Gesture Controlled Car

[1]Shraddha S Bhagure, [2]Purva H Mutha

[1]E&TC, SNJB'S KBJ COE, Chandwad, Nashik, Maharashtra(India), [2]Computer Engineering, SNJB'S KBJ COE, Chandwad, Nashik, Maharashtra(India)

Abstract

The moment control based car is a robot, going to be controlled by hand moments. The user just needs to wear a gesture system in which a sensor is included. The sensor will analyze the movement of hand in a specific direction which will result in the motion of the robot in the respective directions. The car and the gesture hand are connected through radio waves which is wireless communication. User can interact with the robot in a more friendly way due to the wireless communication we can control the car using accelerometer sensors connected to a hand glove. The sensors are intended to replace the remote control that is generally used to run the car. It will allow user to control the forward, backward, leftward and rightward movements, while using the same accelerometer sensor to control the throttle of the car. Movement of car is controlled by the differential mechanism. The mechanism involves the rotation of both forth & rear wheels of left or right side to move in the anticlockwise direction and the other pair to rotate in the clockwise direction which makes the car to rotate about its own axis without any kind of forward or backward motion. The Main advantage of this mechanism is the car with this mechanism can take sharp turn without any difficulty.

Index Terms – robotics, gesture, car, IoT, hand movement.

I. INTRODUCTION

In this latest era of robotics the world need to be more advance and to fulfill the robots should understand the human in every aspect here the interface is gesture through which the car is being controlled over RF module. the assigned gesture movement to make the robot locomotive ,the gesture of the human is recognized using ADXL 345 module which is a accelerometer/gyroscope which detects the gesture of human as its position varies with hand movement which is analog signal and then is being converted to a 4 bit digital pulse using a microcontroller ARDUINO UNO.

FINDINGS

The reference systems are mainly focusing on the control of motors & purpose of the system is to design system which can control a car. In many ways the system can be used e.g. toy cars, industrial use, in robotics.

PROBLEM STATEMENT, NEED AND OBJECTIVES OF THE SYSTEM

Problem Statement: Design a circuit of wireless RF communication system for robot which can be controlled by simple human gestures.

Need

To bridge the gap of automatic industry. To increase awareness of peopleabout the latest technology in the engineering.

Objective

The main objective of the project is To develop Arduino based gesture control car, Which will be controlled through the accelerometer and RF device. bright future in industries.

SCOPE OF THE SYSTEM

The scope the system is defined on the basis of various functionalities provided by the system

1. Mainly in home: car toys.
2. Farming field: Overall farming is done by water.
3. In industries and organizations: Construction.
4. almost everywhere, where motor is used.
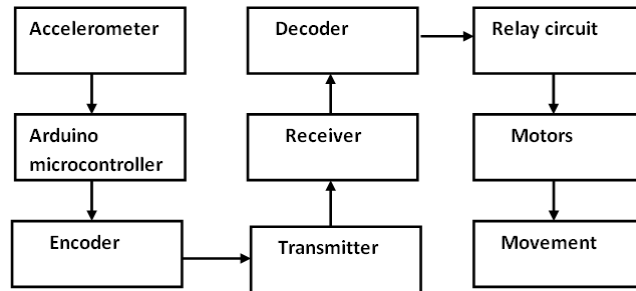
II. BLOCK DIAGRAM

Fig.1Block diagram of system

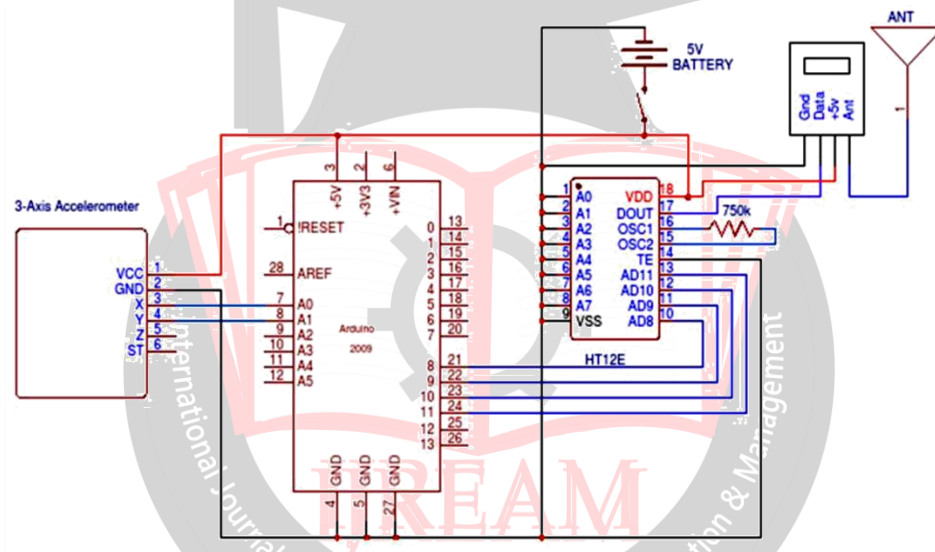## III. WORKING OF THE SYSTEM

TRASMITTER

Fig.2 Circuit Diagram of Transmitter

Circuit is divided into two parts to make the task easy and simple and to avoid complexity and make it error free. The first is the transmitting section which includes the following components: Arduino, Accelerometer, Arduino, Encoder IC, RF Transmitter Module. The transmitter part of the wireless remote control comprises of three components Accelerometer, Encoder HT12E and RF transmitter module which is used for data transmission.

Firstly the accelerometer is connected to the analog pins of Arduino and digital pins are connected to Encoder IC. The accelerometer operated through Arduino coding. Accelerometer has three axes X,Y,Z here we used X&Y only. The IC HT12E was an Encoder IC which is capable of converting 12 bit parallel data inputs into serial outputs [4].These 12 bits are classified into 8 address bits and 4 data bits. The address bits are used to provide secured wireless transmission between the transmitter and the receiver [5]. The address bits used in the transmitter should be similar to the bits used in the receiver part for enabling communication between the Tx and Rx modules. HT12E is capable of operating in a wide Voltage range from 2.4V to 12V and also consists of a built in oscillator [3].

After receiving a low signal the HT12E starts the transmission of 4 data bits as shown in the timing diagram above [5]. The encoder IC will be in standby mode if the TE pin is disabled and thus the status of this pin was necessary for encoding process.
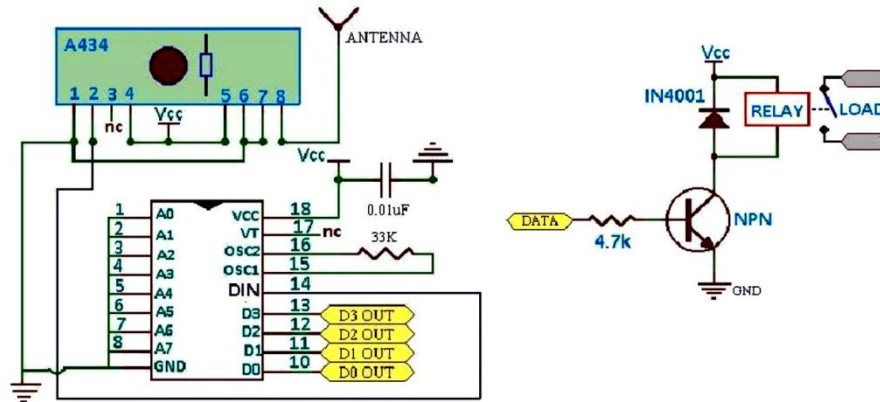
RECEIVER

Fig.3 Circuit Diagram of Receiver

The second is the receiving end which comprises of following main components: RF Receiver Module, Decoder IC, Relays, Motors. The Receiver is comprised of HT12D a matching decoder IC and a RF receiver module for receiving the incoming signal from the transmitter. The HT12D was a matching decoder IC to the HT12E which was consists of similar 8 bit Address bits and 4 data output pin to obtain the input data sent through the HT12E IC. The Decoder IC checks the address values of the incoming signal and then sends out the high signal to the VT pin, But here we grounded it as it has no other purpose. HT12D converts the serial input into parallel outputs [4].

HT12D is capable of decoding 12 bits, of which 8 are address bits and 4 are data bits.. The outputs of decoder C HT12D is given to the relays through the transistor The output of the HT12D drives transistor into saturation and relay gets energizes. The relay contacts are used for motors.

IV. CONCLUSION

The purpose of project is to control a toy car using accelerometer sensors attached to a hand glove. The sensors are intended to replace the remote control that is generally used to run the car. It will permit us to control the forward, backward, left and right movements, while using the same accelerometer sensor to control the throttle of the car. The overall effort is design to reduce the effort of human not only in the field of machine by automation but also to designing the project for the same with the most simplest way by simply replacing the receiver section with totally digital one. Hence the project can be prolonged advance to reach a new height of automation in terms of motion of the human body or can be calculated private eye robot.

V. ACKNOWLEDGEMENT

REFERENCES

[1] http://playground.arduino.cc/Main/MPU-6050

[2] http://www.instructables.com/id/Gesture-controlledrobot-using-Arduino/

[3] www.czhfmtransmitter.com/news/practical-circuit-using-for-ht12e-encoder.../8277.

[4] https://www.engineersgarage.com/electronic-components/ht12e.

[5] www.gadgetronicx.com›/Electronics/transmitter.