HAND GESTURE CONTROLLED ROBOT USING BLUETOOTH
Overview

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Introduction

• A gesture is a form of non-verbal communication.
• A gesture controlled robot is a kind of robot which can be controlled by your hand gesture.
Hardware requirements

• Arduino Uno
• Bluetooth Module
• Flex Sensor
• Voltage follower
• DC Motor Driver L293D
• DC Motor
• Power Supply
Arduino UNO

- Microcontroller board based on the ATmega328P.
- 14 digital input/output pins (of which 6 can be used as PWM outputs)
- 6 analog inputs.
- 16 MHz quartz crystal
- A power jack
- Connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.
The board...

- LED
- 14 digital inputs/outputs (6 PWM outputs)
- Power indicator
- Reset button
- USB connection
- 16 MHz clock
- Voltage regulator
- AC/DC adapter jack
- DC voltage supply (IN/OUT)
- 6 analog inputs
Bluetooth Module (HC-05)

• For the communication between mobile phone and microcontroller Bluetooth module (HC-05) is used.
• Low Power 1.8V Operation, 1.8 to 3.6V I/O.
• Serial port Bluetooth module have a Bluetooth 2.0+EDR (enhanced data rate), 3Mbps modulation with complete 2.4GHZ radio transceiver and baseband.
• Using Bluetooth profile and android platform architecture different type of Bluetooth applications can be developed.
Flex Sensor

- A flex sensor changes its output when it is bent or when force is applied on it.
- The sensor has two output wires.
- The resistance between these two wires varies when the sensor is bent or when subjected to a force.
- They convert the change in bend to resistance.
- The more the bend more the resistance value.
Voltage Follower

• To avoid loading effect and isolate the output from the signal source, voltage follower or impedance buffer is used with flex sensor
DC Motor Driver (L293D)

- L293D has quadruple high current half-H drivers.
- Wide Supply-Voltage Range: 4.5 V to 36 V
- High-Noise-Immunity Inputs
- Output Current 600mA Per Channel
- Peak Output Current 1.2A Per Channel.
Pin Diagram

Enable 1,2
Input 1
Output 1
GND
Output 2
Input 2
Vcc 2

Vcc 1
Input 4
Output 4
GND
Output 3
Input 3
Enable 3,4

L293D
Circuit Diagram
DC Motor

• 10 to 200RPM 12V DC motors with Gearbox
• 6mm shaft diameter with internal hole
• No-Load Current=60mA(max)
• Load Current=300mA(max)
Power Supply

230 V AC
50 Hz

12V step down transformer

Bridge rectifier

5v Regulator

Filter (470µf)

5V DC

Transformer 12-0V

Bridge Rectifier (+12V)

Voltage Regulator

{+5V}

GND
Software Used..

- Arduino IDE

Programming Languages Used..

- Embedded C/C++
Application

- Hospitals
- Industrial robots
- Automobiles
References

• www.arduino.org
• www.beyondlogic.org
• www.wikipedia.org
• www.elementzonline.com
• www.elementztechblog.wordpress.com
Questions????
THANK YOU