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VIRTUAL VOICE BASED ASSISTANT FOR THE VISUALLY IMPAIRED - GMAIL, CLASSROOM, DRIVE

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Abstract:

This paper demonstrates the use of software that provides blind access to the Internet. The growth of technology today is important and makes the impossible possible. In addition, the concept of Artificial Intelligence is also growing rapidly. Artificial intelligence (AI) means imitating human intelligence in machines designed to think like humans and imitate their actions. The term can also be used in any machine that displays features related to the human mind such as learning and solving problems. Many online apps can be accessed with the mouse or keyboard and read on-screen information as a result of input. Despite this, most people in the community do not have the natural ability to see differently from us. The only way a blind person can access the internet is, with the help of a third party who is blind. Therefore, it makes retrieval difficult for the visually impaired. The technology supports them with a few new features like screen readers and braille displays. Screen readers read aloud the information on the screen. There is such a screen reading software online. In a braille display, dots are created to represent information on the screen, which the visually impaired can understand by touching a touch. Therefore, in order to improve visually impaired people in the community, we have come up with a program that gives the user access to a variety of services. applications like mail, classroom, and drive using voice commands without the dependency on a third person and without the need to remember keyboard shortcuts and mouse clicks.

Key Words: Visually Impaired; Voice Control; Automatically Use Application; Blind People

Introduction:

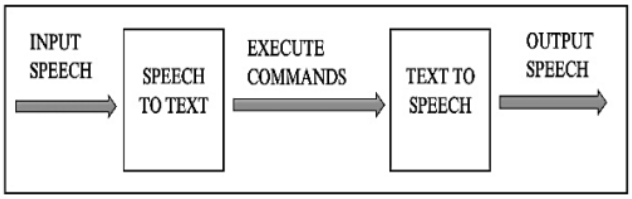
In today's world, many things can be done online. From shopping, ordering food, to booking train tickets, everything can be done online. In almost all of these online resources one has to use the Application. Using the App can be a small task for most people but it is very difficult for visually impaired people. Today there are some 285 million people in the world who are visually impaired. Although technology has grown exponentially, accessibility, especially that of the internet for people with different disabilities is still a long way off. The Internet is a popular form of communication, with different "access restrictions" blocking different types of applications, unlike the brick and mortar business where it is accessible by installing a wheelchair ramp or a braille communication platform. For example, researchers found that 80% of news outlets "had major access issues," while 70% of respondents said they "could not access information and services through government requests." So, we wanted to come up with a unique way to let people go blind people to access the internet. Although the W3C has a set of recommendations to follow when creating Visual Visual Aids, not all applications adhere to the highest levels of accessibility.

Voice help only, multilingual installation and setting the appropriate speech speed when playing to the user are important factors to consider. Unfortunately, these screen readers need to keep the app running in mind otherwise it will be difficult to read data from Google Classroom, Gmail, Drive app. Some screen readers only work with a specific type of program and others require the user to remember complex commands so that screen readers are not a viable solution to an existing problem and cannot be used to access the internet.

There are the following two common themes that appear in most applications:

- The web system is less accessible. Some parts are used for the visually impaired, while others do not.
- Access to another web application has been postponed due to app updates.
- Keeping all of the above factors in mind we came up with a visual assistant solution. The main goal is to close the access gap between the average user and the visually impaired people about the internet. The Internet does not see the blind, but in order not to make the speaker realistic, in this paper we present end-to-end software for the blind so that they can access the Internet with minimal to unnecessary pressure. . The user will provide instructions they want to perform such as voice input instead of using the keyboard. The software then uses the speech to the text module to convert the input text into a text that will be a command to be executed. The order is made using a selenium web driver. Once uninstalled the user will have three options: - read the entire contents of the app, read a summary or ask a question. The second and third options are made using machine learning. Once the voice input is taken and the command is issued the output is said to the user using the text module to the speech. Thus, the

software is able to make the Internet more accessible, faster and more effective for the visually impaired. Figure 1 provides an overview of the complete solution and how the software works. Input speech is visualized using speech to text, commands and then recognized and operated using the selenium web driver used to automate systems, the resulting output is played back to the user using text to speech.



Flow Diagram of Proposed Solution

This paper describes the implementation of the software modules automating the three most frequently used applications that are Google Class Room, Gmail and Drive by users, so as to fulfil the needs of the visually impaired for possible.

Objectives:

The objective of the project is to build a voice-based model of the existing internet applications namely, Gmail, Classroom, and Drive, to provide easier access of these applications to visually challenged people. Users can perform the actions of the particular applications using voice commands.

Literature Survey:

Voice Based E-mail for the Visually Impaired. The author's main goal is to provide a voice-based E-mail program for visually impaired people. Therefore, improvements to the Gmail client-linked app are suggested to help visually impaired people. With this system, users can easily write, send, receive and read emails. It uses speech-to-text and text-to-speech conversions using the .Net framework. User details are stored on the website. The speech-to-text module is used to compose emails and the text-to-speech module is used to read all email content and sender email id. This application uses Simple Mail Transfer Protocol (SMTP) to send emails and Post Office Protocol (POP3) to receive emails. As a result, visually impaired and even illiterate people benefit greatly from this program. This application is for desktop use only and requires keyboard input in a few places. Therefore, future work can be extended to mobile users and upgraded to full voice based support[1]. E-VOICE Post for Android Blind Devices: This app is based on interactive voice answering that will help you send and receive emails from their cell phones without having to touch the mobile screen. In the existing system, we have voice assistants such as Google Assistant and Siri, but these are only useful in accessing the basic features of the phone. The existing software does not work well in accessing the mail application as email has a few additional features such as CC, BCC.In order to develop software to improve web access for the visually impaired, Ferati et al. [4] points out that a “single solution for all models” is not enough without considering the levels of visual impairment when providing customized web information. The modular, plug-in-based solution seems to be very useful in providing visually impaired support, not relying too much on keyboard input (either QWERTY or Braille).

Program and Performance Review:

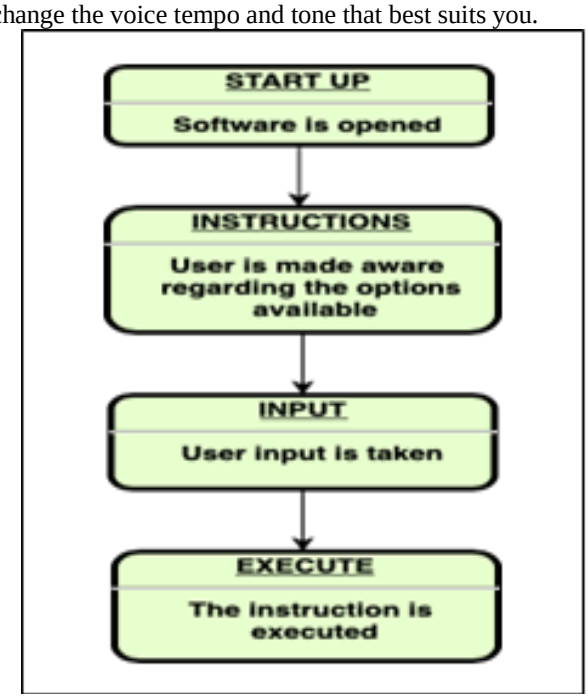
The existing system is specially designed for email applications. Extended to other applications such as class and driving. Speech-to-speech features and text-to-speech converters are integrated to perform specific functions in each application. The user can postsend to anyone by simply voicing the recipient's email id and message. Similarly, the user can recreate the email received by instructing the program to read the emails in the inbox. Initial application actions, such as sending and receiving emails are performed. The user can also create a class in the classroom app and view people and class assignments in the voice using voice commands. He can access the metadata of each class with a unique class ID for a particular class he or she has created or subscribed to. APIs and regulations are used to link a program to a specific program.

Methodology:

The user first interacts with the main software menu once the desktop or portable computer is turned on. The main menu of the software can be requested by an integrated voice assistant, for example Siri, or with a predefined keyboard shortcut, which is the only keyboard interaction required. The main menu interface provides options available to the user namely. Installed Application Modules, audio speed, audio tone. Each application module contains a large number of speech-text and text-to-speech, automatic python application and application-specific features. To get effective speech attention, the user is given a beep in all sections after which they are free to speak. The input detected and recognized system from the user is played to the user so that the user can verify his intended input, in order to minimize any errors immediately, thus enabling a sense of editing. The procedure for using the three modules - Gmail, Class, Drive - and the main menu is described below.

A. Main Menu:

The main menu starts when the software starts opening. Using the pytts (Python text-to-speech) module, the first set of instructions showing the user-provided options. The program captures user input behind the phone using Google's speech-to-text python module. Keywords from the word are then extracted and the correct answer is used. User is also free to change the voice tempo and tone that best suits you.



Flow Diagram for Main Menu

B. Build a Voice-Based Email Application:

A voice-based email application is designed to send emails by voicecommands. Also, emails in the inbox can be read by following the instructions.The advanced system provides facilities to send and download attachments.

C. **Creating a Voice-Based Google Classroom Application:**

The module involves developing the teacher role of the Google classroom application. The teacher can create a course and get the enrollment code of thecourse which is used by the students for enrolling in the particular course. The teacher can also view the metadata of the course and create and assignments.

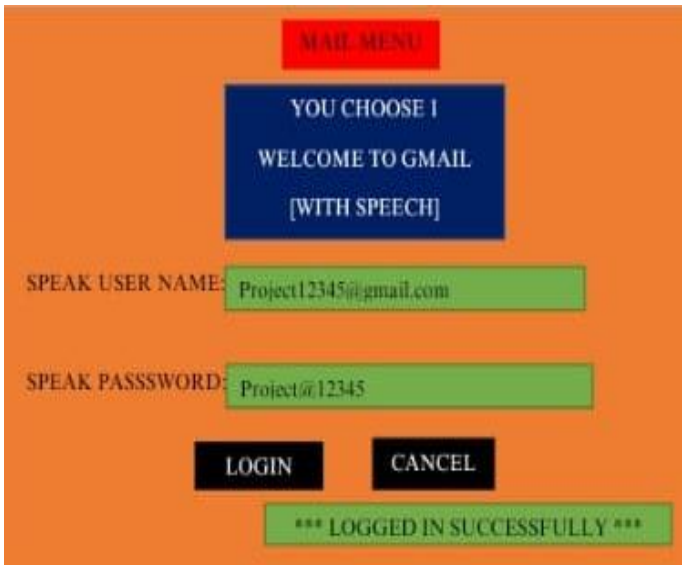
D. Building the Voice-Based Google Drive Application:

In this module, a voice-based Google drive application is created such that the user can upload, download and delete files from the drive. The user can upload files to specific folders in the drive by mentioning the folder name. He / She can alsocreate and delete folders.

Result:

Built-in text-to-speech modules (pyttsx3) and text-to-speech (Google speech library) via python provide excellent accuracy and provide an easy and fast way to convert text. Speech-to-text saw words with 96.25% accuracy with 4 different voice samples. Consider the following diagrams.

A. Main Menu:



B. Gmail Menu:

C. Classroom Menu:

D. Drive Menu:

Application:

The Application containing 20 different inputs in a moderate toquiet environmentResults showed that we were able to run our software on the three most popular sites: Gmail, Classroom and Drive. The software was run on each case separately. The software can send email successfully using user instructions. We were therefore able to test and develop software that would make the Application more accessible, faster and more effective for the visually impaired.Visual Assistant serves as a great support for people with disabilities by recognizing that they have internet access to any browser as our software is independent. They can access the Internet using their speech and can navigate the app using voice commands. The software will read to the user the contents of the application thus making the Application easily accessible. This feature will not only help the visually impaired but also allow other people to easily access the internet and eliminate the use of keyboard-like hardware.Virtual Assistant also provides a feature to provide answers to a specific question in a specific data source, so now the user does not have to read all the text to get the answer, he just has to install the question, the software. will receive feedback on text data itself using a reading machine. The software also provides a summary of the text using machine learning, so the user does not have to read everything and thus make it easy to access the Application. Therefore, applying machine learning and speech to text techniques makes the task of accessing the app, which was previously difficult now much easier, faster and more efficient. Therefore, we believe that visual aids for the visually impaired are the start of Web 3.0. The results showed that we were able to run our software on three well-known sites: Google Gmail, and Drive.

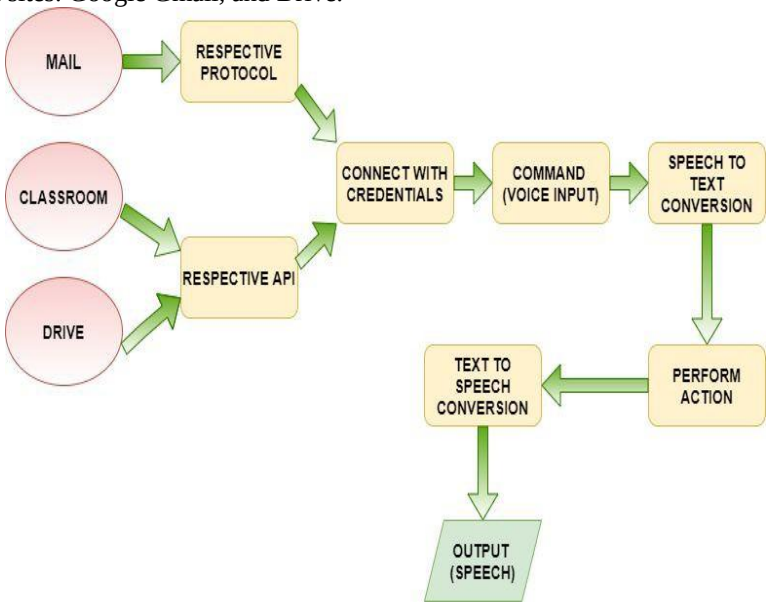


Figure: Application Overview

Conclusion:

In this paper, we have introduced a modular solution to improveaccess for the visually impaired.Visual Assistant is an independent operating system and does not rely on user input from the user for convenience andaims to provide seamless information to the user. By using speech to text and text to speech. the user can communicate and customize the program. We have introduced the system design and functionality of the three modules currently in use.Virtual Assistant provides easy access to any visually impaired people to access everything will work with voice commands.

Future Development:

Currently the app only supports commands given in English language. We would also like to create a similar framework that can be linked to any program and create a browser extension thus making it easier to switch between the two modes, especially in Tutorials so that visually impaired people can access online courses as a moderate measure.

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