people in need. Due to these demerits in the current system, we can overcome that in the application we are going to develop and implement.

Limitations

- The disables cannot use the normal mail system.
- At present, visually challenged people only use the desktop applications. They may not be able to interact with the web based applications.

III. PROPOSED SYSTEM

In this we make the mail service interactive for the blind people. For privacy protection or authentication we use finger prints. The input is presented with the help of the keyboard, as a interactive voice response and output for the input given to the user is by means of voice is used to access this service. Till now, only the normal user can access the web based application, but why the visually challenged may not because, they may rely upon others to interact with the web applications, but it is not safe. The information sent to the user may be confidential when they are relied upon other people they lose their privacy of usage. The main use of using the internet is to communicate with other people and to exchange their information which is provided by means of the email service. So in this project we are providing flexibility of the mail service to the inability people. The visually impaired people cannot view the screen to read out the content. Because all the web application that has been developed till now is on the basis of use of the normal people. In this we provide access to the email by hearing the content of the mail box. If the user hears the content of the screen then he can interactively provide the input to our application that will be developed with the help of the key board. Web accessibility[2] is concerned about the custom of allowing websites accessed by both people of all abilities and disabilities. When a website is properly prototyped, implemented and edited, all sorts of users can have equal access to its information and functionality. For example, consider when a semantically meaningful HTML website is developed, with the links named meaningfully and the textual equivalents are provided for images, this assists visually impaired users who are using text-to-Braille hardware and text-to-speech software. When the sites are correctly built and maintained, users with certain kind of disabilities can be accommodated without decreasing the usability of the website. Interfacing System means for human computer interactions plays a major role. All the people can accessing their information through emails using internet. They can send and receive any information in the form of text document, pictures, audio, video, etc. using email in the internet. All users can have equal access of information when the web application is correctly designed and developed. However its very

complex for the visually impaired user to access their email.

Nowadays, the vision impaired persons can interact with the computer only on desktop applications but they suffer from interaction with the web based applications. They have more difficulties to select the options and checking the mail and also the important thing is lacking of security. We implement our project to making the disable person, easily accessing their mails in the secured manner.

The goal of this project was to develop an interactive email system for visually impaired person (i.e.) to make visually impaired feel as a normal user. Web application used for accessing the emails through internet by visually impaired users works on:

1. Text to speech synthesizer which converts the text format of the emails to synthesized speech. Predicting the correct intonation (how the pitch pattern or fundamental frequency changes during speech), stress and duration from the plain text is a challenging task. The prosodic features also depend on many aspects like the speaker characteristics (gender, age), emotions and meaning of the sentence (neutral, imperative or question)

2. Mail Synchronization and Retrieval which synchronizes the application and retrieves the mails from the databases of the email server. Through this Web Application the Vision Impaired user can get a speech synthesized output of the mails in his inbox or can view his email using the magnifier option available. To compose emails he can give a input to the system by using the Braille keyboard. Adequate measures have been taken which makes this Application more effective.

3. IVR describes the interaction between the user and the system in the way of responding using keyboard for the respective voice message[4].

- Interactive voice response (IVR) is an advanced technology which allows a computer to interact with humans using keyboard. IVR allows user to interact with an email host system via a system keyboard, after that users can easily service their own enquiries by listening to the IVR dialogue.

- IVR systems generally respond with prerecorded or dynamically generated audio voice to further assist users on how to proceed.

IVR applications are able to control nearly any function where the interface can be sub divided into a simple series of interactions. IVR methods implemented in the network are meant to manage large call volumes.

4. During authentication, the system needs two query fingerprints of the same two fingers which were used at the



time of enrollment. A fingerprint matching process with two stages is used for matching the two query fingerprints over a combined minutiae template. By collecting the combined minutiae template, the complete minutiae feature of a single fingerprint cannot be affected or modified even when the complete database is looted. Moreover, because of the similarities in topology, it becomes tough to the attacker to differentiate between a combined minutiae template and original minutiae templates. Using the existing fingerprint reconstruction method, it is possible to change the combined minutiae template into a real look-alike combined fingerprint. Hence, a new virtual identity is created for the two different fingerprints.

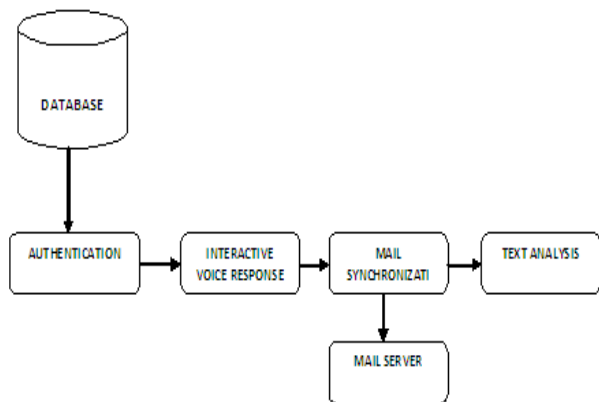


Fig 1. Pictorial representation of an interactive email for visually impaired

Implementation of our proposed system consists of 4 parts as follows,

a) TEXT ANALYSIS

It explains the conversion of an ordinary plain text into its linguistic representation with its prosodic information and this process is highly language dependent[5]. This form of text analysis is classified into three subtasks as follows:

- i. Syntactic processing- It is done on the input text to acquire a phonetic transcription. During this process, the sentences contained in the text are divided into words and the numbers, abbreviations and acronyms are expanded. sIt is done with the help of regular grammars. Then the correct parts of speech categories are searched for each word in order to identify the probable classes depending on the contextual information of words using techniques such as neural networks, finite state automata or regression trees and classification.
- ii. At once when the ambiguities in text are sorted out, automatic determination of phonetic or linguistic

transcription of that text is performed using either dictionary based or rule-based strategies.

- iii. Predicting the correct intonation, stress and duration from the plain text is a challenging task. The prosodic features also depend on many aspects like the speaker characteristics (gender, age), emotions and meaning of the sentence (neutral, imperative or question).

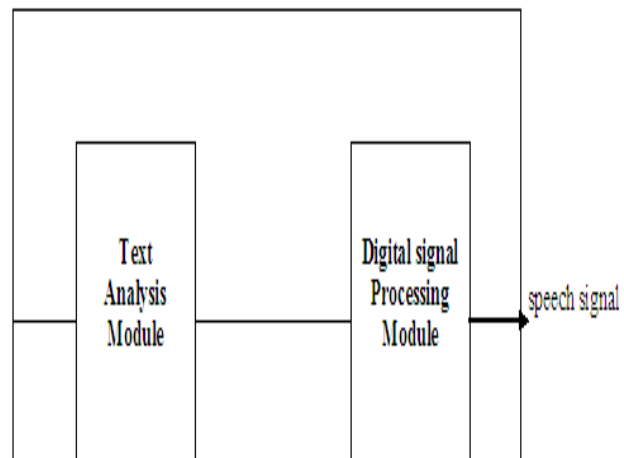


Fig 2.Text to Speech Module

b) AUTHENTICATION MODULE

The authentication module describes the user authentication when they used to access their mail. In our project we implement the fingerprint authentication system for the visually impaired to provide security and privacy.

- i. One of the several important biometric forms of human identification include fingerprint authentication as discussed in [1] and [3]. The digital image of a fingerprint pattern is captured using a fingerprint sensor, generally at 500dpi (dots per inch) resolution in gray-scale using 8 bits per dot. At first, one or more fingerprint image is registered on the device which will be used to do the authentication (e.g., a personal computer with integrated fingerprint scanner), and a template of the fingerprint is stored on a local database. When a user wants to log in, they must have their registered finger scanned again, and a second template is generated. Next, a pattern analysis is performed to determine whether the registered fingerprint matches with the one scanned now and then the system decides whether the logon should be allowed or not. If the pattern matches with any of the patterns stored in the database, the user is given access to the system otherwise he will not be allowed to access the system.

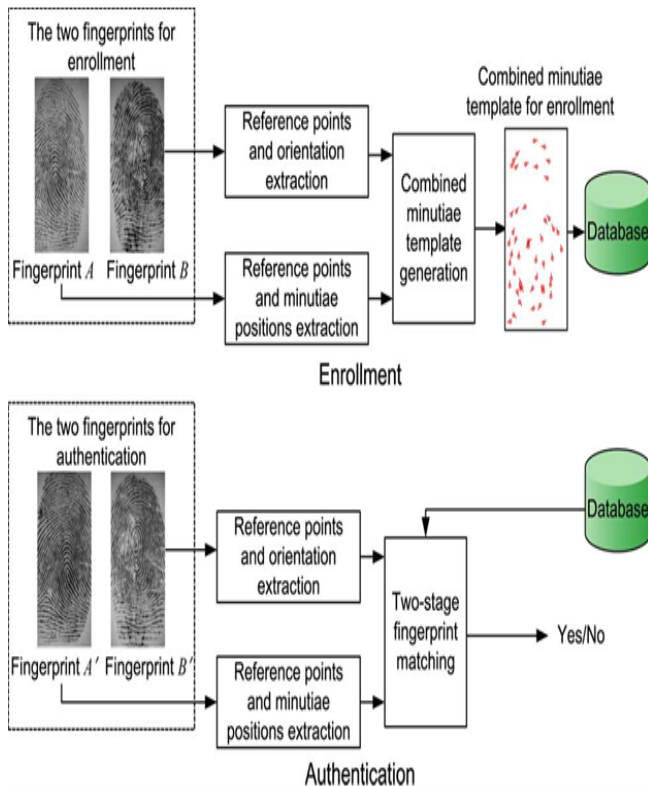


Fig 3. Fingerprint privacy protection system

- ii. The match is identified using points of interest (minutia) on the fingerprint, such as ridge bifurcations and ridge endings. Logon to the system is permitted only when enough of the minutia points and vectors match, thus the fingerprint is considered a match.

c) INTERACTIVE VOICE RESPONSE

This module describes the interaction between the user and the system in the way of responding using keyboard for the respective voice message.

- i. Interactive voice response (IVR) is an advanced technology that permits a computer to interact with humans through keyboard. IVR allows user to interact with an email host system via a system keyboard, after that they can handle their own inquiries by listening to the IVR dialogue. IVR systems make its response through prerecorded or dynamically generated audio to further assist users on how to proceed.

- ii. IVR applications can be used to control almost any function where the interface can be broken down into a series of simple interactions. IVR systems are implemented in the network are in order to service large call volumes.

d) MAIL SYNCHRONIZATION MODULE

Data synchronization technologies are designed to synchronize a single set of data between two or more device automatically copying changes back and forth the coordination of events to operate a system in unison. The familiar conductor of an orchestra serves to keep the orchestra in time. Systems operating with all their parts in synchrony are said to be synchronous. Some systems may be only approximately synchronized or plesiochronous. For certain applications relative offsets between events need to be determined, whereas for others only the order of the event is important.

Advantages

- The disabilities of visually impaired can be thrashed.
- Makes feel the disabled people as a normal user.
- They can hear the recently received messages to the inbox.
- They can give the input via keyboard without the help of the other people.
- The visually impaired people can advance from desktop application to the web based application.

IV. CONCLUSION

Our project is efficient and an economical system, which allows a visually challenged to interact with a web based application, outlining the development and implementation of a real-time email interaction system for vision impaired. This project presents a system for visually challenged user interaction based on real time web applications. The aim of the project is all about checking the inbox for visually challenged in which the mail can be read through the voice recognizer only if when the user can select the mail .

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