GALGOTIAS UNIVERSITY

(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

VOICE AND BLUETOOTH CONTROLLED ROBOT

A Report for the Evaluation 3 of Project 2

Submitted by

AMIT KUMAR

(1613101115)

in partial fulfilment for the award of

the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

Under the Supervision of

Dr. NARESH KUMAR, M.Tech., Ph.D.,

Professor

APRIL / MAY- 2020

GALGOTIAS UNIVERSITY

SCHOOL OF COMPUTING AND SCIENCE AND ENGINEERING

BONAFIDE CERTIFICATE

Certified that this project report **"VOICE AND BLURTOOTH CONTROLLED ROBOT"** is the bonafide work of "AMIT KUMAR (1613101115)" who carried out the project work under my supervision.

SIGNATURE OF HEAD

TAPAS KUMAR, M.Tech, Ph.D

Professor

School of computer science and engineering

SIGNATURE OF SUPERVISOR

Dr.NARESH KUMAR, M.Tech, Ph.D

Professor

School of computer science and engineering

CONTENT

Abstract-

The purpose of robotics in commercial and residential intention has to be quite essential for executing challenging work to make simple and easy. Robotics is field where still it requires lots of research and development. This paper represents research on designing and implementation of a voice controlled robot using mobile phone based Arduino uno microcontroller. The whole robot can be controlled by voice input. HC-05 is helping to establish a communication between Arduino and android phone.the voice command is converted into a text by the app of the smart phone and sends a valuable data to the microcontroller for controlling a smart robot.

Chapter 01

Introduction:

The robot has been built with the intention to perform different-different task which can adopt the further modification.

Analysis on numerous technique of controlling robot has accomplished quite a few success by introducing a nuber of innovative and unique methods of robot movement control. Controlling robot with voice and IoT is always an impressive. Robots are supposed to anticipate to Socialize along with the end users. If you analyse then you would find that techniques to control robot using voice identification yet it is reasonably limited. I have demonstrated a development of a voice controlled robot it has a potential to follow the users command. As we all know earlier robot development environment were using Zigbee which is costly device. What I have done exactly? I have used smart phone or android phone using HC-05 is which found in the robot and robot is based on the Arduino uno. What it does? It takes a verbal input from the end user then perform the execution of the instruction accordingly.

Overview:

The robot will be consist of a microcontroller Arduino uno because as we all know Arduino has ability to perform multiple task which shows its versatility or versatile nature of it. The robot will utilize Bluetooth technology and standard communication interface known as SPI interface.

Bluetooth uses radio waves with,safe and less power consuming device.without using any kind of physical contact like wires and cable.

Chapter -02

Operations or controlling movements

I have already defined that this is a voice controlled robot which can be controlled by using voice commands. What ever the command end user will give it will recognize that particular command and perform its respective operation.

End user will give their voice input using their individual smart / android phones. In this your voice input will converted into text then text that text transmit to the microcontroller HC-05 bluetooth module. when microcontroller receives a command then it is execute the command and instruct ther motor driver to respond accordingly. The robot can move forward, backward ,right , left.

We have used dc motors which gives power to the robot to move from one place to another place.

This robot contains 4 dc motors and 4 wheels and one motor shield driver L293D which plays an important role to run the dc motors.

You can stop this robot using simple voice input “stop”

Chapter-03

Functioning model

In this chapter we guys will discuss about the functionality of this catchy robot. Functionality of a robot is always a very interesting likely we always offer an interest in the functionality of the robot and the robotics as well.

The part which plays an important role in the functionality of this robot is-

HC-05

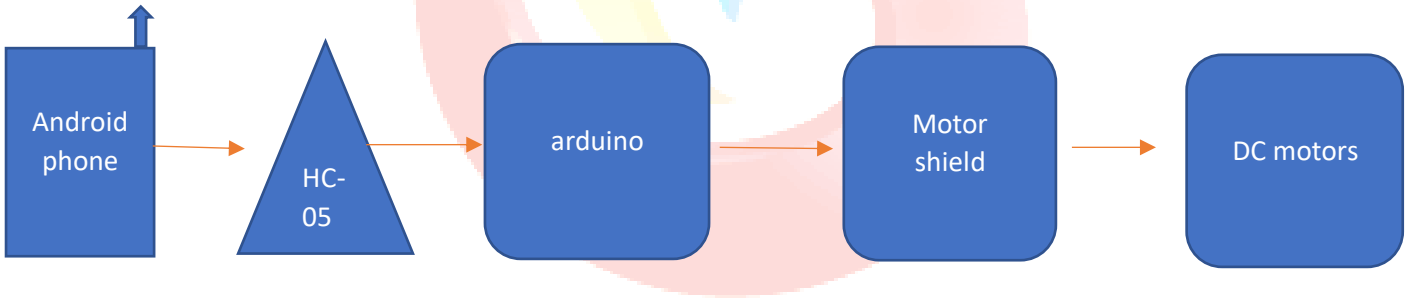
Android phone

Arduino microcontroller

Motor shield

Dc motor

How communication flows-



User gives an input using android smart phone then that particular voice command will converted into a text input then it will transmit to the microcontroller. And microcontroller will read that input and start sending the signal or instruction to the motor shield and then motor will be asked to the dc motor to respond accordingly to the particular voice command. Then dc motor will start moving and wheels also.

Circuit connection:

Central processing will be a Arduino uno consisting of 14 digital and 6 analog pins. The development of the power supply will be implemented using 1M7805 and LE33 which has three terminals of input , ground and output and able to provide fixed voltage with accuracy to maintain the voltage regulation.

Capicitors of different values will be used to contruct circuit for filtering and bypass purpose Bluetooth module will be interfaced with microcontroller using two data pins known as RX and TX.

Motor driver L293D has 16 pins where 4 pins are used to connect two DC motor and another 4 pins are connected to the microcontroller for controlling the dc motors.

Chapter-04

Design and implementation:

The motor driver controller is based on L293D which is a quad, high current half bridge driver that is connect to provide 6i- directional drive current of up to 600 mA at voltage range from 45V to 36V. Input 1 and 2 are connected to the digital pin of 2 and 3 for left motor and input 3 and input 4 are connected to the digital pin 4 and 5 for right motor.

Enable pin of L293D is connected to the digital pin number 6 of Arduino uno for speed control.

RX of the Bluetooth module is connected to TX of arduino uno which is digital pin 1 and TX of Bluetooth module is connected to RX of of arduino uno which digital pin 0.

Software development

Mobile app development


```
Void setup () {
Pin mode (3, output);
Pin mode (4, output);
Pin mode (5, output);
Pin mode (6, output);
}
Serial begin (9600);
Void (00 pc)
{
If (serial. Available ())
{
int z= serial void();
if(z==1)
{
digital write (3,HIGH);
digital write(4,LOW);
digital write(5,HIGH);
digital write(6,LOW);
}
if(z==2)
{
```

```
digital write(3,LOW);
digital write(4,HIGH);
digital write(5,LOW);
digital write(6,HIGH);
}
if(z==3)
{
digital write(3,HIGH);
digital write(4,HIGH);
digital write(5,HIGH);
digital write(6,LOW);
}
if(z==4)
{
digital write(3,HIGH);
digital write(4,LOW);
digital write(5,HIGH);
digital write(6,HIGH);
}
if(z==5)
{
digital write(3,LOW);
digital write(4,LOW);
digital write (5, LOW);
digital write(6,LOW);
   }
        }
}
```

Result and Analysis of Developed Robot

When we are providing voice command using Android smart phone what happing there is that application is converting / changing your voice input into textual/ text input.

Textual content will be transmitted to the arduino using HC-05 module through mobile phones which usually holds a microphones to process the signal and the robot will stand responding according to the end uses command .In appendix table 1 is showing the instructions utilized for the movement of the robot. The robot is able to move forward and backward and performing Rodial turns. According to the input given to L293D from arduino uno which gives input according to command received from the user.

I gave command turn right then it turned right.

Proper assembled integrated robot image is attached with appendix.

CONCLUSION

We are living in the era where we all are focusing our respective task and how we all can ease our task.

No one wants to put efforts like physical effort and this nature of us bending towards an innovation or in another way we can call it robotics.

Robotics is the key which we have at this scenario. As we all know this era is adopting new technique as / technologies which moves it more smarter more powerful.

In this I have developed a robot which can be controlled by human voice and it is very cost effective. Whatever the command end user will give it will execute all those.

It has ability to move forward, backward, radial right turns, radial left turns, stop.

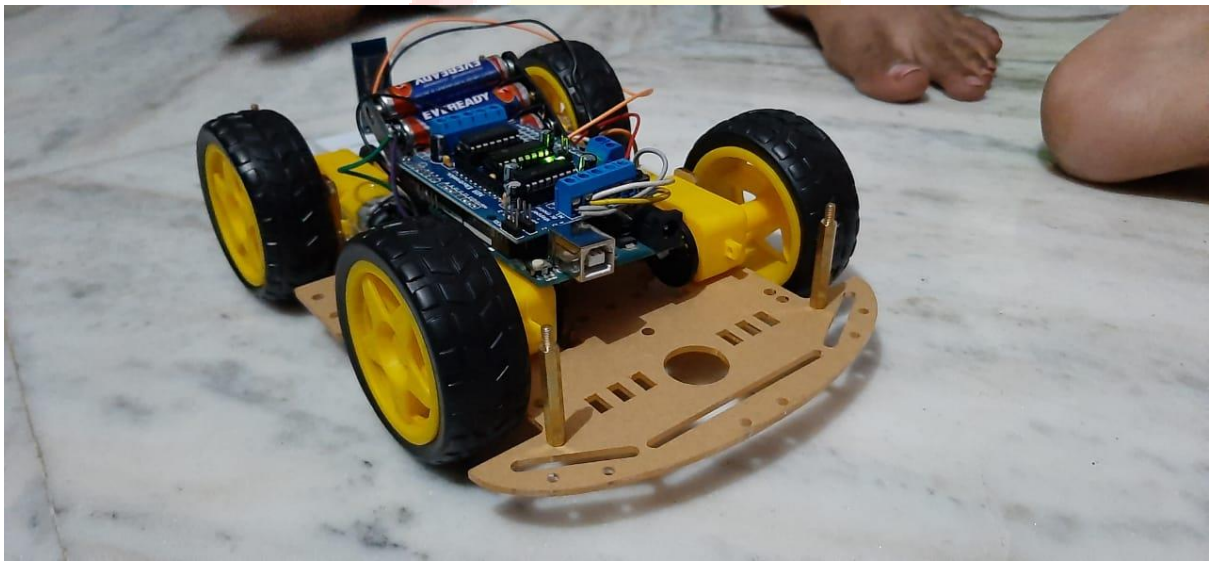
It has built with the intention of future updates. In future in case if you want to add some more attributes then you can easily add without a second thought.

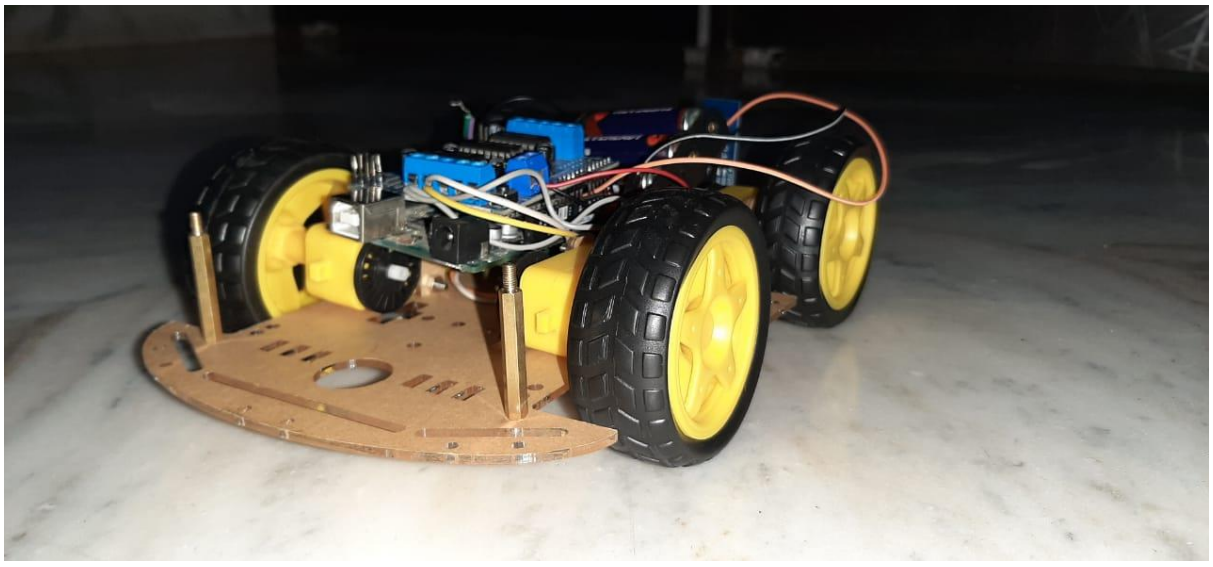
In future I am looking to add some AI (Artificial Internet) features by which we can avoid android phone for the command transmission then we can directly communicate voice recogonisation hardware inside the robot.

Appendix:

Table-1

Voice command	Input 1	Input 2	Input 3	Input 4	Direction
Stop	0	0	0	0	Stop
Forward	1	0	1	0	Forward
Backward	0	1	0	1	Backward
Left	0	1	0	0	Left
right	0	0	0	1	right





References

Make my first robot book by vineesh kumar

Arduino project hub

p.rasal “voice controlled robotic vehicle” international journal of new trends in electronics and communication.

Prof. v.a. badadhe, Priyanka Deshmukh,sayali bhukbal,priti bhandare ,”sBOT: a face authenticated and speech controlled robot(IJARECE)