Smart Voice Assistant for Educational Institution

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Abstract: **Voice assistants are built on artificial intelligence and voice recognition technology. As the end user interacts with the digital assistant, the AI programming uses sophisticated algorithms to learn from data input and better itself at predicting the user need. This paper discusses about the use Voice Assistant in educational field. Voice Assistant has reached a high level of growth ever since created. They are everywhere nowadays, starting from IBM Shoebox to Alexa and Apple home pad. By adding voice assistance to educational institution's website, which provides more user comfort and to take the technology to the next level of usage is the actual idea of this paper.**

Keywords: **Voice Assistant, JavaScript, Php, Website.**

1. Introduction

Voice Assistants are piece of software which is used to provide services or perform some specified tasks as programmed before. They receive the user queries and resolve them. The Voice Assistants have been developed a lot since their first generation, from IBM shoebox which initially recognized only 16 words and 9 digits to the currently available Amazon echo smart speaker which is running the Alexa- voice assistant. The idea here is to guide a user to travel throughout a website or a web application using a bot like voice assistant. People have a lot of questions and learning needs and they need an immediate assistance for solving it. Assigning a dedicated human staff to addresses this may not be effective as human resources have certain limitations.
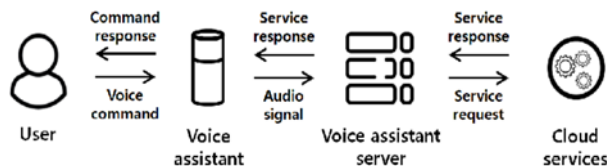

Fig. 1. General working of a voice assistant

For this exemption online websites were developed. But interfacing a bot in the website and making it work dynamically can attract and have a good reach to all extremes. It will also be efficient and easy for accessing the information. This could be achieved through the implementation of Artificial Intelligence. Hardware includes a combination of microphone and speaker connected to the system.

2. Existing system

This section covers about the already existing voice assistant and their uses. There are Voice Assistants like Google Assistant, Siri, Cortana, etc., but all of them provide only accession to a search engine or to perform general tasks. There is a difference between viewing a website and analysing it through voice. To guide a user to travel throughout a website or a web application we need a bot like voice assistant. The existing system also uses constrained algorithms for voice recognition. Also there is no Voice Assistant developed for a specific website, that too for an educational purpose.
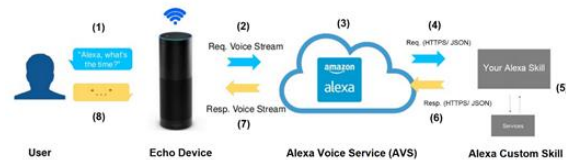

Fig. 2. System architecture of an existing system (Alexa)

3. Proposed System

The proposed system is to develop a Voice/Virtual Assistant for an educational institution's website (for PSG Polytechnic College). To develop a bot to answer general queries and to access the PSG Polytechnic College website externally is the idea. Also the developed website with Voice Assistant sis planned to work dynamically and both in online and offline status.
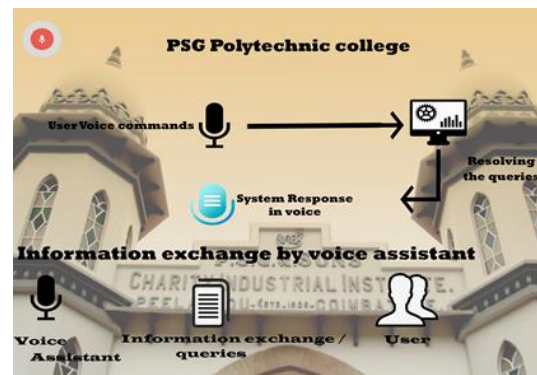

Fig. 3. Model for the proposed system

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733

Other voice assistants offer voice commands, voice searching and voice activated device control letting you to perform a number of tasks, but they won't work dynamically. The system we proposed can work in such a manner that a user can solve their needs in the website as it is customized for all needs.

4. Development of the system

The development of our project underlies on four phases.
- Website creation
- Voice control code generation
- Interfacing the Voice control code with the website
- Running the code and testing for bugs & errors

The first phase is to create a model website of a college (educational institution). This is done because the interfacing of voice control code with the website requires the source code from scratch; we couldn't have the full source code from the already existing website. The second phase of the project is to generate voice control code. This code should be capable of making the website accept our instructions through voice and also to reply to us through voice. This is continued by the third phase of the project, to interfacing the voice control code along with the created model website. The last phase is to run the code and looking for bugs and errors. Thus a fully customized website with voice control for an educational institution has been developed.

PHASE 1   PHASE 2 & 3   PHASE 4
Fig. 4. Development of the system

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5. Technologies Used

The technologies used for this project are as follows:
- PHP
- JavaScript
- MySql
- Html
- CSS
- Xampp

Php is used for creation of dynamic website. Here it is used in the first phase of development. Also Php is chosen because it blends effectively with JavaScript for voice requirements. JavaScript is used for generation of voice control code and it's interfacing with the website code. JavaScript provides a wide range of feasibility for voice related actions with its packages and modules. Html and CSS are used for designing and formatting of the website. MySql is used for data acquisition and analyzing it when the website is working in online. Xampp, a free and open-source cross-platform web server solution stack package is used for interpretation of scripts written in the PHP

and JavaScript programming languages at offline status.

Fig. 5. Various technologies used for development of project

6. Working Principle

The created system works by the following process. The user gives an input or enquires about information at the website via the Voice Assistant present in it. The microphone and speaker are turned on while starting the query. The voice is received by the system and the Speech Recognition package available in JavaScript. The package then converts the voice request and directs the user to the requested query as programmed before. The system then replies with a system voice either the action requested has been completed successfully or not. All the process of converting user's voice query into machine based instructions, replying to the user with a voice and all other voice control over the website is purely provided by the JavaScript's packages. A red light blinks when the microphone is being used. Initially the system is being run on local host. In future it is developed also in online mode.

7. Output

Since the output is related to voice commands, they can't be photographed. Here we have placed the output screen of out model website created using Php and the switching on the microphone at the website (a red light will be blinking) is shown below.

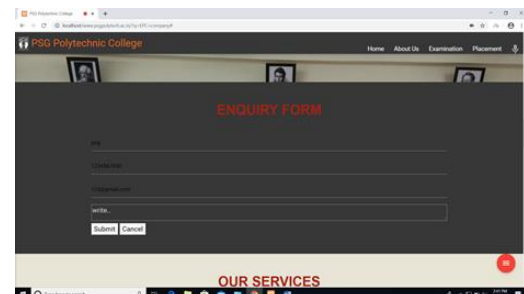Fig. 6. Website creation and using microphone to interact

Fig. 7. Filling out the form in the website through the assistant

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734

8. Conclusion

The project is able to make the voice assistant embed internally, within the actual educational institute's website. It is also developed in such a way that assistant is reactive to the user. It is constructed in such a way that the voice assistant works on local host and on online services. This makes the Voice Assistant to be fully available only to a specific website. This increases the ease of use to the users. Also it takes the usage of growing technologies to the next level. This can also be embedded with Artificial Intelligence and Machine Learning algorithms to make the Voice Assistant more reactive and intelligent.

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