KDT

Arduino Project

Our project is a small car based on Arduino platform which can be controlled using Bluetooth and a Android app.

Overveiw Project

- Introduction
- Project Reveiw
  - Blutooth Controlled
  - Line Follower
- Components
- Work Of Components
- Connections
  - Setup Connection
  - Pin Connection
  - Power Connection
- Coding
  - Arduino Code
  - Android App Code
  - Web code
- Project Aim

KDT

KDT

Introduction

In this project we have used a toy car for demonstration. Here we have selected a RF toy car with moving left right steering feature. After buying this car we have replaced its RF circuit with our Arduino circuit. This car have two dc motors at its front and rear side. Front side motor is used for giving direction to car means turning left or right side (like real car steering feature). And rear side motor is used for driving the car in forward and backward direction. A Bluetooth module is used to receive command from android phone and Arduino UNO is used for controlling the whole system.

Project Reveiw

This project consists of presenting a didactic robot from a line-following Arduino robot car using the IR sensor modules, the ultrasonic sensor among other components, as well as the assembly of its mechanical structure.

The project is basically constituted by a physical structure similar to a simple vehicle, responsible for supporting the electronic components that will process the signal to make the robot move according to the path it must follow. Figure 2 illustrates the robot's internal region.

KDT

Blutooth Controlled

After developing few popular robotic projects like line follower robot, edge avoiding robot, DTMF robot, gesture controlled robot, etc. in this project we are going to develop a bluetooth controlled robo car. Here we used a Bluetooth module to control the car, and it is also an android based application.

KDT

Line Follower

The concept of working of line follower is related to light. We use here the behavior of light at the black and white surfaces. When light falls on a white surface it is almost fully reflected and in the case of a black surface light is completely absorbed. This behavior of light is used in building a line follower robot.

KDT

Components

1. Toy Car
2. Arduino UNO with Cable
3 . Bluetooth Module
4. Gear Motor
5. Motor Driver
6. Motor Wheels
7. Jumper Wires
8. Battery
9. Some Led
10. IR Sensors
11. Touch Sensors
12. LDR Sensors
13. PIR Sensors
14. Switch Sensor
15. Speaker
16. Bridge Rectifier
17. Simple Wires
18. Electrical instruments
19. Bluetooth Controller App
20. Android device
21. Arduino IDE

KDT

Work Of Component

All parts word diffrent diffrent something like this.

KDT

* Toy Car

It's for design car and setup all parts.

* Arduino Board

The Arduino software is used to build the code for every project made using any Arduino boards; it mostly uses the C/C++ language for its coding. Once the code is ready, we have to just compile and upload it on the board to make our project work. There are many types of Arduino boards like Arduino Uno, Arduino Nano, Arduino USB, etc. In this project, we are going to use the Arduino UNO board (Atmega 328p).

* Bluetooth Module

HC Bluetooth module consists two things one is Bluetooth serial interface module and a Bluetooth adaptor. Bluetooth serial module is used for converting serial port to Bluetooth.

* Gear Motor

We have used two geared motors at the rear of the line follower robot. These motors provide more torque than normal motors and can be used for carrying some load as well.

KDT

* Motor Driver

The L298N Motor Driver Module is responsible for providing the necessary drive current to the motors of the robotic car. I have provided information about L298N Module in an earlier project called Arduino DC Motor Control using L298N.

* Motor Wheels

wheels used for car moving and simply its work.

* Jumper Wires

Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering. Jumper wires are typically used with breadboards and other prototyping tools in order to make it easy to change a circuit as needed. Fairly simple. In fact, it doesn't get much more basic than jumper wires. It is 3 type male to male, female to female, female to male

* Battery

Battery is one of the most important thing in this project ! It's use for current in circuit I use 3.7v battery 4pcs when these are connected to serise conection then its work base on 14.8v and this power user in motor driver and arduino.

KDT

* LED

In this project led used for light as front light, back light, left light etc.

* IR Sensor

It's used for line follower black object detection. Its's not working black surface and sun light

* Touch Sensor

It's used for light connection toggle on and off in arduino.

* LDR Sensor

It's used for known brightness like day or night.

KDT

* PIR Sensor

PIR sensors are most commonly used in motion-based detection, such as in-home security systems. When a moving object that generates infrared radiation enters the sensing range of the detector, the difference in IR levels between the two pyroelectric elements is measured. The sensor then sends an electronic signal to an embedded computer, which in turn triggers an alarm.

* Switch Sensor

It's used for light connection toggle on and off in main circuit.

* Speaker

It's used for horn when car will going to reverse then its work.

* Bridge Rectifier

When battery will going to die then cahrging battery from bridge rectifeir

* Simple Wires

Simple Wires are used to bear mechanical loads or electricity and telecommunications signals and connectoins for motor and battery etc.

* Electrical instruments

Electrical instruments are instruments that use the mechanical movement of electromagnetic meter to measure voltage, power, current... Electrical technicians require electrical measurement equipment to check the electrical activity and to detect the presence of voltage or current. By using this instrument we can measure electrical parameters such as voltage, frequency, current, power factor, and resistance. Electrical measurements are depended upon either current or voltage while measuring the frequency we will be measuring the frequency of a current signal or a voltage signal.

KDT

* Bluetooth Controller App

After installing app you need to open it and then search Bluetooth device and select desired Bluetooth device. And then configure keys. Here in this project we have used Bluetooth controller app.

* Android device

It's used for handling car from blutooth car app

* Arduino IDE

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.

KDT

Connections

- Setup Connection

In this connection is only simply like joining all part to toy car.

- * Pin or Physically Connection

Here, I want to tell one important point that, The code that will be given should be uploaded before connection of the pins; else you will face an error in uploading the code, so, just first copy the code provided below and pasted in the Arduino software and upload it to the board before the pin connections.

- * Power Connection

In this connection is electrical connection for battery and his charge and bridge rectifeir connection.

KDT

Coding

In this coding part is three division first one

KDT

* Arduino Code

First install the Arduino software. Installation instructions are very simple, you should not have any trouble with this step.

The code at the master device, or the joystick is quite simple. We just need to read the X and Y values of the joystick, which actually regulate the speed of the motors, and send them via the serial port to the slave HC-05 Bluetooth device. We can note here that the analog values of joystick from 0 to 1023 are converted into a values from 0 to 255 by diving them by 4.

KDT

* Android App Code

Create a separate thread in your code to initiate a connection using the MAC Address that we previously obtained. This thread will manage what happens if a connection is successfully established or failed to be established. It also handles if we want to close the Bluetooth connection.

Create a new project with the empty activity template and select the appropriate name for your app. For this app we will create 2 activities and 2 Java classes :

KDT

*Web App Code

This web for all information of my project and ppt srs and known my group members. If you have any problem then contact our group member. click here for checking my website.

KDT

Project Aim

This project's main motive is to expand the knowledge for smart micro-controllers like Arduino, which is widely used in the latest IoT technologies.

Making the use of Connectivity Modules like Bluetooth HC-05, to understand the different modes of operating and communications with the micro-controller board.

To get familiar with Codes and programs used for the controlling of the Arduino Uno board.

Introductory project for Every Electronics And Electrical Student, to get the working of the Arduino board and its software.

KDT

Thank You

KDT