Voice Based E-mail System For The Visually Impaired

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Abstract:

The internet has become one of the most important aspects of modern life. The internet allows everyone to gain access to knowledge and information. However, blind persons have difficulty reading these written materials, as well as using any internet-based service. The evolution of computer-based accessible solutions has provided many opportunities for the blind people all over the world. Due to the availability of many screen readers, the visually handicapped encounter obstacles when it comes to surfing the internet. Voice assistance for several simple yet crucial programs used on a regular basis, such as Calculator, Music, and so on, in addition to Email.

I. INTRODUCTION

People with visual impairments are unable to use the most common postal services that we use on a daily basis. Screen readers, voice recognition , speech to text and text to speech, braille keyboard, and other technologies are available to make these platforms more accessible to visually impaired persons. As a result, living in this cyber environment is quite challenging for them. There are different technologies accessible in the world today, such as TTS, ASR, STT, Screen readers and so on, but they are not very effective for them.About 39 million individuals are blind, 246 million have impaired vision, and 82 percent of those who are blind are 50 or older. We need to provide them with internet access so that they can use it. As a result, we developed a voice-based email system for blind people, which will greatly assist visually challenged and uneducated persons in sending emails. The system will issue voice orders to the user to conduct specified actions, and the recipient will answer.

So, using the.net framework, Speech-to-Text and Text-to-Speech techniques are used. Automatic Voice Recognition, often known as Speech-to-Text, translates spoken speech into text, making email composition simple. The Text-to-Speech module provides audio output of the mail received, including the sender, topic, and content of the email.
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II. LITERATURE REVIEW:
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We give a full research review of current related strategies inside this section. A voice-based email architecture is proposed in paper [1], that will assist blind persons in accessing email. The current technology is inaccessible to blind persons since it does not provide aural feedback while reading out text. Speech Recognition, Interactive Voice Response, and Mouse Click events are all used in the proposed system. Additionally, voice recognition is used for user verification for added protection. Registration is the first module in this system. This module will collect all of the user's data by asking them to provide the necessary details. The system will ask for the user's user name and password in the second module. Voice instructions are used for this.

In paper [2] presented an email system that is easily accessible to visually challenged people. Text-to-speech (TTS), Speech-to-text (STT), and Mail Programming Module (Compose, Mailbox, and Sent Mail) are the 3 modules that make up the system's design. Speech-to-text is performed in this system using Artificial Intelligence (AI) using an API that uses neural network models supplied by Cloud Based Speech-to-text to developers. It also uses several Hashing Algorithms (MD5, SHA) to turn passwords and other credentials into hash functions, resulting in stronger security than traditional systems.

In papers [3,] they suggest an electronic mail that is simple to use for blind persons. The usage of a Speech to Text converter, a Text to Speech converter, and the Viterbi Method are all considered. The algorithms operates on the basis that the system determines the most suitable word as soon as the user spells it, matching the predicted word with the voiced word. When a person visits the website for the first time, they must first register. This system mitigates some of the shortcomings of the previous system. The disadvantage of this system is that the Viterbi algorithm's effectiveness drops as the number of mistakes rises, and it also takes up more space.

Payal Dudhbale and colleagues [4] Presented Voice-Based Systems for Blind People on Pc and Mobile Platforms. The primary components of this report's suggested system are listed below. 1. The Gmail system examines emails in the inbox of the receiver. 2. RSS-Real-time simple distribution 3. Listen to music 4. The red book reader system 5. Search drives and folders with the device browser.

The writers of the [5] paper presented Tri Mail, a useable blind-friendly mail client, to address the challenges of email-related activities on a smartphone in terms of accessibility and usability.
Tetra Mail user structure: They created Tetra Mail, an email client for blind people, using the HCI model as a foundation. Tri Mail's interface is designed in such a way that even a blind user with no prior experience with touch - based interface can use it.

In their study [6] Saurabh Sawant et al. suggest a solution for visually impaired and illiterate people to improve their engagement with email. This method replaces IVR technology, which formerly relied on screen readers and a Braille keyboards. There, we converted speech to text and text to speech. Voice inputs are also used for various tasks. I used my email address and password to register. Use a PHP feature called PHP mailers for the capability. It's a package that allows you to send email. To obtain the user's email from the IMAP server. For searching mail in inboxes, the Knuth-Morris-Pratt Algorithm is utilized. To summaries, the system environment is entirely voice-driven, with adequate system input at every stage. The disadvantage of this method is that it needs Gmail as a host server, preventing us from using other email providers such as Yahoo.

III.PROBLEM STATEMENT:

Persons who are visually challenged cannot use the mail services that are now available. This is because these systems are useless to them because they can't get any acoustic feedback to read out the data, which makes file searching inefficient. While screen readers are accessible, they present certain difficulties for them.

IV. Objectives:

1) To create a voice-based email system that will include latest systems that are easily accepted by visually impaired persons.

2) In this highly advanced era, to assist blind individuals in communicating with others via the net.

3) To Detect spoken language words and phrases.

V. RESEARCH METHODOLOGY

- Voice Input.
- MFCC.
- Speech to text.
- SMTP Protocol.
- Text to Speech

VI. OUTCOME

Computer program will be built for the suggested system that will allow people with various visual

impairments to simply and efficiently retrieve emails. A computer program will be built for the suggested system that will allow people with various visual impairments to simply and efficiently retrieve emails. All of the present voice-based email systems offer their own user-developed email services and do not use Google's Gmail. Taking this into account, the plan is to develop the program by integrating it with the Gmail Client, offering consumers an added benefit.

VII. APPLICATIONS

The purpose of the project is to improve society. This project intends to assist visually challenged individuals in participating in the expanding digital India by using the internet, as well as to make their lives easier. Furthermore, the success of this initiative will push programmers to develop something more beneficial for vision challenged or uneducated people, who, like everyone else, deserve to be treated equally in society

VIII. DESIGN OF PROPOSED SYSTEM

1.User Interface Design

Adobe Dreamweaver CS3 was used to create the user interface. The entire website is focused on the productivity of comprehending the IVR rather than the look and feel of the system, as the system is primarily designed for blind persons for whom the look and feel are less important than the productivity of recognizing the prompting.

2. Database design:

All project needs a database because it is responsible for storing data and information identities. That is, databases are primarily used for identity verification and storage of all user emails. The database management system will entail the construction of numerous tables for managing emails.

3. System design:

TTS (Text to Speech) and STT (Speech to Text) modules, as well as the Mail programming module, will be included in the system (Compose, Inbox, and Sent Mail).

A. Mail Programming Module:

Email is quickly becoming one of the most important web services. SMTP is used by many internet systems to send messages from one user to another. POP (post office protocol) or IMAP (internet message access protocol) are used to retrieve emails at the recipient's end.

B. Sending Email:
C. When an email is sent, it will include specific elements such as a header and a body sequence of replies requested messages that is aligned between the consumer and the server when sending emails.
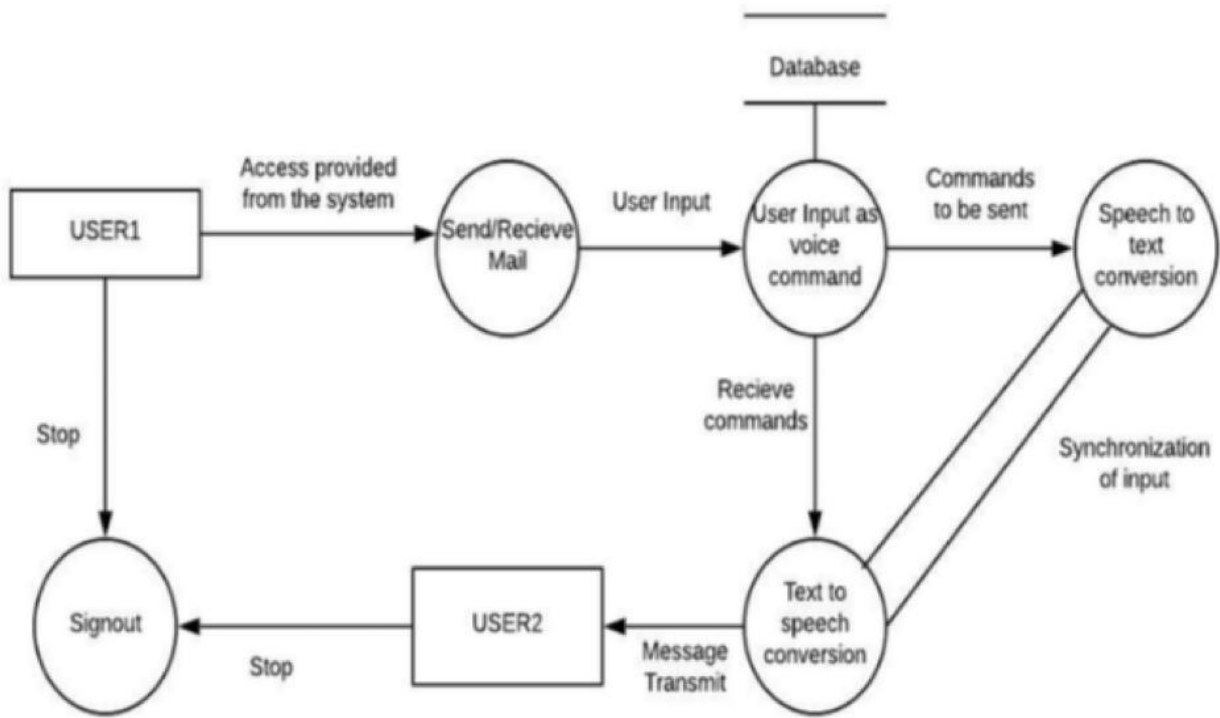
Fig.1 Voice Based Email System
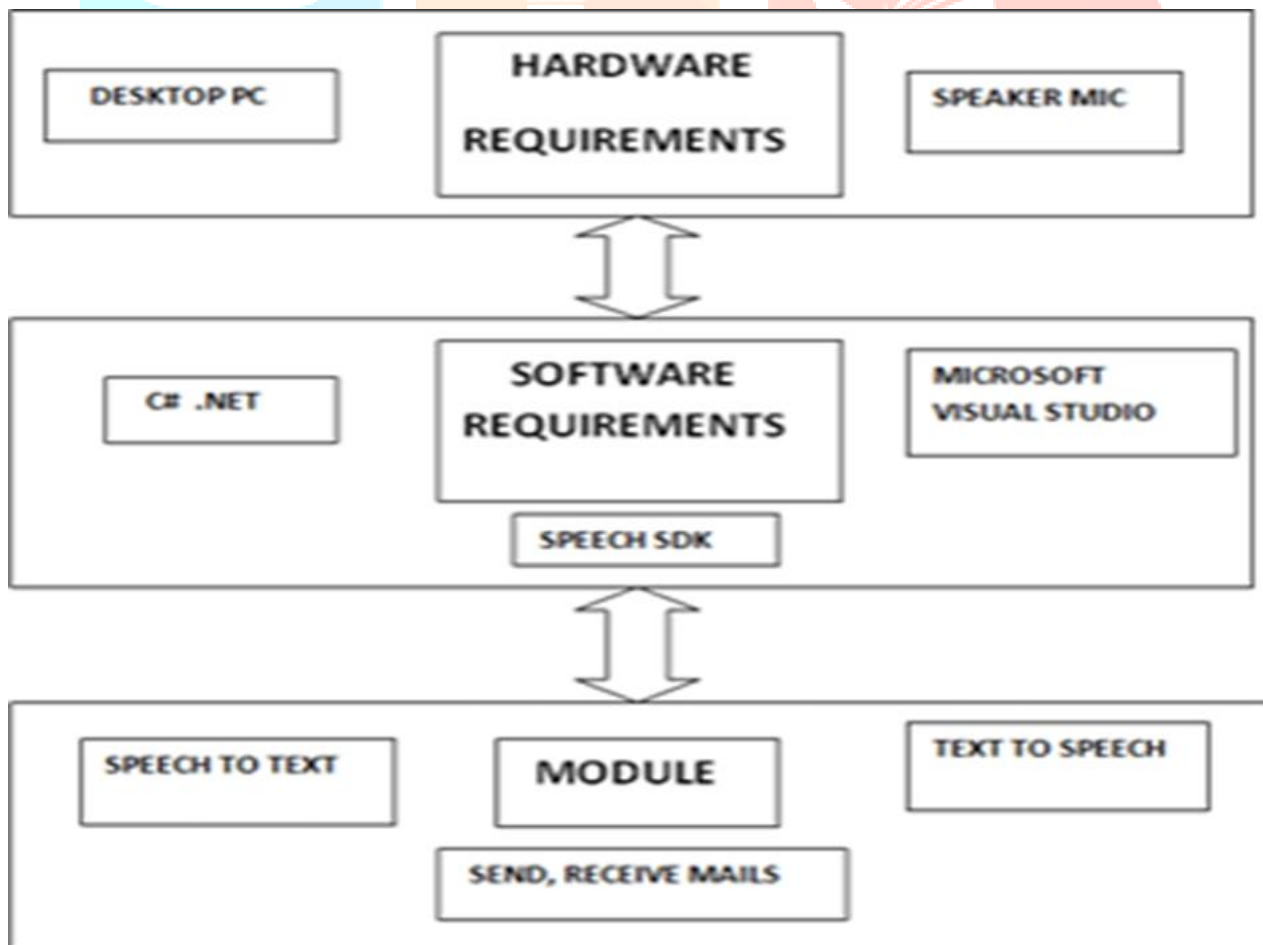
IX. ARCHITECTURAL DESIGN

Figure 2: Flowchart of the Proposed System

a) Speech-to-text Converter:

The speech-to-text converter aids in the program's input. When someone talks into a microphone and the system recognizes them, the speech is transformed to text. Our speech to text system gathers and converts speech to text in real time. It enables visually challenged people to control the entire system by speaking commands, eliminating the need for keyboard shortcuts or screen readers. In a VoiceBased email system, users say their usernames and passwords while entering into the system, as well as when doing tasks such as viewing their inbox, sending emails, and so on. Speech recognition systems are made up of various components: extraction of features, an acoustic model database built from training data, a dictionary, a language model, and a speech recognition algorithm.

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b) Text-to-Speech Converter:

It turns text to voice using speech synthesis techniques. The blind utilize it to focus on written material; it's now widely used to transmit financial information, e-mail messages, and other information over the phone for everyone. When offering instructions, text-to-speech is also employed on devices like portable GPS units to proclaim street addresses. The text-to-speech translator aids in the system's output. When a system operation occurs, the output is in text format, which is inaccessible to visually challenged people. As a result, the text is turned to speech and they hear it. It is quite convenient because it does not require the use of keyboard shortcuts or anything else to generate outputs. When a user instructs a voice-based email system to read inbox or sent mails, the text-to-speech transformer turns the text in the mails into speech that the user understands. When offering instructions, text-to-speech is also employed on gadgets like portable GPS units to proclaim street names.

Figure 1: Overview of Proposed System
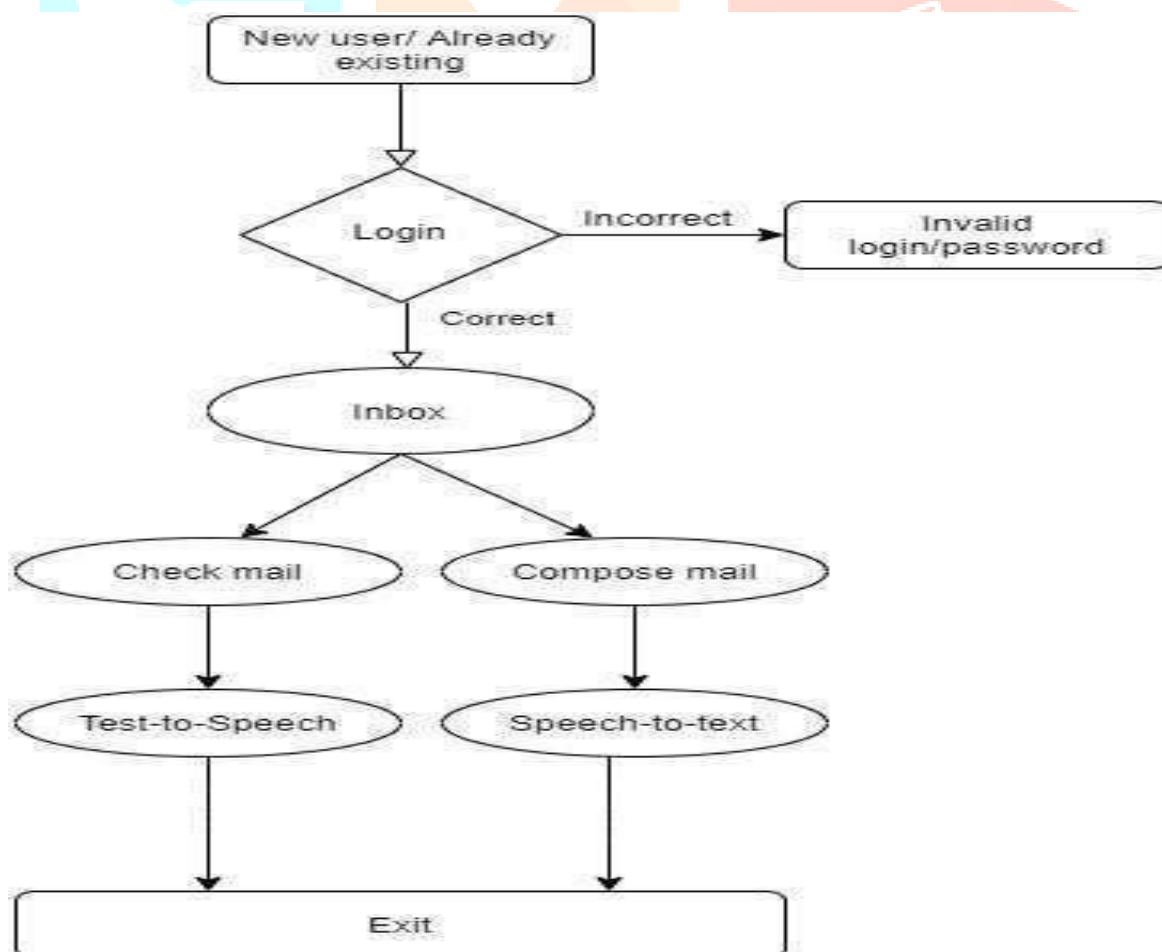
X. CONCLUSION:

This article is a proposal for a voice-based email system for visually impaired individuals, which is being developed as an application to assist blind and disabled people in accessing emails quickly and effortlessly. It offers a voice-based mailing service that allows visually impaired people to read and send letters without the assistance of others. It necessitates a rudimentary understanding of keyboard shortcuts. All of these conceptions have been eradicated, and the visually handicapped have conquered all of their challenges. It employs a voice recognition programme to give an effective voice input technique for blind people mailing devices.

Because of the TTS and STT techniques, uneducated and handicapped persons can utilise these voice-based e-mail services. The article provides an overview of the numerous technologies employed in various studies, as well as their benefits and drawbacks, in order to provide a perspective on emerging technologies.

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