

Design and Implementation of a AI Automotic Decesion Robot using Arduino UNO controller

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Abstract— A robot is usually an electro-mechanical machine that is guided by computer and electronic programming. Many robots have been built for manufacturing purpose and can be found in factories around the world. Now a day a human need to work the robot automatically. In this project are used the Arduino UNO controller. This controller are fitted in the program as per the application of robot. This arduino are interfacing two motor, Bluetooth module. This robot are totally wireless by using an android app. To send the command to arduino through the android app, like robot move Left, Right, Forward, Reverse. Sensors are used to detect the objects then robot works peak and place the object or move the object from one place to another place. This overall work goes the arduino.

Keywords: *Arduino UNO, DC Motor, Motor Driver, Bluetooth Model, Ultrasonic Sensor, Wheel, Power Supply, Android*

App

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I. INTRODUCTION

So, it makes sense to look at ways to leverage the Arduino to build robots. The robot base is simple to build and can be constructed out of a variety of materials; no special tools are required. I'll demonstrate a version made of expanded PVC plastic, but you can use heavy cardboard, foam board, picture frame mat board, or most any other material you like. (For your convenience, you can get the robot chassis precut with all the hardware; see the Sources box for more information.) I believe in robot designs that let you explore and experiment, and the ArdBot leaves plenty of room for expansion and independent discovery. You can use the robot for line or wall following, maze solving, or general meandering around in a room. (Cat scaring optional.) You can also take the concepts presented here and design your own version of the ArdBot bigger or smaller, wheels or tracks your choice. In this instalment, you'll learn all about the Arduino: what it's made of, how to connect it to your computer, and how to start developing robot projects for it. You'll also be introduced to the ArdBot chassis, including where to get its main parts. In coming instalments to this series, you'll explore programming the robot to do interesting things, and extending its features with sensors and other addins.

II. RELATED WORKS

The proposed system is implemented using the Arduino mega 2560 microcontroller. It has 54 input output pins. The operating voltage of mega microcontroller is 5v. The Bluetooth module and four motors are interfaced with the microcontroller. Motor driver L293D receive 12V from

power supply and drive the motors. Each DC motor is connected to the IN1, IN2 and IN3, IN4 of the driver IC. Movement of the robotic vehicle and arm is based on the direction of rotation of motors. By giving digital high or low values to the motor pins we can rotate it to any direction.

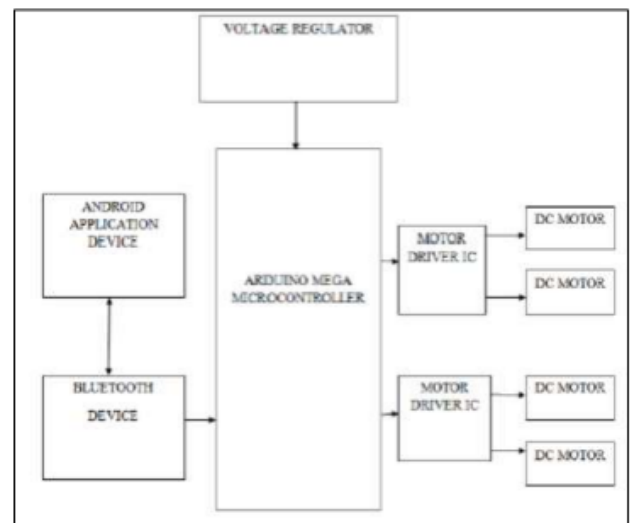


Fig. 1: Block Diagram of Robot

METHODOLOGY

Arduino Uno The arduinouno is a 8 bit microcontroller board based on the at mega 328. It has 14 digital pin 6 analog pin and other power pin such as ground, vcc, it has 14 digital input output pin(of which six can be used as apwm output), 6 analog input, a 16 mhz ceramic resonator

,usb connection a powejack ,an ICSP header ,and reset button ,it has SRAM 2KB and flash memory 32KB EEPROM with 1KB arduino is open source hardware board with many open source libraries to interface it on board microcontroller with many other externak component like led, motors, IR sensor and many other things.one want to interface with arduinoboard. Arduino is a complete board which include all things to connect wutextwernal peripheral and to programme through computer. It contain everything need support to microcontroller.



Fig. 2.1: DC Motor

The almost every mechanical movement that we see around us is accomplished by electronic motor. Electric machines are means of converting energy motor take electric energy and produce mechanical energy electric motor is used 100 of devices we used in everyday life an ex. Of small motor application include using automobile, robot, hand power tools and food blenders. Micro machines are electric machines with part the size of red blood cell and find many an application in medicine. Servos are small but powerful motor that can be used in multitude of product ranging from toy helicopter to robots a servo controlled via pulse modulation.

Bluetooth Model



Fig. 2.2: Bluetooth Model

Place Bluetooth using low-power radio waves, Bluetooth can connects up to eight devices simultaneously 10. Due to its strong connectivity, this technology is preferred over other wireless communication techniques such as infrared networks.to achieve Android Phone Place all this project we will control the robot using android phone by using an application which we will get from android olay store by

installing the application we can move the robot in four direction i.e front, reverse, left and right direction.



Fig. 2.3: Ultrasonic Sensor

Ultrasonic sensors “are based on the measurement of the properties of acoustic waves with frequencies above the human audible range”, often at roughly 40KHz.It measures distance by sending out a sound wave at a specific frequency and listening for soundwave to bounce back. Ultrasonic sensor provides precise, non-contact distance measurements within a 2cm to 3m range. It works in any lighting condition, making this a good choice to supplement infrared object detectors. Motor Driver The L293 and L293D are quadruple high-current half-H drivers. The L293 is designed to provide bidirectional drive currents of up to 1 A at voltages from 4.5 V to 36 V. The L293D is designed to provide bidirectional drive currents of up to 600-mA at voltages from 4.5 V to 36 V .Both devices are designed to drive inductive loads such as relays, solenoids, dc and bipolar stepping motors, as well as other high-current/high-voltage loads in positive-supply applications. All inputs are TTL compatible. Each output is a complete totem-pole drive circuit, with a Darlington transistor sink and a pseudo-Darlington source. Drivers are enabled in pairs, with drivers 1 and 2 enabled by 1,2EN and drivers 3 and 4 enabled by 3,4EN. When an enable input become high, the associated drivers will get enabled, and their outputs will become active. These outputs are in phase with their inputs.

III. RESULTS AND DISCUSSIONS BASIC STEP TO DESIGN

Step 1: First step is the arduino are mount on the heavy cardboard. The arduino are one kind of controller and it is programeable controller. In the arduino are burn (fite) the different program like motor control, sensor programming, Bluetooth module programming etc. 2) Step 2: in step two interface the motor to arduino through motor driver IC L293 in the arduino already burn (fite) the motor programming.

The motor are connect the wheel. Using the motor programming the motor are rotate clockwise and anticlockwise direction

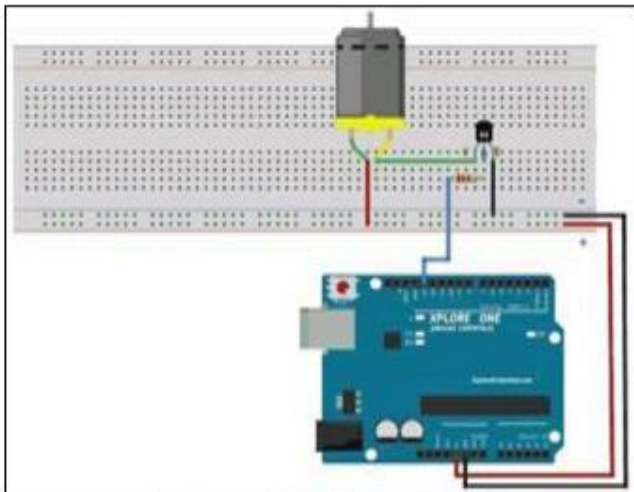


Fig. 4.1: Interfacing of Motor to Arduino

Step 3: step three is interface the Ultrasonic sensor. This sensor are used to detect the object or measure the distance between robot and object.

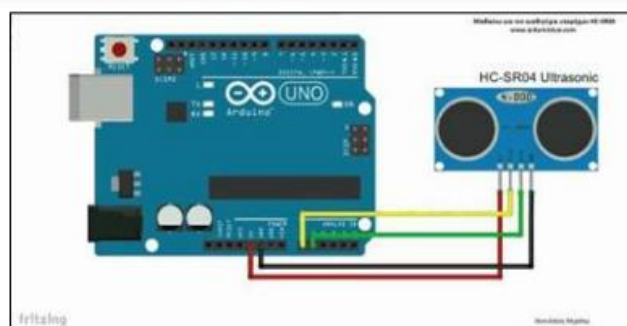


Fig. 4.2: Interfacing of Ultrasonic Sensor

Step 4: in these step interface the Bluetooth module and Android phone to the arduino . The bluetooth module are used to build up the robot totally wireless. The android phone are used to send the command top arduino to move the robot left, Right, Forward, Reverse direction. Used these four steps you can easily design robot.



Fig. 4.3: Interfacing of Bluetooth Module & Android Phone

IV. CONCLUSION

In these research paper we can learn how work robot by using the arduino. And also learn how to interface the different component like motor, Bluetooth module, sensor, etc. in these project the arduino are brain of this robot. This project in feature development to connect the hand and do the different work easily. It can be used by many purposes like reducing man work in industries, in institutes and it also used home automation purpose

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