BLUETOOTH CONTROLLED
PICK & PLACE ROBOT
Overview

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Introduction

• Build a robot which can receive commands via bluetooth and work accordingly.
• Develop an android app which allows the user to sends commands via bluetooth.
• Commands received by bluetooth modem connected to Arduino UNO.
• Arduino controls motor which allow the movement of robot.
Block Diagram

RECEIVER

Motor 1
Motor 2
Motor 3
Motor 4

Motor Driver 1
Motor Driver 2

ARDUINO UNO

Bluetooth Module

TRANSMITTER

Android Application Device

Bluetooth

Power supply

To all stages
Hardware requirements

- Arduino Uno
- Bluetooth Module HC-05
- 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...
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.
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

L293D

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

Filter (470µf)

5V Regulator

5V DC

Transformer 12-0V

Bridge Rectifier (+12V)

Voltage Regulator 7805

{+5V} 40
(of each side)

20

GND

R40 330R

C11 10u

D41 LED-RED
Android

- Android is an open-source operating system which means that any manufacturer can use it in their phones free of charge.
- It was built to be truly open.
- Android is built on the open Linux Kernel. Furthermore, it utilizes a custom JAVA virtual machine
Android Application on Mobile Phones

• An android app is meant for phones with an android based operating systems. They can be downloaded from the android app Market which is pre-loaded on every android phone.

• Blue control APP and Bluetooth Spp APP are some examples.
Android Application Operated Bluetooth

• The Android platform includes support for the Bluetooth network stack, which allows a device to wirelessly exchange data with other Bluetooth devices.

• The application framework provides access to the Bluetooth functionality through the Android Bluetooth APIs.
Android Application

BlueStick
Software Used..

• Arduino IDE
• Eclipse Android SDK (Software Development Kit)

Programming Languages Used..

• Embedded C/C++
• Java & XML
Advantages

• It is feasible to implement bluetooth communication between smart phone and microcontroller.
• The development of apps for Android in Android SDK is easy and free of cost.
Applications

• It can be used in various industries where human intervention is not desired.
• Robot is used Place the things in correct Order and this can be used in Homes and Industry to place things.
• Robot is also used in Libraries to Place the books in correct order.
• With tremendous smartphone in markets, it is bound to have many more applications in near future.
References

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Questions????
THANK YOU