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Hand Gesture Robot Car using ADXL 335

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Abstract- In today's world gesture recognition technologies are much newer. Hand gesture recognition is well known done using glove based technique. In our project the vehicle that can be controlled by hand gestures. The gesture controlled robot car is now we controlled by our hand sign and not in our older days controlled using buttons. The controller just they need to wear some small transmission sensor in his hand which acts as accelerometer and at end it receives signals using RF receiver sensor in the car. We refer this idea in some previous projects and we implement some extra features in our project. We uses different sensor to implement better. In previous cases there are some transmission problems but in this we alter the transmission phase and we also fixed extra antenna to transmit extra range of signals. The microcontrollers controls the movement of the robot in the same direction as our hand moves.

Keywords- Arduino, Microcontroller, Transmitter, Receiver..

I. INTRODUCTION

Important component is arduino board is the device for making computers that can sense and control physical world more than the desktop computer. Arduino board interacts with the sensors and switches and gives physical output. signals are transmitted using RF module. It is device which is often used to communicate wireless device. RF transmission module used to transmits signals to the receiver.. The received signals are demodulated using RF receiver module. Motor driver is a electric circuit which is used to apply voltage across a load in any direction. this motor controls circuit in different conversion like DC-DC, DC-AC, AC-AC coverts and also many other types of conversion. Accelerometer is one which helps us to measure direction and magnitude of acceleration in that direction so it recognizes hand gesture[2]. We have to measure this in two directions one is speed and another one is direction. It controls both phase.

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And finally encoder and decoder, encoder is mainly used to interfacing RF and infrared circuits. Interface RF and infrared circuits are mainly used for decoding. The preferred encoder and decoder, must be contained in the identical amount of addresses and data format.This papers deals with the hand gesture control[1] robot car using mainly arduino board. This device consists of two modules RF transmitter and receiver.

Accelerometer used in this device is adxl335 which can accelerate the car[1]. Motor driver is used in this model is L293D which performs flows of current to the motors. At the end of the work, our hand gestures can control the device.

II. RELATED WORK

By the concept of hand gesticulation, navigation of a car robot can be controlled[1].. A user's hand gesticulation is taken into account by a 3-axis accelerometer...For the nautics of a car robot, the 6 control instructions are used. To specify hand movements of the robot the classifier gets the dynamic time warping(DTW) algorithm. Simulation results prove that the classifier could achieve the rate of 92.2% .

Advanced technology, robots play an important role in real time system for hand gestures [3]. There are many robotic services in our society.. Hence, the human-robot communication is set as a key matter for experimentation. Throught his paper we bring in hand sign recognition method. ..Hand gesticulation high sign is a crucial fact for human robot interaction. By using sign language the robot meets the demands of the user easily. Combination of hand gesture reorganization with two distinct recognizers CAR equation is used to recognize the hand gesticulations. One detector uses hand gesture skeleton and other one support vector machines. The trained images uses Bosporus Hand Database [3]. A set of norms are designed to recognize switching and CAR[4] equation. We have successfully demonstrated gesture apprehension through research with manifestation of the idea.

Mservice robot is based on the method of fusion applied by multi sensor for hand sign recognition.. Human robot interaction is achieved by the useful way of hand sign recognition. By the hand and body gestures, the disabled can effectively convey to the caregiver or robot knows what message and instruction they want to convey. In this we propose a combined hand gesture recognition [5]algorithm which unites two unique recognizers. These both recognizers are sighted to appreciate the ability of differentiation. To achieve the human hand sign recognition, we equip two sensors on the service robot and implement the above algorithms on it. We have effectively demonstrated signs recognition through experiment with thoroughly satisfying proof of conceptual results.

III. PROPOSED WORK

A. RF module

An electronic device, that is used to transmit or receive radio signals between two or more devices.. Wireless communication occurs in an embedded system. This wireless communication may be good through optical communication or through radio frequency (RF) communication. Few transmit signals up to certain distance. RF modules are widely used in electronics and it is difficult to design radio circuitry.

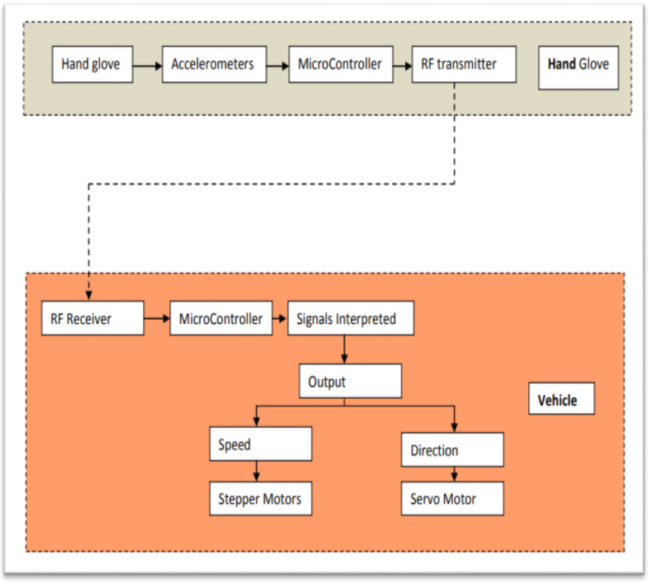
B. Transmitter modules

An RF Transmitter module is able to transmit radio wave and modulating wave to carry signals. Transmitter modules are used to transmit data to the microcontroller. The maximum transmitter power output, harmonics, and band edge requirements are usually subjected to RF transmitter

C. Receiver modules

An RF receiver module receives the modulated RF signal and demodulates it. The two types of modules are super heterodyne receivers and super regenerative receivers. Super-regenerative modules regularly amplifies to extract modulated data. It has low power design and costs less. Super-regenerative modules generally differs with temperature and power supply voltage.

D. SYSTEM DESIGN



In the working of the prototype car there are two main parts of one is transmitter part and other one is receiver part. In the glove transmitter and accelerometer is fixed which is controlled by the micro controller. The transmitter transmits the RF signal to the receiver part which is placed in the car . In RF receiver consists of microcontroller. The signal which is transmitted which is get interupted in receiver and gets output in result of speed, stepper motors , direction and servo motor of the vehicle .

IV. RESULT AND DISCUSSION

The outer frame work is done using tyres and supporting board is fixed to it and the tyres each other with steel road of suitable capacity and which the tyres are connected to the board using wires and also the motors are fixed to the tyres for rotation purpose.

Fig 1. Outer framework

Radio signals are transmitted using transmitter module Without any physical connection, the embedded system is used to interact with each other.. This transmitter is going to fix to the board of the car.

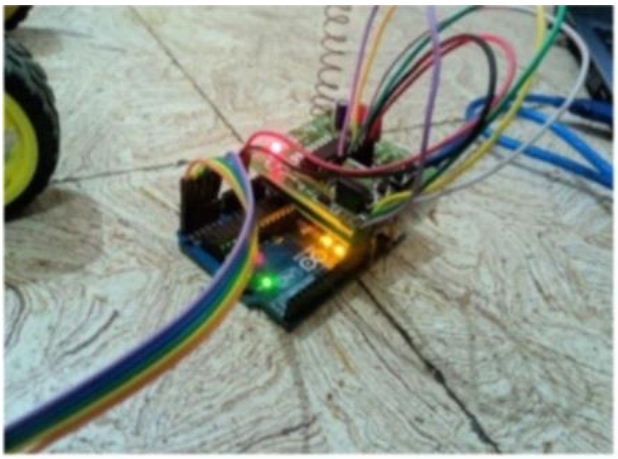


Fig 2 Transmitter

The transmitter and the motor driver which is connected to the board, the batteries are connected to the transmitter and motor driver to supply current. These batteries are first connected to the switch and then to driver and transmitter. In the picture all are connected by wires to the board.

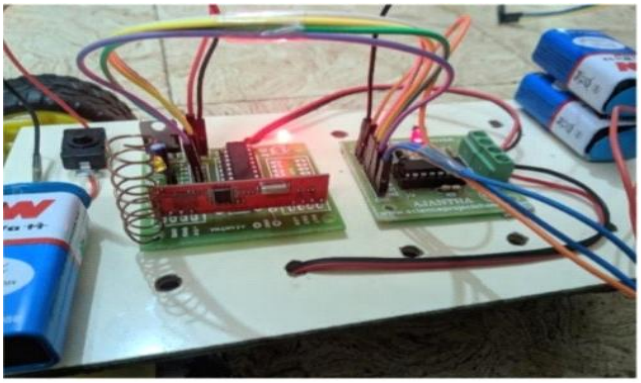


Fig 3 Transmitter and Motor Driver

The total setup is done the overall component are transmitter, motor driver, batteries, switch, board, tyres, motors. By connecting all the motors and sensors we can control or operate the robot car using hand gesture sign effectively.

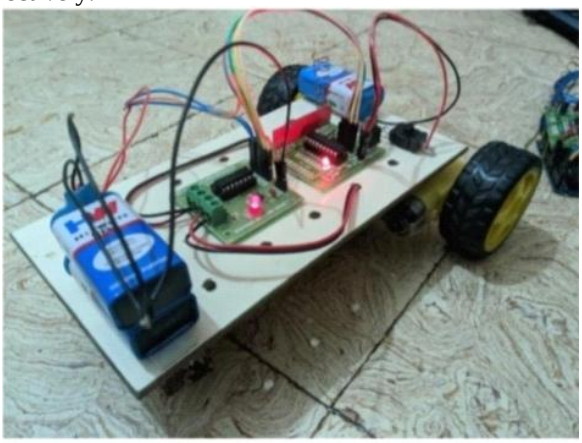


Fig 4 Overall Design

V. CONCLUSION

Gathering the information from different sources we had an idea why not to make them all in same circuit. After successful completion the working loads improving or developing the project. Implementing more unique ideas like "GPS" oriented, so we can easily find out where the exact longitudinal and latitudinal point. Even the mounting of ultrasonic sensor and other sensors for the complete information about the place where the car is being operated & make it useful for the society .The most important feature is to interact with the application from the distance object without any physical contact .The future enhancement of our project is mainly used for military purpose which is used for hacking purpose of wifi in certain areas by using raspberry pi and esp8266 sensor.

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