# Wireless Gesture Controlled Robot

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Abstract—This document presents a representation for Wireless Gesture Controlled Robot and identifies trends in technology, application and usability. In a lot of request of controlling robotic device it becomes somewhat hard and complex when present comes the part of controlling it with distance or several different switches.

Generally In military application, industrial robotics, construction vehicles in civil side, medical application for treatment. In this field it is fairly problematical to control the robot or particular machine with distant or switches, for a moment the operator may get confused in the switches and key itself, thus a new theory is introduced to manage the device with the movement of hand which will concurrently control the movement of robot.

#### I. INTRODUCTION

Inside this arrangement, a gesture driven robotic motor vehicle is developed, in which the vehicle actions and manipulations that is handling and control is depends on the gesture of the user. In this system, gesture is captured by accelerometer with it is processed via software specially, microcontroller with encoder circuit, it is more transmitted through RF 433 MHZ transmitter. In the receiver part, the RF 433 MHZ receiver holds down the received parameters and process with microcontroller and give those parameters to the robotic vehicles thus that it perform consequently to the gesture. By this method, it is probable to achieve dealing out of extensive distance. This system is intentionally developed to concern in medical field for nursing help to physicians and into surgeries.

#### II. BLOCK DIAGRAM

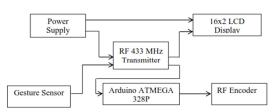


Fig. 1 Block diagram of automobile driving interface system transmitter

In the system we use the gesture sensor for driving interface. In which we give the command to the gesture sensor by any part of body but we mostly use hand movement to give the command to gesture sensor and with respect to that command the vehicle moves. We use transmitter to give the command and receiver to accept that command and vehicle moves.

Mainly we give the five commands to move the vehicle i.e. given below.

- 1. Forward direction
- 2. Reverse direction
- 3. Left side
- 4. Right side
- 5. Stop.

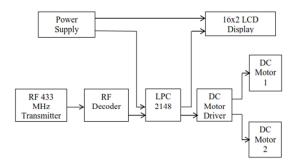


Fig.2 Block diagram of automobile driving interface system receiver.

In this section, we have use LPC 2148 microcontroller. We use 16\*2 LCD display to display the command. Power supply of 5v and 3.3v supplied to the microcontroller and LCD respectively. It consists of RF433MHz antenna to receive the incoming generated radio frequency and transmit it to the RF decoder. RF encoder IC HT12D used for Decoding. RF Decoder IC Decoded radio frequency into binary data and send it to the LPC2148 microcontroller. The microcontroller interfaced with DC Motor driver IC L293D. Motor driver used for drive the motor according to the command received from microcontroller. Two DC motor, Motor 1 and Motor 2 used to drive the car. Both motor controlled by DC motor driver.

# A. Gesture sensor

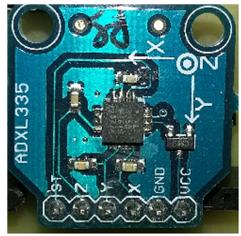


Fig.3 Accelerometer ADXL335

An Accelerometer is a type of sensor which gives an analog information as affecting in X,Y,Z way or may be X,Y

direction simply depends on the type of the sensor. Here is a small image of an Accelerometer shown. We can observe in the picture that present are a few arrow viewing if we tilt these sensors in that way then the data at that equivalent pin will vary in the analog form.

#### B. RF Link



Fig. 4 RF Pair

The single-chip result is an integrated circuit future for employ as a low cost FSK transmitter to set up a frequency-agile RF link. The device is accessible in a 24-lead TSSOP package and is considered to give a fully-functional multichannel transmitter the chip is intended for linear (FM) or digital (FSK) modulated application in the 433-MHz ISM band. The single-chip transmitter operates along to 2.2 V and is specifically designed for low power utilization. The synthesizer has a typical channel spacing of about 230 Hz to permit narrow-band as well as wide-band applications. Appropriate to the narrow channel spacing of the direct digital synthesizer, the DDS can be used to regulate the TX frequency and allows the use of cheap reference crystals.

# C. L293D



Fig. 5 Motor Driver L293D

The L293D be quadruple high-current half-H drivers. The L293 is intended to give bi-directional force currents of up to 1 A by voltages starting 4.5 V to 36V. The L293D is intended to give bidirectional force currents of up to 600 -m A by voltages starting 4.5 V to 36 V. Both devices are designed toward drive inductive loads such as relays, solenoids, dc and bipolar stepping motors in positive supply application.

#### D. LM7805

This sequence of fixed-voltage integrated-circuit voltage regulators is considered for a broad variety of applications. These applications contain on-card regulation for deduction of noise and distribution troubles linked with single-point regulation. All of these regulators are able to transport up to 1.5A of output current. In addition to utilize as fixed-voltage regulators, this strategy can be used by external mechanism

to gain adjustable output voltages and currents, and also be able to be used as the power-pass part in exactness regulators.



Fig. 6 LM7805

## E. LCD Dsplay



Fig. 7 LCD Display

Alphanumeric displays are used in a broad range of applications, together with palmtop computers, word processors, photocopiers, point of sale terminals, medical instruments, cellular phones, etc.

The 16 x 2 intelligent alphanumeric dot matrix displays is able of displaying 224 dissimilar characters and symbols. A full list of the font and symbols is printed on pages 7/8. This brochure provides all the technical specifications for between the unit, which requires a particular power supply (+5V). Obtainable as an possible extra is the Serial LCD Firmware, which allows consecutive manager of the display. This alternative provides much easier link plus employ of the LCD module. The firmware enables microcontrollers to visually output client commands or readings onto an LCD module. All LCD instructions are transmitted in sequence using a single microcontroller pin. The firmware can also be linked to the serial port of a computer.

# F. DC Motor



Fig. 8 DC Motor

DC motor are used to actually constrain the claim as per the obligation provided is a software. The dc motor mechanism resting on 12v. To force a dc motor, we need dc motor driver called L293D.

This dc motor driver is skilled of driving 2 dc motors at a time. In arrange to defend the dc motor from a backside EMF generated through the dc motor as altering the way of turning round. The dc motor drivers have an interior defense suit. We can also provide the back EMF defense suit by linking 4 diode configurations across each dc motor.

#### G. ARM Processor



Fig. 9 ARM Processor (LPC214X)

The ARM7 is a general purpose 32-bit microprocessor, which offers high recital and extremely small power utilization. The ARM construction is based on Reduced Instruction Set Computer principles, and the instruction set and linked decode mechanism are a lot simpler than those of micro programmed Complex Instruction Set Computers. This simplicity results in a high instruction throughput and remarkable real-Time interrupt reaction from a tiny and commercial processor core.

Pipeline techniques are working so that all parts of the processing and memory systems can work endlessly. Classically, while one instruction is being executed, its successor is being decoded. The ARM7 processor also employs a single architectural approach known as Thumb, which makes it perfectly suited to high-volume applications with memory limitations, or applications where code density is an issue.

# III. FUTURE SCOPE

By using the zigbee we can able to increase the distance of transmission. By using the GSM and GPS we can locate the system and we operate the system anywhere. By adding the IR Sensors to detect the obstacles in the path and we can detect obstacles in the path. Presently in the system a minimum threshold value is set up and using that value input image frame is threshold to dual. This advance put some constraints on the background, so a dark background is used .So to avoid this, color based thresholding can be done. Also, the current implementation makes use of periodic polling from Wifely to the web server to access the command signal in real time.

# IV. CONCLUSION

In this paper, an automated robot has been developed which works according to your hand gesture. The robot moves wirelessly according to palm gesture. The RF module is working on the frequency of 433 MHz and has a range of 50-80 meters. This robot can be upgraded to detect human life in earthquake and landslide by implementing the sensor accordingly. It can also be upgraded to bomb detecting robot as it has robotic arm it can also lift the bomb. GPS system can

be added to the robot by the help of which its location can be tracked

#### V. References

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