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# A Review on Voice Controlled Robot

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**ABSTRACT:** A Voice Controlled Robot (VCR) is a robot which is controlled by the human voice. This type of robots can easily operated by user voice commands, while doing other task. Basically this type of system consists of three modules; first one is voice recognition system second one is central controller system and third one is robot. These types of systems are useful for domestic as well as industrial users. Robot can be controlled by using wired or wireless communication like Bluetooth, Wi-Fi and ZigBee technology. This paper provides review on voice controlled robot also provides the different technologies used in the recent year.

**KEYWORDS:** Voice Controlled Robot (VCR), voice recognition system, controller, Bluetooth, Wi-Fi and ZigBee.

## I. INTRODUCTION

Robots are used to perform different operation in a domestic as well as in industrial sector. Robots include mechanical, electrical, computing and automation fields of technology and controlled by the humans. Day by day technology become very advanced and robots can now be controlled with lesser direct human intervention to achieve a more natural interaction with machines. Robots are mostly controlled by using the different switches, but in advanced robots, robots can be controlled via voice commands which allow the user to free up their hands and work on other tasks. Voice controlled robots can be handled by the user having some physical disability [1].

Mostly voices controlled robots are used for industrial and surveillance applications and it is capable of understanding and synthesizing human speech for communication by using voice recognition unit. This type of robots is capable to recognize the some basic commands like Start, Stop, Forward, Reverse, Right, Left, Slow, Fast, Ok, Up, Down, Clock, Anticlock, Close, and Open [4]. Robot can be controlled by using wired or wireless communication. Most of the work on the wireless voice control robots because it provides more benefits than the wired. There are different Wireless technologies like Bluetooth (Bluetooth and IrDA standard provide the ability to strengthen the local wireless network), Wi-Fi or Wireless LAN (is a wireless network based on a series of specifications from the Institute of Electrical and Electronics Engineers (IEEE) called 802.11) and 3G (mobile devices and services will transform wireless communications into online, real-time connectivity) etc. [5].

## II. EXISTING WORK

Yasir Ali Memon et al. [1] proposed a strategy which can be used in controlling a robotic vehicle through connected speech input, in which Android smart phone (is a speech recognizer) communicates with the robot using Bluetooth Connectivity. This proposed robot provides the detection of obstacles and informs the user to use a different command additionally. The proposed system contains; Arduino mega (is a microcontroller board and it is based on the ATmega1280 and contains 54 digital input and output pins including 14 PWM pins, 16 analog inputs, crystal oscillator of 16MHz), HC-05 Serial Bluetooth Module (it is a wireless technology that can easily interconnect mobile phones, PDA, and personal computer with each other using a short-range wireless connection), Ultrasonic Sensor (HC-SR04 ultrasonic sensor is used to measure distance from an object), L298 H-Bridge Serial Motor Driver (this is bidirectional motor driver is based on L298 chip) and Android App. Figure 1 shows the software architecture design of the proposed system.

Aniket R. Yeole et al. [2] developed a smart phone controlled robot using ATMEGA328 Microcontroller, which consists of Blue-tooth module-JY MCU BT HC-06 (used in the project can be connected to any device, via built in



UART interface to communicate with other Bluetooth -enabled devices such as mobile phones, handheld computers and laptops), Micro-Controller -ATMEGA 328 (is intended for artists, designers, hobbyists and anyone interested in creating interactive), DC motors, Ultrasonic transceiver module HC-SR04 (it is to determine distance to an object), Motor Driver H-Bridge L293D (is a dual H-bridge motor driver integrated circuit and also take a low-current control signal and provide a higher-current signal to run four solenoid) and 9v Dc battery

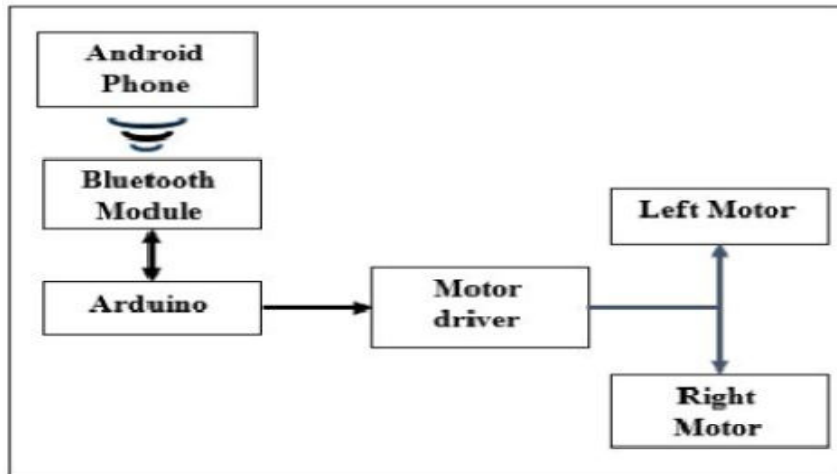


Figure 1 Software architecture design of the proposed system

Hardik Chhatbar et al [3] developed the system which identifies speech of speaker with security. The main goal of this system is a Speaker Identification based automation system capable of controlling many devices inside a home and office using speech commands. Proposed system consists if consists of comparing speech signal from speaker to the object database library. Then system will compare and identify the speaker and acts as the command given by the user. Table 1 gives the result for different condition of Sound by using different methods. In this system two methods; Fast Fourier Transform (FFT) is a mathematical method for transforming a function of time into a function of frequency. And Discrete Cosine Transform (DCT) expresses a finite sequence of data points in terms of a sum of cosine functions oscillating at different frequencies. From the result it is found that FFT technique is not more accurate and efficient

Table 1 Result Using different Methods on Different Conditions.

Number of Person(s)	Number of Attempt	FFT Method		DCT Method	
		Correct Identification	False Identification	Correct Identification	False Identification
One Person	10	9	1	7	3
Two Persons	10	8	2	6	4
More than two persons	10	6	4	4	6

### III. CONCLUSION

Day by day technology become very advanced and robots can now be controlled with lesser direct human intervention to achieve a more natural interaction with machines. This paper provides review on voice controlled robot also provides the different technologies used in the recent year.

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