

Voice Controlled Robot

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Abstract- This paper includes that how a robot works with the input given in voice. This paper explains that how a robot interface with user with voice command given by the user. This system is quite fast. This system consists three parts first one is voice recognition system second one is central controller system and third one is robot. The use of robots in the present day has moves from industries to the normal day to life. In such a scenario a healthy interface between humans and robot is of dire need. The use of voice commands to control a robot is much easier for domestic as well as industrial users. The voice recognition system is a basically a interface between man and robot it receives the voice as input signal and processes it and then forwarded to central controller then it passes the signal to Robot. The paper will describe how the whole process it happen. This paper proposes the use of an android mobile to control a robot via voice commands.

I. INTRODUCTION

Robot controlled by voice using mobile phone is a very effective project especially for physically challenged peoples. It is also

Very useful in industries and at those places where human life is endangered.

The idea of using voice commands to manipulate a device is not new to us. We have come across many such incidents in several scientific-fiction novels and movies. With the advent of technology this idea became a reality now.

Improvements in the areas of speech recognition and synthesis, language understanding, and voice processing have already been realized in many real-world applications.

The Technology advancement in the speech recognition over the past few year's results in

research oriented activities based operating the equipment based on user voice commands. Some design implementation results in operating the home appliances based on voice command, some design implementation results in navigation of physically challenged to their destination based on their voice commands, design implementation of robots and forklift navigation based on voice command, endanger. It gives exact concept of controlling a robot by voice. Robot is capable of understanding and synthesizing human's speech for communication.

A voice recognition unit built around a high speed processor that ensures various function of the system to be performed by voice command.

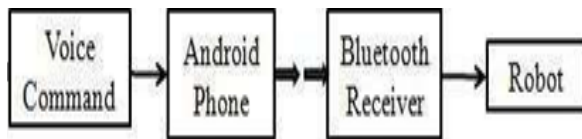
A few of instructions recommended for operation are listed as:

- STOP,
- FORWARD,
- BACKWARD,
- RIGHT,
- LEFT,
- SLOW,
- FAST,
- OK,
- UP,
- DOWN,
- CLOCK,
- ANTICLOCK,
- CLOSE,
- OPEN

To work with this system we have to design some application of android. The application consists of android phone with Bluetooth receiver.

In the model, an android application for voice recognition is developed. This application converts the voice command to text and sends it to the robot via Bluetooth. The robot receives the voice and

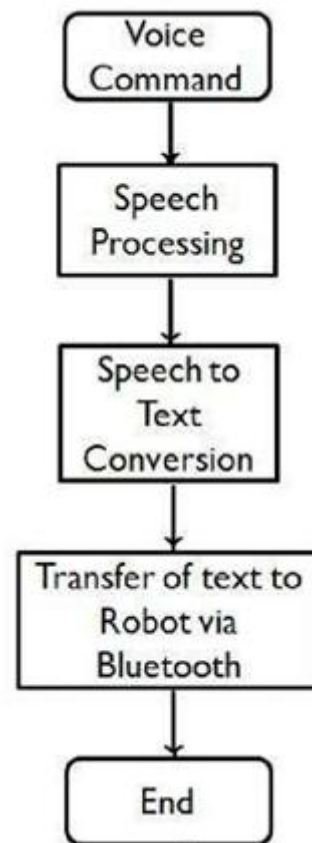
compares it with the programmed commands in the microcontroller and executes the directed action. This process is shown in the block diagram.



II. FUNCTION OF ANDROID

As it is mentioned that to control a Robot through mobile phone it is obvious that we have to make android application, now it is to be studied that the function of android application. We use android application for voice recognition, once voice is recognized the user can be able to control the robot as per desired command. The voice command is going to be converted into text it is described in block diagram below.

Operating System have developed a lot in last 15 years .Starting from black and white phones to recent smart phones or mini computers ,mobile os has come far away .Especially for smart phones ,Mobile os has greatly evolved from palm os in 1996 to Windows pocket PC in 2000 then to Blackberry OS and Android.

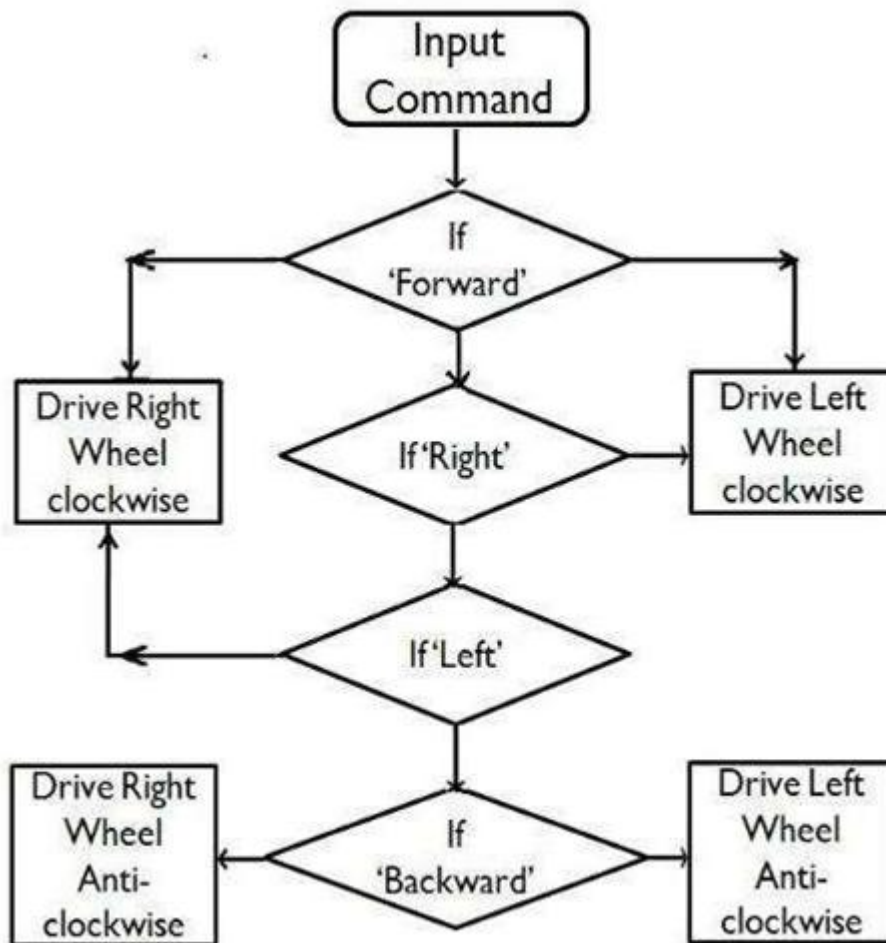


III. CONTROLLING OF ROBOT

In this system the robot is controlled by arduino board containing the ATmega328 microcontroller. The text sent to microcontroller from mobile phone and it will be compared with pre programmed command such as left, right, up, down etc. The microcontroller gives the commanding signal to both the wheels through motor driver when user gives comman left then it stops the left wheel and right wheel will move then robot moves in right direction same as when we have to move robot in

right direction then right wheel will be stop and left wheel will move then robot will turn right, when we have move it sharp turn then one wheel move in clockwise direction and another wheel will move in anticlockwise direction then robot will take sharp turn.

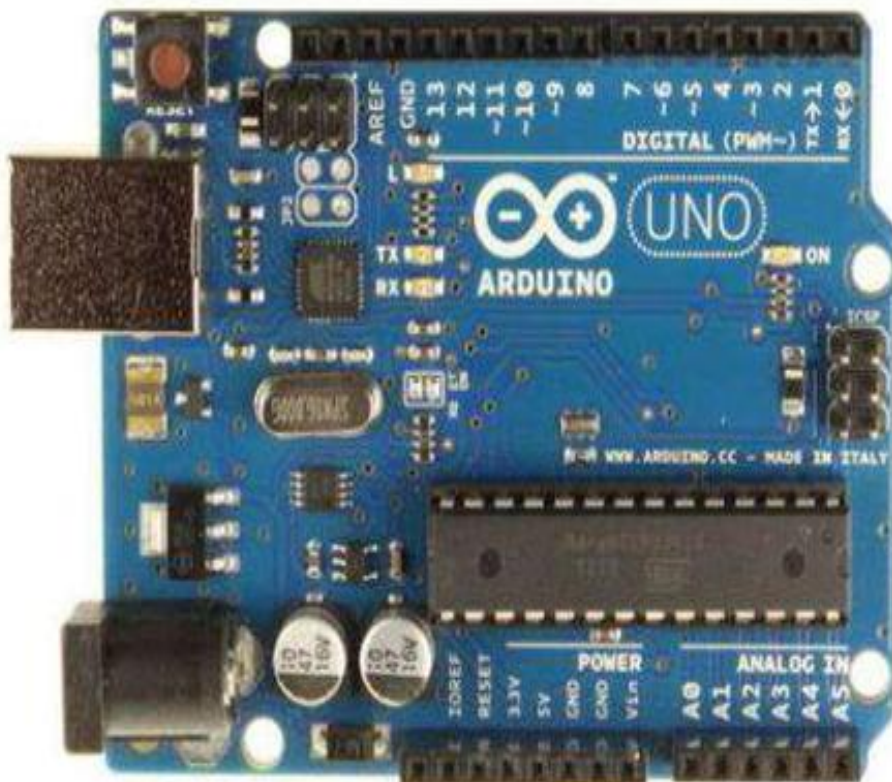
Flow chart of arduino program:



IV. ARDUINO BOARD

Arduino board is basically a single board microcontroller, intended to make the application of interactive objects or environments more accessible. The

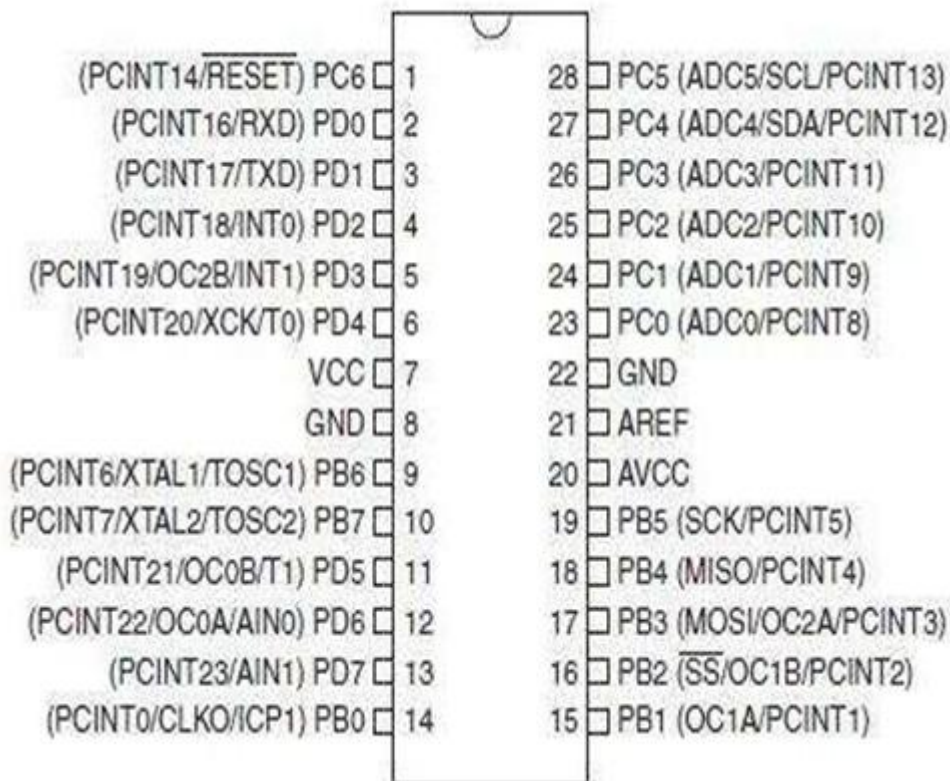
Hardware consists of an open- source hardware board designed around an 8- bit ATMEL AVR microcontroller, or a 32_-bit ATMEL ARM. Current models feature a USB interface, 6 analog input pins, as well as 14 digital I/O pins which allows the user to attach various extension boards.



V. MICROCONTROLLER

A microcontroller is a small computer on a single integrated circuit containing a processor core, memory, and programmable I/O peripherals. Program memory in the form of nor flash or OTP ROM is also obtain included on chip, as well as a typically small amount of RAM.

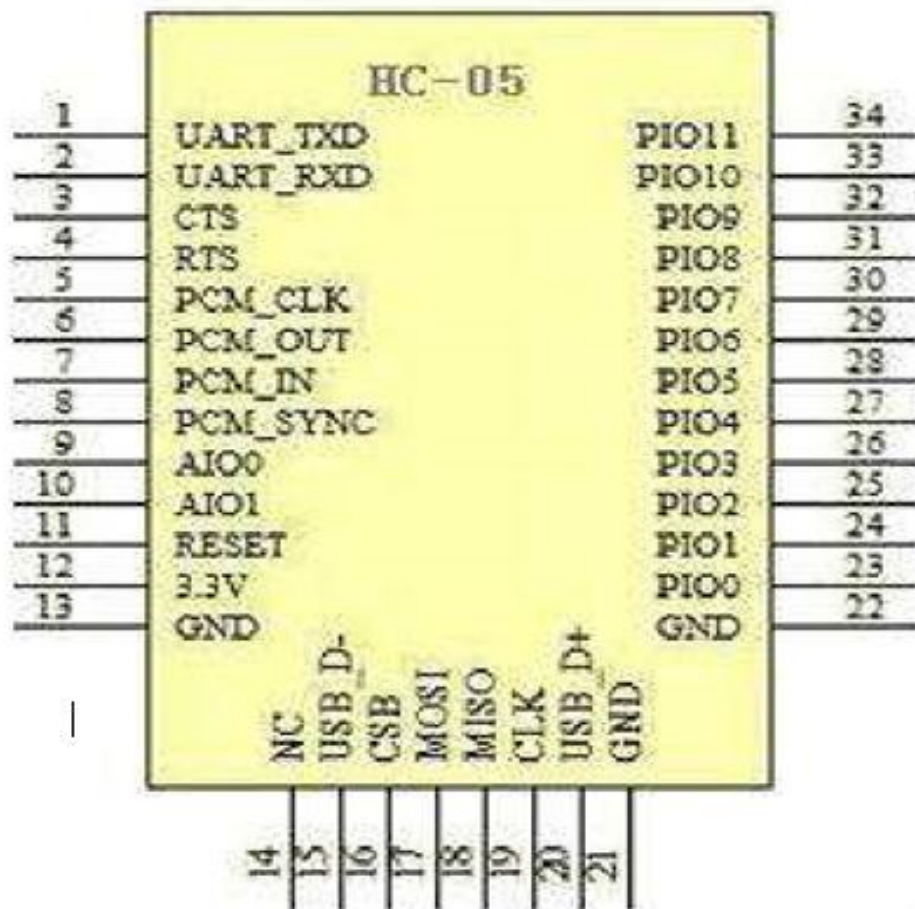
In system Atmega328 microcontroller is used. The ATmel 8 bit AVR RISC- based microcontroller combines 32 kb ISP FLASH memory with read-while- write capabilities, 1kb EEPROM, 2 kb SRAM, 23 general purpose I/O lines, 32 general purpose registers, 3 flexible timers/counters. The pin diagram is given below:



VI. BLUETOOTH

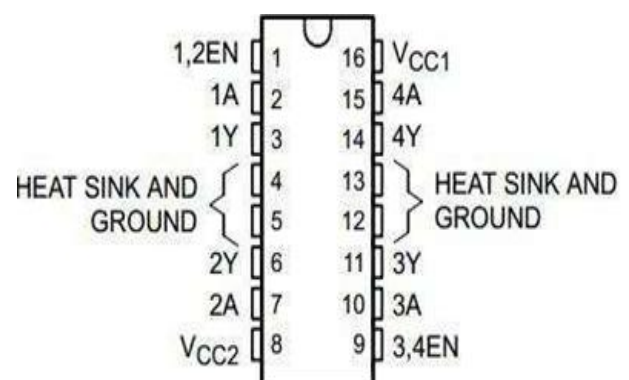
Bluetooth is computing and telecommunication industry specification that describes how mobile phones, computers, and personal digital assistant can easily interconnect with each other and with

home and business phones and computers using a short-range wireless connection. In simple words a Bluetooth module is a chip through which wireless Bluetooth communication can be established between two devices. The Pin diagram is depicted below:



VII. L239D MOTOR DRIVER

This motor driver is a driver IC that can drive two motors simultaneously. L239D IC is a dual H-bridges capable to drive a dc motor in bi-directional. L239D IC is a current enhancing IC as output from the sensor is not able to drive motors itself so L239D is used for this purpose. It is a 16 pin IC having two enable pins which should always be remain high to enable both the H-bridges. The pin diagram is given below:-



VIII. RESULTS

The working model was tested on Arduino. The function of robot is fully controlled by the voice of mobile. The robot will follow all the instructions.

IX. CONCLUSION & FUTURE WORK

The paper is very useful for the future work in voice controlled robot is successfully designed on

arduino. The number of areas in which voice control robot will be useful like in war, for the dense areas etc. This can be also useful for the person who is physically challenged and also useful for marketing also.

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