VOICE CONTROL MUSIC SYSTEM USING RASPBERRY PI

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Abstract: This paper is about the voice recognition software using Raspberry Pi. This software is based on using online API's, it uses Google Voice APIs for converting the speech back to commands. It uses LAN to connect it online. It uses Google speech, so that the system can be manipulated to talk back to commands and queries. We can define our own tasks based on commands received. The speech is recorded using Mic or web cam. Then it is sent online, using Google speech it is converted to commands. The commands are returned as an output then for the specified commands specific task is done. All the coding is done using python. Thus, voice recognition is done using Raspberry pi. This project will be very useful for old age people and disabled people, basically for one's who cannot perform basic activities efficiently. It is the idea which corresponds to the new era of automation and technology. The main aim of the system is to make life easier. Mobile devices are very common among everyone due to its user-friendly interface and portability features.

Keywords: Text to speech; Speech to text; Raspberry Pi; Voice Command System;

I. Introduction

A Voice Command System essentially means a system that processes voice as an input, decodes or understands the meaning of that input processes it and generates an appropriate voice output. Any voice command system needs two basic components which are speech to text converter, and a text to speech converter. Voice has been a very integral part of communication nowadays. Since, it is faster to process sound and voices than to process written text, hence voice command systems are omnipresent in computer devices. Text to speech There have been some very good innovations in the field of speech recognition. Some of the latest innovations have been due to the improvements and high usage of big data and deep learning in this field. These innovations have attributed to the technology industry using deep learning methods in making and using some of the speech recognition systems. Using big data for speech systems, Google was able to reduce word error rate by 6% to 10% relative, for the system that had the word error rate of 17% to 52%.conversion is the process of converting a machine recognized text into any language which could be identified by a speaker when the text is read out loud. It is two step processes which is divided into front end and back end. First part is responsible for converting numbers and abbreviations to a written word format. This is also referred to as normalization of text. Second part involves the signal to be processed into an understandable one. Speech Recognition is the ability of machine for instance a computer to understand words and sentences spoken in any language. These words or sentences are then converted to a format that could be understood by the machine. Speech recognition is basically implemented using vocabulary systems. A speech recognition system may be a Small Vocabulary-many user system or a Large Vocabulary- small user system.

II. Literature Review

This system works on the primary input of a user's voice. Using voice as an input, we were able to convert it to text using a speech to text engine [1]. This software is based on using online API's, It uses Google Voice APIs for converting the speech back to commands. It uses LAN to connect it online. It uses Google speech, so that the system can be manipulated to talk back to commands and queries. We can define our own tasks based on commands received. The speech is recorded using Mic or web cam. Then it is sent online, using Google speech it is converted to commands. The commands are returned as an output then for the specified commands specific task is done. All the coding is done using python. Thus voice recognition is done using Raspberry pi [2].

III. Proposed Methodology
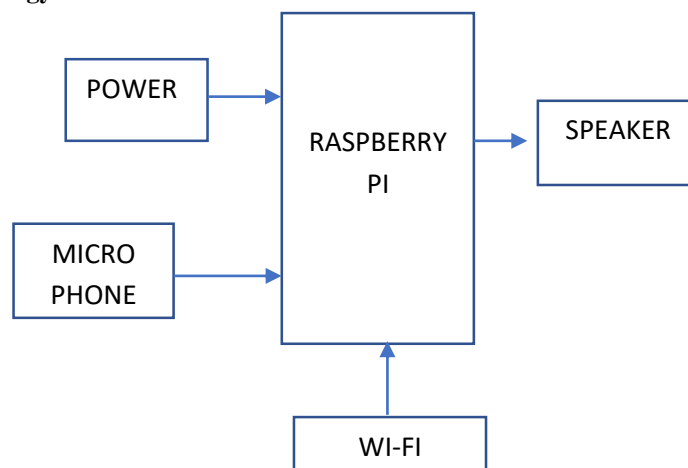
Raspberry Pi: Raspberry pi is like the brain. Its primary advantage comes in processing higher level processing capability. It is a full computer. The heart of our system is Raspberry pi. Microphone: Microphone is used to take the audio input of the sound. This audio input when further passed through the system would be searched for keywords. These keywords are essential for the functioning of the voice command system as our modules work on the essence of searching for keywords and giving output by matching keywords. Speakers: Once the query put forward by the user has been processed, the text output of that query is converted to speech using the online text to speech converter. Now this speech which is the audio output is sent to the user using the speakers which are running on audio out. Ethernet: Ethernet is being used to provide internet connection to the voice command system. Since the system relies on online text to speech conversion, online query processing and online speech to text conversion hence we need a constant connection to achieve all this.

IV. Advantages

- ► It is portable system.
- ► Easy to use.
- ► Record is stored in system itself.
- ► Simple in design.
- ► Small in size.
- ► Unlimited storage capacity.

V. Future Scope

This project has future scope for developing very effectively music system. We can use this type of access control system in many areas such as in homes, vehicles for entertainment purpose etc.

VI. Conclusion

In this project, we have successfully given the idea and rationale behind the Voice Command System. We have also explained the flaws in the current system and our way of resolving those flaws. Additionally, we have also laid out the system architecture of our Voice Command System. Many of our modules are of open source systems and we have customized those modules according to our system. This helps get the best performance from the system in terms of space time complexity.The Voice Command System has an enormous scope in the future. Already, we are seeing virtual assistants like Siri, Google Now and Cortana become popular in the mobile industry. This makes the transition smooth to a complete voice command system. Additionally, this also paves way for a Connected Home using Internet of Things and the voice command system.

VII. References

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