ISSN: 2456 – 043X
International Journal of Engineering Science and Generic Research (IJESAR)
IJESAR : A Innovative Publication Center
Available Online at: www.ijesar.in
Volume – 3, Issue – 3, May – Jun - 2017, Page No. : 12 - 14

Wireless Gesture Controlled Robot

Huma khan
B.Tech. Scholar
khuma899@gmail.com

Abstract

The robots are programmed to perform certain tasks that people do not. To increase the use of robots in which the conditions are not secure, such as the burst or rescue operations, robots can be performed which follow the human operator's instruction and perform the task. Every day the gap between machinery and people narrows the introduction of new technologies to make life easier. The robot controlled by gestures is a robot that can be controlled by simple robots. The user only needs to carry a gestural device that includes a sensor. The sensor will pick up the movement of the hand in a specific direction that determines the movement of the robot in the respective direction. The robot and gesture device are connected wirelessly via radio waves. The wireless communication enable the user interact with the robot.

In these paper different techniques of "Human-Machine Interaction" using gestures has been presented. Gestures can be captured with the help of an accelerometer, however, with the evolution of smart phone its independent usage has been rendered useless. Here the program is designed by AVR .microcontroller.

Keywords: Accelerometer, Gesture, Sensor, Human Interaction Machine

1. Introduction

Robots are used in the different domains ranging from search and rescue in the dangerous environments to the interactive entertainments. The robots are employed in our daily life, the more a natural communication with the robot is required. Hand gesture, as a natural interface means, has been attracting so much attention for interactive communication with robots in the recent years**.** Gesture controlled robot is controlled by using hand in place of any other method like buttons or joystick. Here one only needs to move hand to control the robot. A transmitting device is used in your hand which contains RF Transmitter and accelerometer. This will transmit command to robot so that it can do the required task like moving forward, reverse, turning left, turning right and stop. All these tasks will be performed by using hand gesture.

The latest advances in the computer vision field the recent vision based approaches do not need any extra hardware except a camera. These techniques can be categorized as model based and appearance based methods. While model based techniques can recognize the hand motion and its shape exactly, they are computationally expensive and therefore they are infeasible for a real time control application. In this project we are going to control a robot wirelessly using hand gestures. This is an easy, user-friendly way to interact with robotic systems and robots. An accelerometer is used to detect the tilting position of your hand, and a microcontroller gets different analogue values and generates command signals to control the robot. This concept can be implemented in a robotic arm used for welding or handling hazardous materials, such as in nuclear plants.

In this project we are going to control a robot wirelessly using hand gestures. This is an easy, user-friendly way to interact with robotic systems and robots. An accelerometer is used to detect the tilting position of your hand, and a

microcontroller gets different analogue values and generates command signals to control the robot. This concept can be implemented in a robotic arm used for welding or handling hazardous materials, such as in nuclear plants. [2]

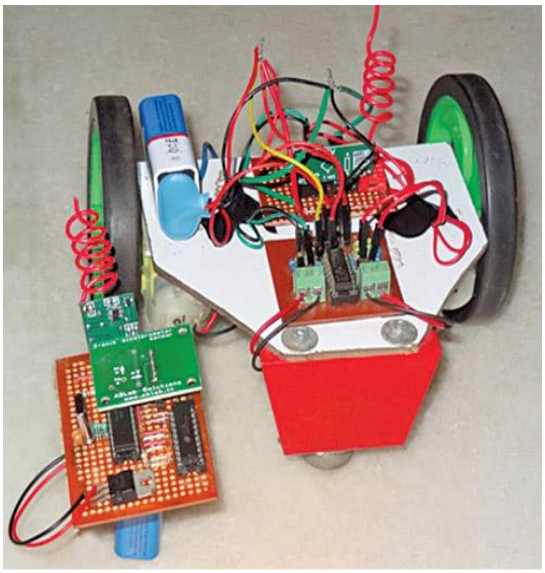

Fig:1 Wireless gesture controlled robot

Circuit and Working of Wireless Gesture controlled:

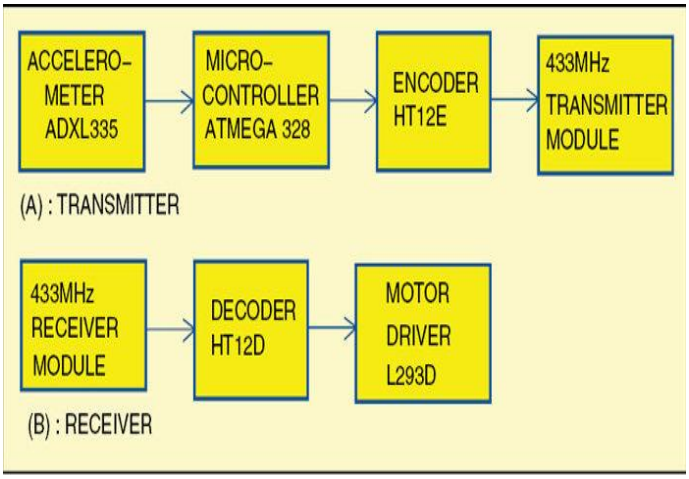

Fig:2 Block Diagram of Wireless Gesture Controlled Robot

There is different parts work on wireless gesture controlled robot are:

Accelerometer

An accelerometer is a sensor that measures the acceleration along three predefined axes mentioned in that accelerometer and returns a raw value to the microcontroller that controls it. These raw values are exploited together voltage differences along the axes and the accelerations.

ATmega328

ATmega328 is a single-chip microcontroller from Atmel and belongs to the mega AVR series. The Atmel 8-bit AVR RISC based microcontroller combines 32kB ISP flash memory with read-while-write capabilities, 1kB EEPROM, 2kB SRAM, 23 general-purpose I/O lines, 32 general-purpose working registers, three flexible timers/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, 10-bit A/D converter, programmable watch-dog timer with an internal oscillator and five software-selectable power-saving modes.

ADXL335

This is a complete three-axis acceleration measurement system. ADXL335 has a minimum measurement range of ±3g. It contains a poly-silicon-surface micro-machined sensor and signal-conditioning circuitry to implement open-loop acceleration measurement architecture. Output signals are analogue voltages that are proportional to acceleration. The accelerometer can measure the static acceleration of gravity in tilt-sensing applications as well as dynamic acceleration resulting from motion, shock or vibration.

The sensor is a poly-silicon-surface micro-machined structure built on top of a silicon wafer. Poly-silicon springs suspend the structure over the surface of the wafer and provide resistance against acceleration forces. Deflection of the structure is measured using a differential capacitor that consists of independent fixed plates and plates attached to the moving mass.

L293D:

This is a 16-pin DIP package motor driver IC (IC6) having four input pins and four output pins. All four input pins are connected to output pins of the decoder IC (IC5) and the four output pins are connected to DC motors of the robot. Enable pins are used to enable input/output pins on both sides of IC6.[3]

Conclusion:

Enormous amount of work has been done on wireless gesture controlling of robots. In this paper, various methodologies have been analyzed and reviewed with their merits and demerits under various operational and functional strategies. Thus, it can be concluded that features like user friendly interface, light weight.

Reference:

[1] Wang B., and Yuan, T., "Traffic Police Gesture Recognition using
Accelerometer"

[2] Cannan, J. and Hu, H., "HumanMachine Interaction (HMI): ASurvey".[Online]

[3] Das, S., Toya, L., Green, Perez, B., and Murphy, M. M., "Detecting User.