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VOICE CONTROLLED ROBOT CAR USING ARDUINO

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ABSTRACT

The aim of our project is to make a Voice management automaton automotive mistreatment Arduino. The operating relies on Arduino micro-controller, motor drivers, a Bluetooth module. Arduino is Associate in Nursing open supply hardware (single board microcontrollers and kit) used for building digital devices. The idea is to first style the Hardware of the automaton Car and code the entire working mistreatment our previous data of programming. The code can then be simulated on software package (IDE) and later be interfaced with the hardware. The coordination of management unit with Bluetooth gizmo is accomplished utilizing a Bluetooth module to catch and read the voice orders. The dominant remote is a sensible humanoid device with Bluetooth application. we have a tendency to picked this as our project as AI has become a major half of our everyday life style and also have a wide scope in the engineering field. It plays an important role in the development of latest technology.

1. INTRODUCTION

Robotics is associate degree evolving technology. There are varied approaches to build robots, and no one is sure which method or technology can be used a hundred years from currently. Artificial intelligence is evolving like the Darwinian organic process theory of survival of the fittest. it'll be connected via motors and different various elements of automotive. Once the Bluetooth app is turned on and is connected with the current system via Bluetooth, one can operate the automotive by giving wireless commands via Bluetooth from the robot victimization the functions already programmed within the app. The vehicle can motion in four directions:

The directions are Forward, Backward, Right and Left. In forward command, all four wheels can move identical direction and for backward commend is movement of the motors will be in wrong way. For left and right movements, either of motors can rotate and to the motors can stop. Directions are given to the motors through the Bluetooth app of robot Smartphone by the user.

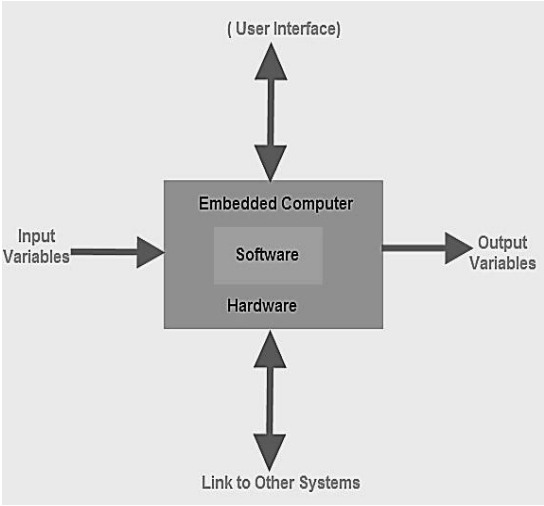
2. EMBEDDED SYSTEM

An Embedded system is combination of hardware and computer code. The software is termed as code. it's one reasonably a pc system mainly designed to perform many tasks like to access, method and store and conjointly control the knowledge in varied electronics-based systems. one among its most control systems. The embedded software utilized in set of directions that ar termed as a program. The microprocessors or microcontrollers utilized within the hardware circuits of embedded systems ar programmed important characteristics of these systems is, it offers the o/p among the deadlines. So, we have a tendency to regularly use embedded systems in simple and complex devices too. The applications of embedded systems is involving daily routine of the human life, Like microwave-oven, calculators, TV device, home security and to perform specific tasks by following the set of directions. These programs are primarily written victimization any programming computer code like Proteus or Lab-view victimization any programming languages like C or C++ or embedded C. Then, the program is loading into either microprocessors or microcontrollers.

Embedded systems are primarily classified into differing types of quality of hardware & computer code and microcontroller. TSmall scale embedded systems

- Medium scale embedded systems
- Sophisticated embedded systems Further, supported on performance and functional requirements of the system embedded system classified into four types such as:
- Real time embedded systems
- Stand-alone embedded systems
- Networked embedded systems

- Mobile embedded systems



3. LITERATURE SURVEY

3.1 Robot management vogue exploitation humanoid Smartphone Authors: Mrumal K Pathak, Javed Khan, Aarushi Koul, Reshma KalaneRaunak Varshney.

The motivation behind this paper is to furnish very good machine humanoid stages with easier mechanism instrumentation vogue. This paper depicts the suggests that thanks to management a mechanism utilizing transferable through Bluetooth communication, some highlights regarding Bluetooth innovation, segments of the versatile and mechanism. It presents associate audit of mechanisms unnatural by smart phone by suggests that of moving the automaton upward, reverse, left and right side by the humanoid application, as an example, Arduino, Bluetooth.

3.2 Smart Phone Controlled mechanism exploitation ATMEGA328 Microcontroller. Authors: Aniket R. Yeole, Sapana M. Bramhankar, Monali D. Wani, Mukesh P. Mahajan:

In this paper have structured a mechanism which can be controlled exploitation associate application running on associate humanoid smartphone. It sends management order by suggests that of Bluetooth that has sure highlights like dominant the speed of the engine, police work and sharing the data with phonephone regarding the bearing and separation of the mechanism from the closest hindrance.

3.3 Humanoid Controlled Bluetooth mechanism exploitation 8051 Microcontroller. Authors: Ritika Pahuja, Narender Kumar:

A mechanism is is sometimes associate electro-mechanical machine that's radio-controlled by laptop computer and electronic programming. varied robots unit of measurement worked for producing reason and can square measure found in production lines around the globe. This paper builds up the remote fastens within the humanoid application that management the mechanism movement with them. what's extra, throughout that Bluetooth communication is use to interface controller and android. Controller is interfaced to the Bluetooth module but UART convention.

3.4 Robot Controlled automobile exploitation Wi-Fi Module Authors: S R Madkar, Vipul Mehta, Nitin Bhuwania, MaitriParida:

This paper, deliberate the because of management robot controlled vehicle utilizing Wi-Fi module through humanoid application of associate humanoid smart Phone. it's also show that the apparatuses would possibly even be controlled even whereas not associate humanoid phone phone by inflicting a customary SMS. This task is additionally adjusted effectively to include a covert agent camera too that's in a very position to stream the recordings to the consumer over wireless local area network. daylight primarily based cells unit of measurement rather than the customary metal battery for the venture.

3.5 Bluetooth Controlled mechanism exploitation pic microcontroller Authors: Ritika Pahuja, Monali D. Wani:

Bluetooth Controlled mechanism This project is employed to manage mechanism motion exploitation Bluetooth and humanoid application. User send management commands from humanoid app to Bluetooth that's connected with pic microcontroller. Microcontroller receives commands from Bluetooth and take many actions to drive two motors. These two motors unit of measurement connected with microcontroller through motor driver circuit remarked as L298N. Bluetooth Controlled mechanism involved building a mechanism that is in a position to receive commands via Bluetooth therefore execute those commands. associate humanoid app was accustomed send the

commands via Bluetooth. Commands were received by Bluetooth module connected to microcontroller and to boot the microcontroller then dead those commands.

4. EXISTING SYSTEM

A mechanism is usually associate electro-mechanical machine that's radio-controlled by laptop computer and electronic programming. varied robots unit of measurement worked for producing reason and can be found in production lines around the globe. This paper builds up the remote fastens within the humanoid application that controls the mechanism movement with them. what's extra, within that's Use to manage via button and humanoid. Controller is interfaced to the Button module however UART convention.

Disadvantage

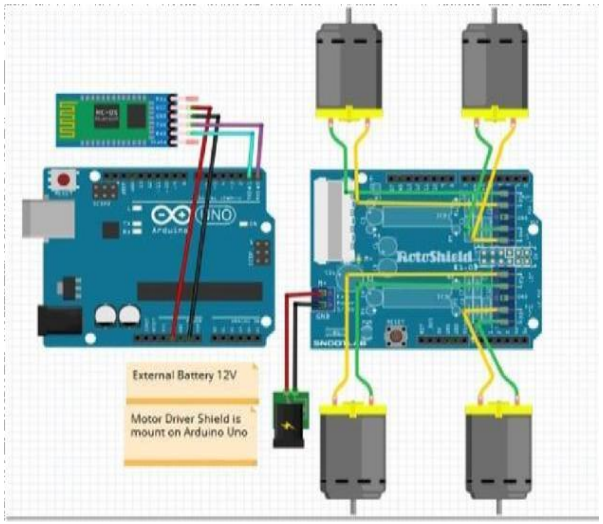
1) The mechanism is useful in places where humans notice difficult to understand in but human voice reach. Such as- in fire things, in extraordinarily unhealthful areas.

2) The mechanism unit of measurement on the point of is used for observation or investigation.

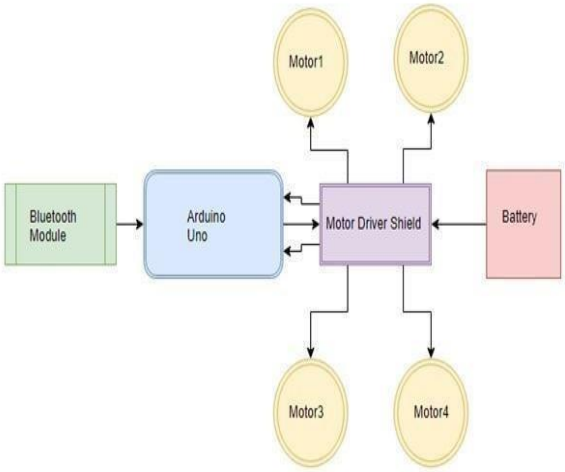
5. PROPOSED SYSTEM

The Arduino Wireless Voice Controlled mechanism includes of a transmitter and a beneficiary section. The transmitter end includes of Smartphone Bluetooth and put together the humanoid application introduced thereon. Thus, the Receiver area has Arduino board as a processor, HC-05 Bluetooth Module as a distant communication module, L293D for driving engines, and a mix of DC designed as a chunk for moving mechanism.

BLOCK DIAGRAM



CIRCUIT DIAGRAM



The circuit includes of Arduino UNO Board, HC05/HC-06 Bluetooth Module, L293D Motor Driver IC, a mix of DC double-geared Motors of 200 rate and a 9V Battery. The TX, RX pins of Arduino is expounded to Rx, Lone-Star State pins of Bluetooth Module. The Bluetooth Module is given 5V. primarily, left DC engine is imagined to pin no 3 and 6 of L293D and right DC engine to keep no fourteen and eleven of L293D. Arduino advanced pins 2,3,4,5 is claimed to L293D 2, 7, 10, fifteen severally. The L293D IC Pins 2, 5, 12, 13 is GND pins, and 9, 1, sixteen is well-appointed 5V. Be that as a results of it's planning to pin eight of L293D is foursquare given 9V.

Advantage:

1. The mechanism is little in size, therefore less house required.

2. we've got an inclination to stand live planning to access the mechanism vehicle from the house of meters as we've got an inclination to stand live exploitation LAN for the association between mechanism and together the server pc.

3. As we've got an inclination to stand live U.S.A. camera which may be attach to the mechanism thus it's attending to capture video which can be used for security.

4. Low power consumption.

5. No accident is finished by improper driving individuals of individuals} and together offered for older and disabled individuals.

A. ARDUINO UNO

The Arduino UNO is Associate in Nursing open- provide microcontroller board supported on the semiconductor unit ATmega328P microcontroller and developed by Arduino.cc. The board is given sets of digital and Analog input/output (I/O) pins which can be interfaced to varied growth boards (shields) and various circuits. The board has fourteen Digital pins, six Analog pins, and programmable with the Arduino IDE (Integrated Development Environment) via a sort B USB cable. It got to be supercharged by a USB cable or by Associate in Nursing external 9-volt battery, although it accepts voltages between seven and twenty volts. it's together nearly rather just like the Arduino Nano and sculptor. The hardware reference vogue is distributed beneath a selected Commons Attribution Share-Alike 2.5 license and is on the market on the Arduino computing device. Layout and production files for a some versions of the hardware unit of measurement offered. "Uno" implies that one in Italian and was chosen to mark the discharge of Arduino code (IDE) one.0. The Uno board and version one.0 of Arduino code (IDE) were the reference versions of Arduino, presently evolved to newer releases. The Uno board is that the primary in Associate in Nursing passing series of USB Arduino boards, then that the reference model for the Arduino platform. The ATmega328 on the Arduino Uno comes pre-programmed with a boot loader that allows uploading new code there to whereas not the utilization of Associate in Nursing external hardware computer user. It communicates exploitation the initial STK500 protocol. The Uno together differs from all preceding boards in this it doesn't use the FTDI USB-to-serial driver chip. Instead, it uses the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial device The Arduino project started at the Interaction vogue Institute Ivrea (IDII) in Ivrea, Italy. At that time, the students used a BASIC Stamp microcontroller at a worth of $100, a considerable expense for several students.

In 2003 Hernando Barragan created the event platform wiring as a Master's thesis project at IDII, beneath the management of Massimo Banzi and Casey Reas, WHO unit of measurement known for work on the method language. The project goal was to make easy, cheap tools for creating digital comes by non-engineers. The Wiring platform consisted of a circuit board (PCB) with Associate in Nursing ATmega168 microcontroller, Associate in Nursing IDE supported method and library functions to easily program the microcontroller. In 2003, Massimo Banzi, with David Mellis, another IDII student, and David Cuartielles, supplementary support for the cheaper ATmega8 microcontroller to Wiring. but instead of continued the work on Wiring, they forked the project and renamed it Arduino. Early Arduino boards used the FTDI USB-to-serial driver chip Associate in Nursingd AN ATmega168. The Uno differed from all preceding boards by that has the ATmega328P microcontroller Associate in Nursingd AN ATmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial device

B. BLUETOOTH MODULE HC-05

1. It is employed for several applications like wireless telephone receiver, game controllers, wireless mouse, wireless keyboard and heaps of more shopper applications.

2. Its range up to <100m which depends upon transmitter and receiver, atmosphere, geographic & urban conditions.

3. It is IEEE 802.15.1 standardized protocol, through which one can build wireless Personal Area Network (PAN). It uses frequency-hopping spread spectrum (FHSS) radio technology to send data over air.

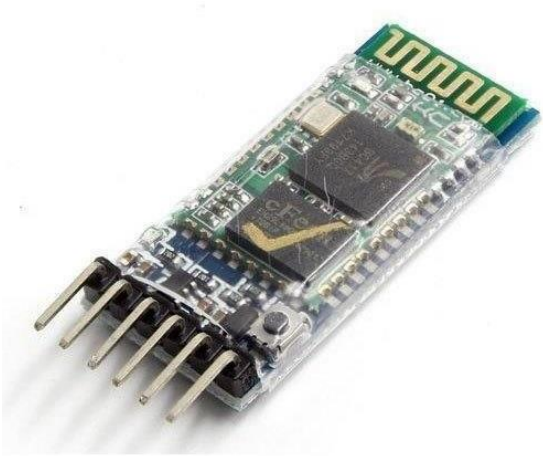
4. It uses serial communication to talk with devices. It communicates with microcontroller using port (USART).

HC-05 Bluetooth Module - HC-05 is a Bluetooth module which is intended for wireless communication. This module is utilized in a very master or slave configuration.

HC-05 module Information - HC-05 has red LED Bluetooth is connected or not. Before connecting to HC-05 module this red LED blinks continuously in an exceedingly periodic manner. When it gets its connected to the opposite Bluetooth device, its blinking slows all the way down to two seconds.

This module works on 3.3 V. we will connect 5V supply voltage similarly since the module has on board 5 to a few 3 V regulator.

As HC-05 Bluetooth module has 3.3 V level for RX/TX and microcontroller can detect 3.3 V level, so, no must to shift transmit level of HC-05 module. But we'd prefer to shift the transmit voltage level from microcontroller to RX of HC-05 module.



HC-05 Bluetooth Module

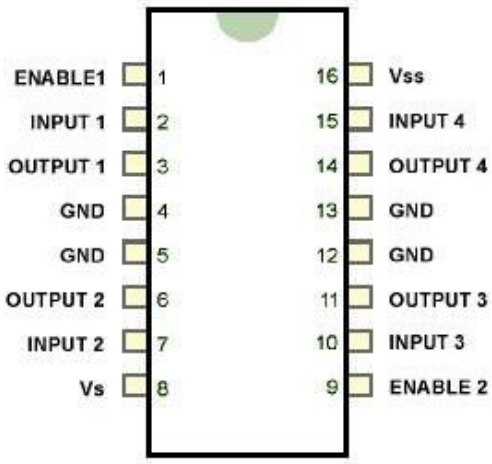
C. L293D –MOTOR DRIVER IC

We start with the L293D. L293D could also be a preferred motor driving IC. It is a 16 pin IC. The IC has 8 pins on both the perimeters. it's 2 enable pins, 1 VSS pin, 1 VS pin, 4 ground pins, 4 input pins and 4 output pins. Though not required here, but just in case you'd prefer to be told the way to interface L293D with a microcontroller.

Enable – the enable pins, when are given **true,** (i.e., 1) then they permit the respective a part of theIC. The enable 1 chip enables the Left part of the IC for inputs and outputs, and then does the Enable 2 does to the correct a part of the IC.

PIN DESCRIPTIONS

VS – this pin is given the voltage that we've got to provide to the motors. This voltage comes out through the output pins. thanks to the gates utilized in the IC, the output is usually one.8 to a pair of volts but the Vs..



L293D Pin Configuration

a) VS – this pin is given the voltage that we have to supply to the motors. This voltage comes out through the output pins. Because of the gates used in the IC, the output is sometimes 1.8 to 2 volts less than the Vs.

b) Input – the input pin decides whether or not output desires incline to tend to the individual output pin or not. once the Input is true, then output is additionaly 1in the individual output pin. once input among the Input pin is zero, and then output within the individual output pin is in addition zero.

c) Output – the output pin is connected to the terminals of the motor. The input pins, as declared higher than, management its output.

d) GND – these pins area unit the bottom pins, or, in different words, Zero.

The L293D IC are going to be accustomed management a most of four motors at the same time. once four motors area unit connected to the IC, then for operation, -ve of each of the motors is connected to the GND, and the+ve terminal to the outputs.

D. BATTERY 12V 1.3 AMPS

A battery can be a source of power consisting of 1 or more electrochemical cells with external connections for powering electrical devices like flashlights, mobile phones, and electric cars. When battery is supplying power, its positive terminal is that the cathode and its negative terminal is that the anode. The terminal marked negative is that the source of electrons which can flow through an external circuit to the positive terminal. When battery is connected to an external electric load, a redox reaction converts high-energy reactants to lower-energy products, and also the free-energy difference is delivered to the external circuit as electricity. Historically the term "battery" specifically observed a tool composed of multiple cells; however, the usage has evolved to include devices composed of 1 cell.

6. CONCLUSION

The planned framework of our project shows that but a mechanism unit of measurement generally management utilizing Bluetooth. The voice dominant orders unit of measurement effectively transmitted through Bluetooth innovation then like and in addition the desired activities effectively happen. This task lessens human endeavors at spots or circumstances where human intercessions unit of measurement laborious

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REFERENCE

[1] Type of a Bluetooth Enabled automaton Application for a Microcontroller Driven mechanism by Vito M. Guardi, (May 2014).

[2] Automaton Controlled Mobile mechanism by Jorge KazacosWinter, (July2013).

[3] Automaton based mechanism Implementation for decide and Retain of Objects By Ranjith Kumar Goud, B. Santhosh Kumar, (Oct 2014). sensible phone based robotic management for investigating applications By M.Selvam,(IJRET 2014).

[4] Dominant a mechanism victimization automaton Interface and Voice by Kishan rule kilocycle per second, (2012). [6] Motion management of wheeled Mobile mechanism by GyulaMester, (SISY 2006).

[5] Type of PI and inflammatory disease Controllers with Transient Performance Specification by J. C. Basilio and S. R. Matos, (IEEE 2002).

[6] mechanism management vogue supported Smartphone by Xiao lutecium, Wenjun Liu, Haixia Wang, Qia Sun, IEEE, 978-1-4673-1382, pp-2820-2823, Jun 2013.

[7] Automaton phone-controlled mechanism victimization Bluetooth by Arpit Sharma, Reetesh Verma, Saurabh Gupta, Sukhdeepkaurbhatia, IJEEE, Vol.7, pp-443-448, Nov2014.