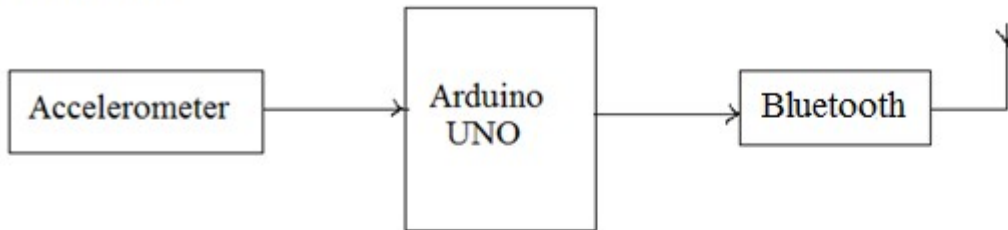# Bluetooth Accelerometer Robot

Overview

- Introduction
- Block Diagram
- Hardware requirements
- Software requirements
- Advantages
- Conclusion
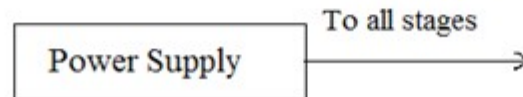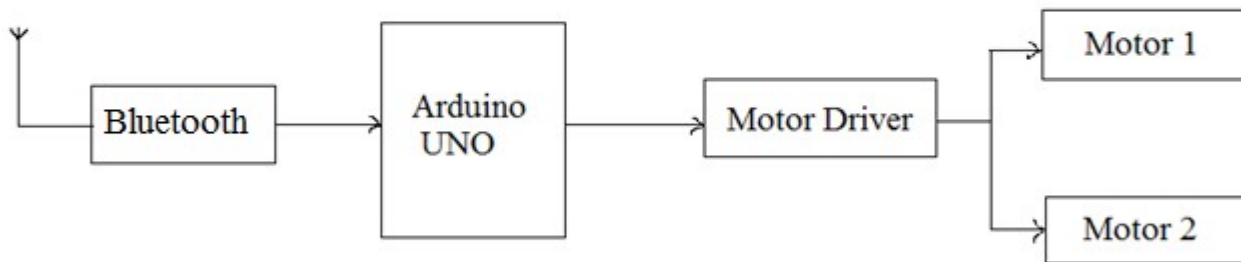- References

Introduction

- Robots reduces human efforts

- Accelerometer : Used to detect motion

- In transmitter part an accelerometer and a Bluetooth module is used.

- At the receiver end used a Bluetooth module to receive data

Block Diagram

Transmitter

Accelerometer → Arduino UNO → Bluetooth

Receiver

Bluetooth → Arduino UNO → Motor Driver → Motor 1 / Motor 2
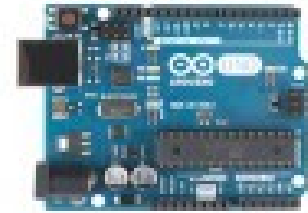
Power Supply → To all stages

Hardware Requirements

- Microcontroller board – Arduino Uno

- Bluetooth Module – HC05

- Accelerometer – ADXL335

- Motor driver IC

- DC Motor

- Power Supply

Arduino Uno Features

- ATmega328P microcontroller
- Input voltage - 7-12V
- 14 Digital I/O Pins (6 PWM outputs)
- 6 Analog Inputs
- 32k Flash Memory
- 16Mhz Clock Speed

ATmega328P

- 8-bit microcontroller
- 8KB ROM
- 256 bytes RAM
- 3 timers
- 32 I/O pins
- 1 serial port
- 8 interrupt sources

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.

Accelerometer ADXL335

- 3-axis accelerometer

- Measure static acceleration of gravity in tilt sensing applications

- Measures dynamic acceleration from motion, shock or vibration

- Bandwidth can be selected using different capacitor values

Motor Driver IC
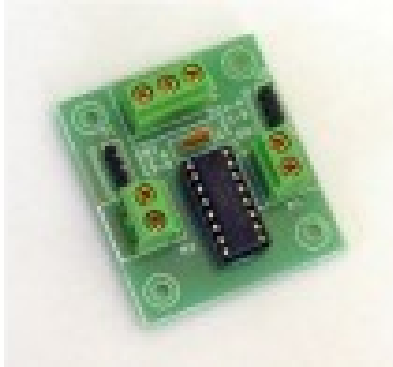
- This Motor Driver Board is designed to Work with L293D IC.

- This can control 2 DC Motors, their direction using control lines and their speed using PWM.
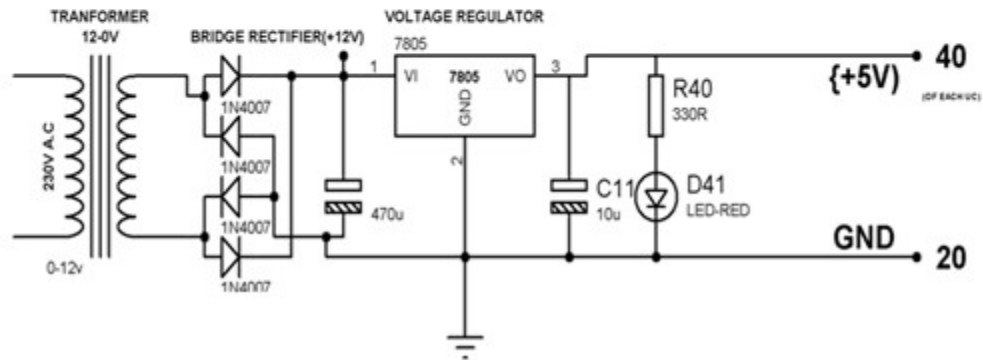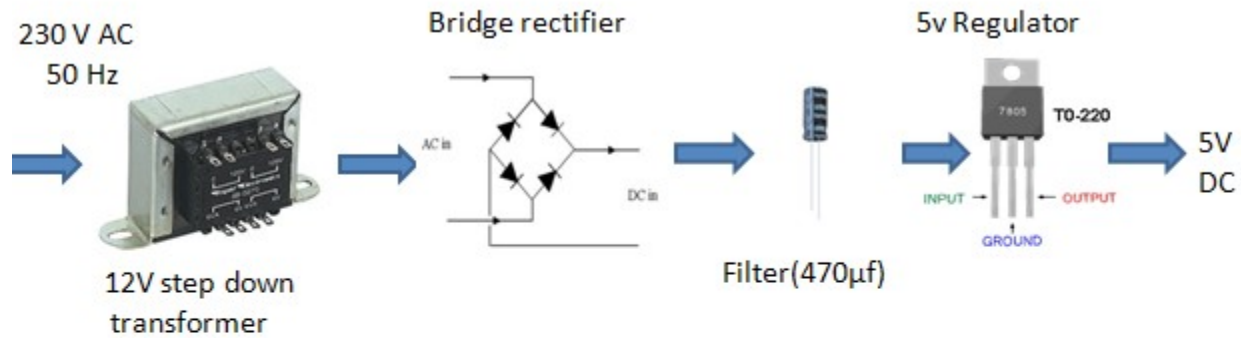
DC Motor

- Converts direct current electrical power into mechanical power

- The very basic construction of a dc motor contains a current carrying armature which is connected to the supply end through commutator segments and brushes are placed within the north south poles of a permanent or an electro-magnet

DC Motor - Construction
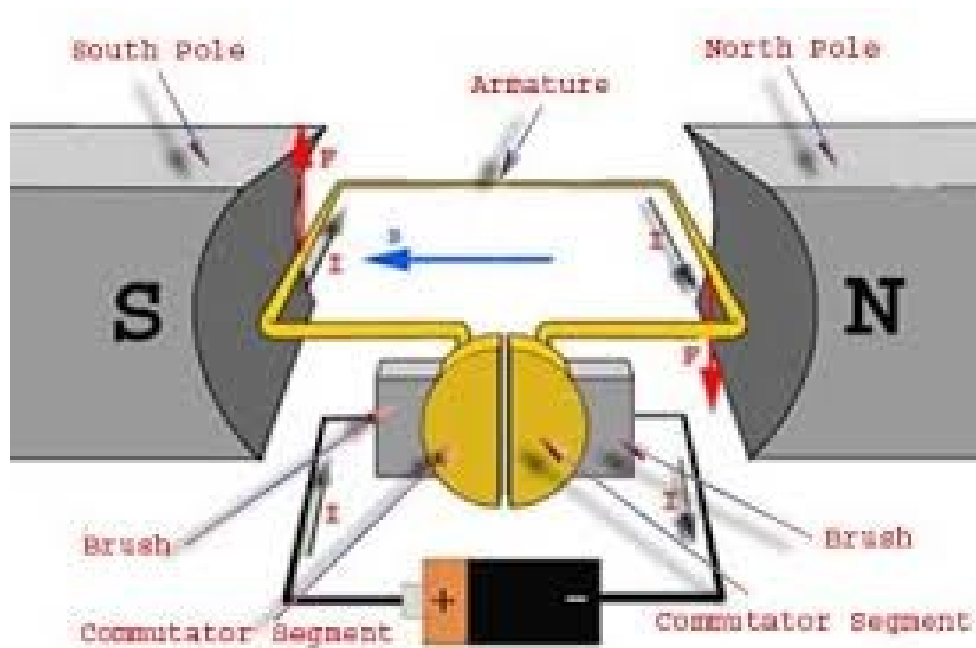
Power Supply

Software requirements

- Tool

    Arduino IDE

- Programming languages used

    Embedded C/C++

Advantages

- Code compatibility and expandability across different Arduino boards

- Cost is less as Arduino is open source

- The schematic of Arduino is open source. So for future enhancement of the project the board can be extended to add more hardware

- Bluetooth does not require a clear line of sight between the synced devices. This means that the devices need not be facing each other

Conclusion

- Bluetooth based accelerometer controlled robot using Arduino microcontroller has been developed

References

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