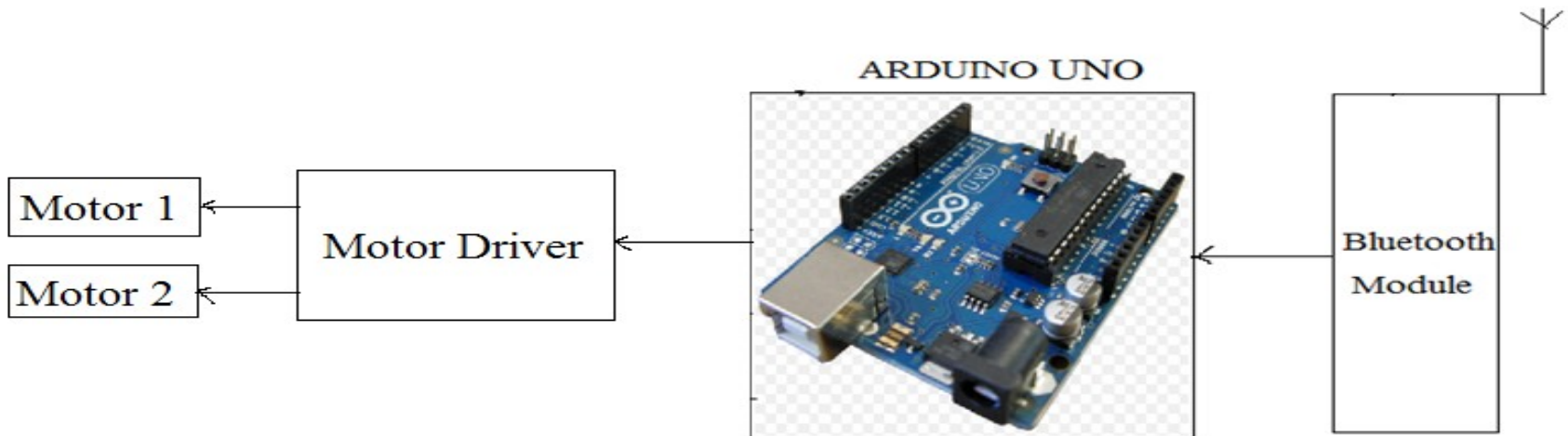# BLUETOOTH CONTROLLED ROBOT

Overview

- Introduction
- Block Diagram
- Hardware Requirements
- Software used
- Advantages
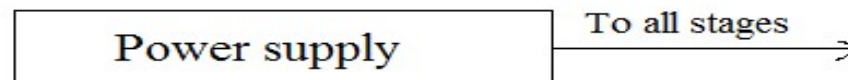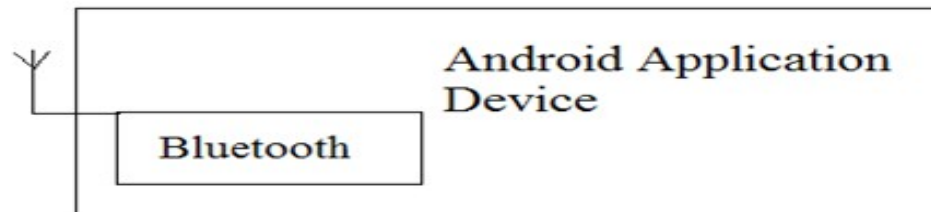- Applications
- References

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

ARDUINO UNO

Motor 1

Motor 2

Motor Driver

Bluetooth Module

TRANSMITTER

Bluetooth

Android Application Device

Power supply

To all stages

Hardware requirements

- Arduino Uno
- Bluetooth Module HC-05
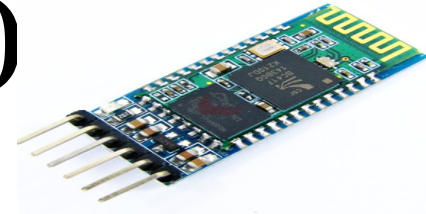- DC Motor Driver L293D
- DC Motor
- Power Supply

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...
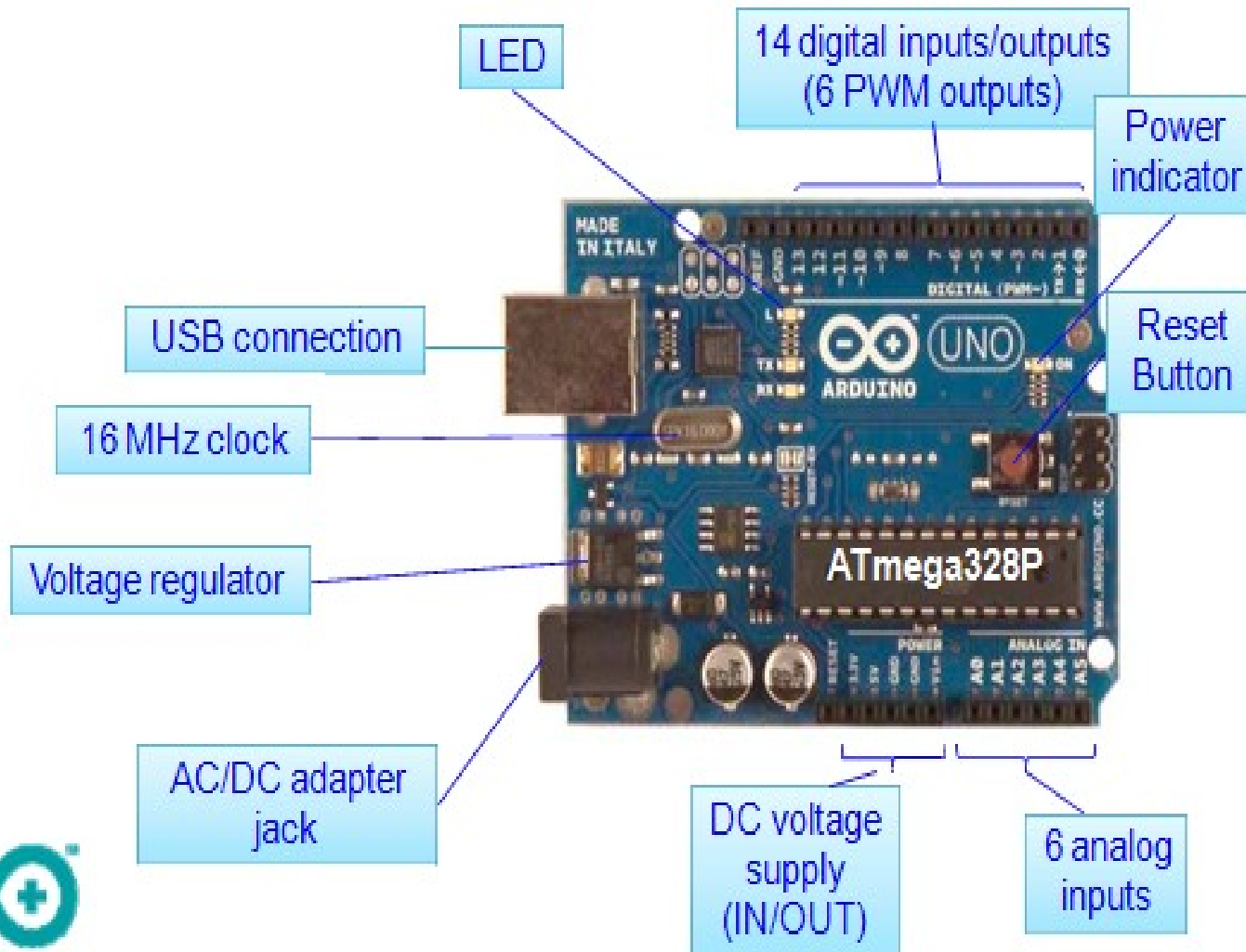
Bluetooth Module (HC-05)

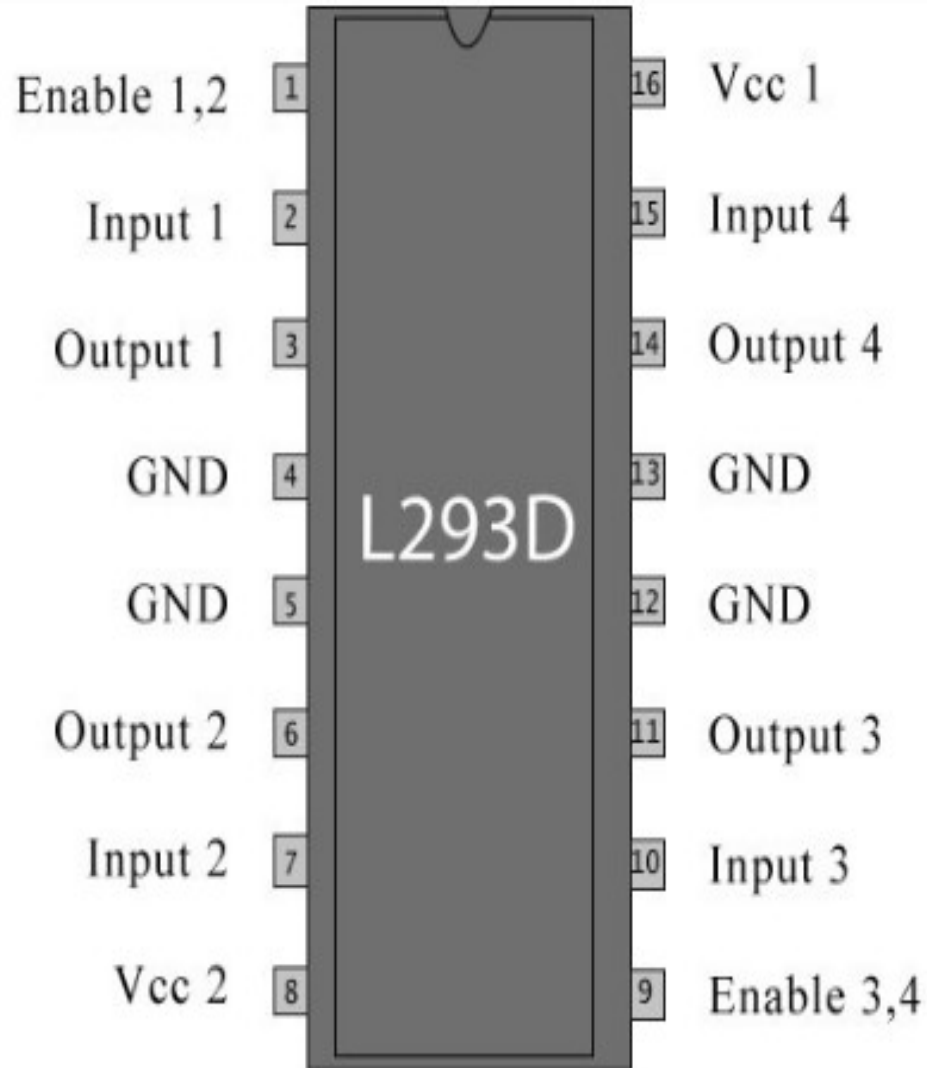- For the communication between mobile phone and microcontroller Bluetooth module(HC-05) is used

- 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

	L293D	
Enable 1,2 — 1		16 — Vcc 1
Input 1 — 2		15 — Input 4
Output 1 — 3		14 — Output 4
GND — 4		13 — GND
GND — 5		12 — GND
Output 2 — 6		11 — Output 3
Input 2 — 7		10 — Input 3
Vcc 2 — 8		9 — Enable 3,4

Circuit Diagram

+5V

Enable

IC1

1 1-2EN   VCC1 16   l293d VCC

2 1A   4A 15

3 1Y   4Y 14

Input 1

DC motor

4 GND1   GND3 13

5 GND2   GND4 12

GND

6 2Y   3Y 11
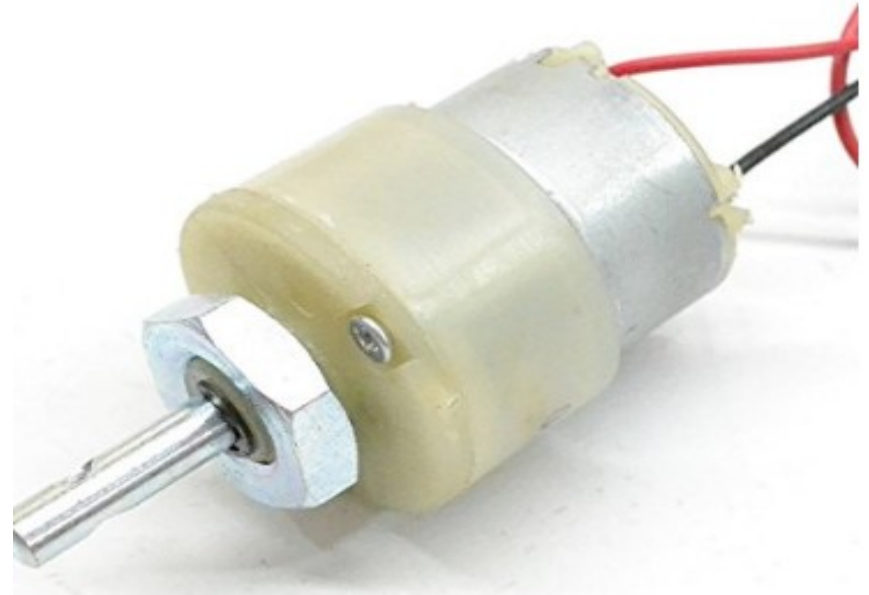
Input 2

7 2A   3A 10
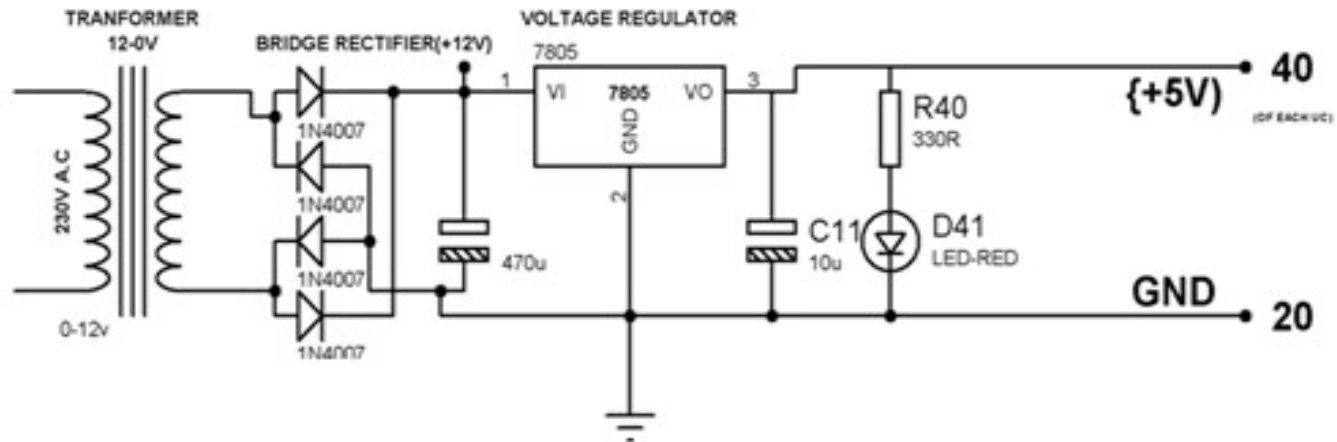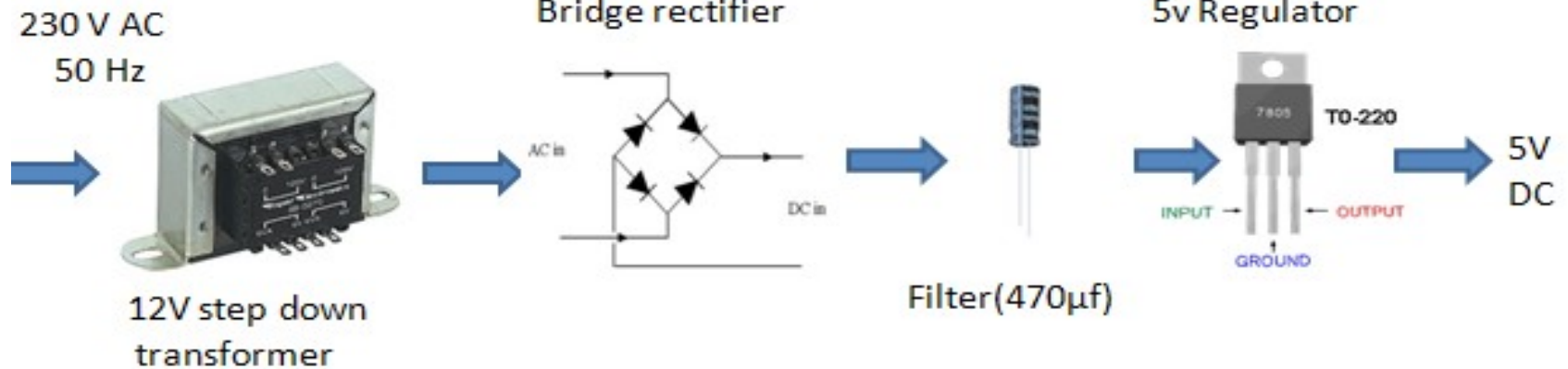
8 VCC2   3-4EN 9

+7V

L293D

GND
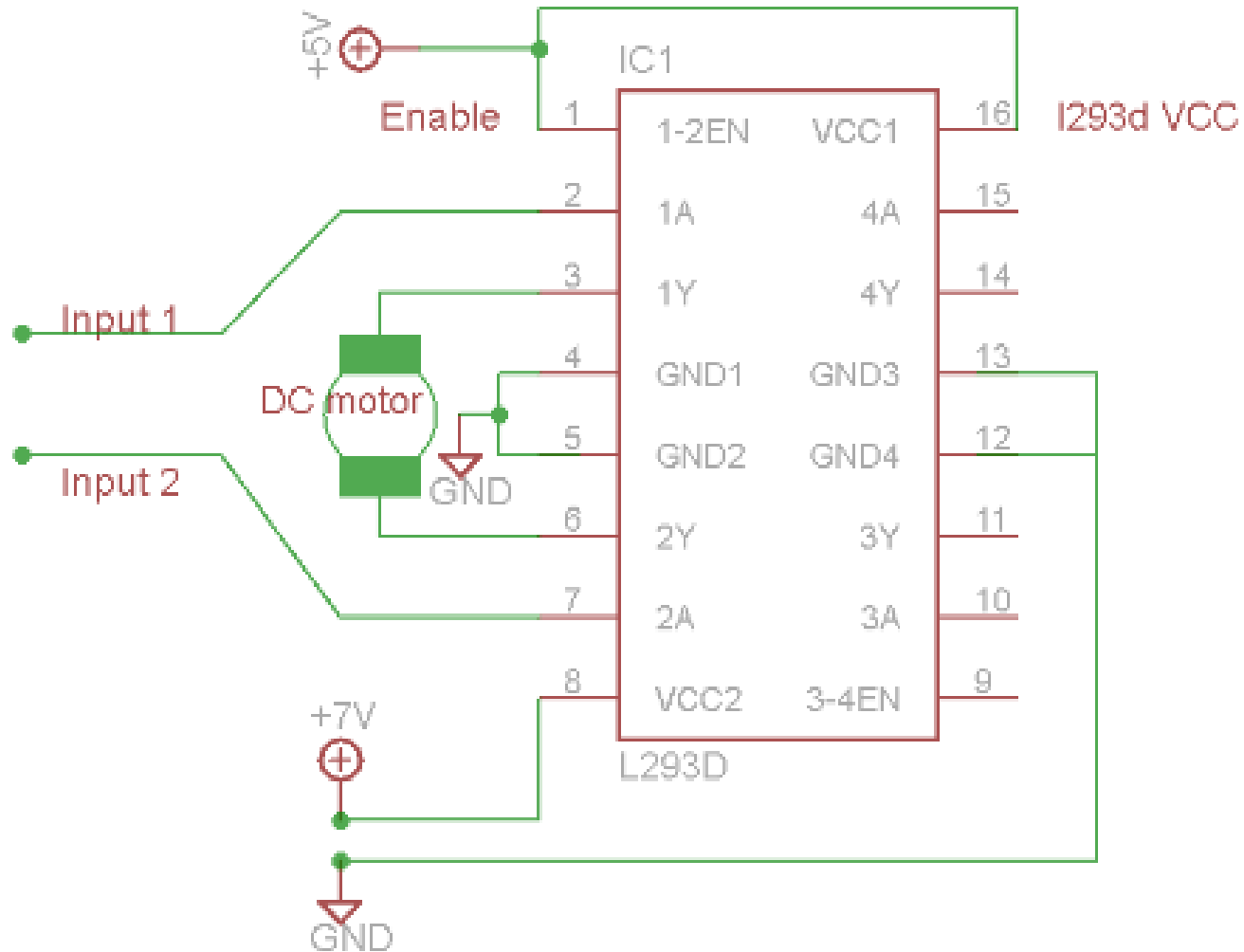
DC Motor

- 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

Bridge rectifier

5v Regulator

AC in

DC in

T0-220

7805

INPUT → ← OUTPUT

GROUND

5V
DC

12V step down
transformer

Filter(470μf)

TRANSFORMER
12-0V

BRIDGE RECTIFIER(+12V)

VOLTAGE REGULATOR
7805

230V A.C

0-12v

1N4007

1N4007

1N4007

1N4007

470u

VI   7805   VO

GND

1

2

3

C11
10u

R40
330R

D41
LED-RED

40
{+5V}
(OF EACH UC)

GND   20

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
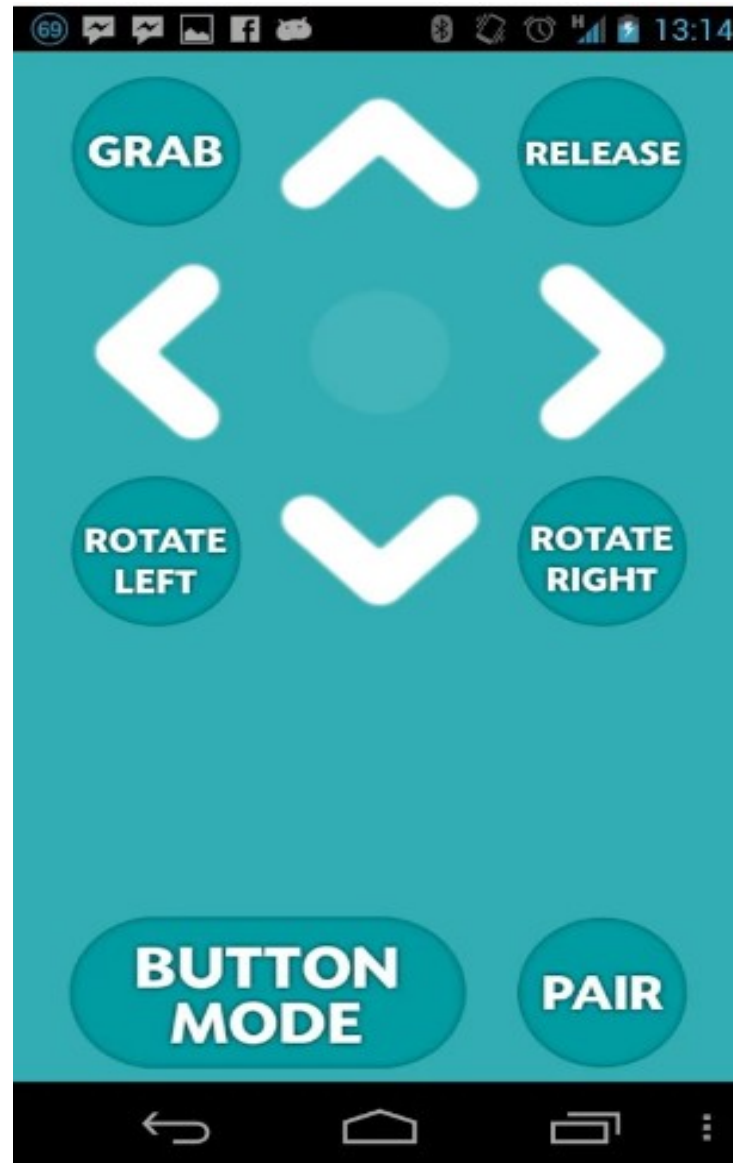
Software Used..

- 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.

- It can be used to develop robot with military applications.

- It provides more application based on Android operating system.

- With tremendous smart phone in markets, it is bound to have many more applications in near future.

Future Work

- We can interface sensors to this robot so that it can monitor some parameters.
- We can add wireless camera to this robot.

References

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- www.beyondlogic.org

- www.wikipedia.org

- www.elementzonline.com

- www.elementztechblog.wordpress.com

Questions????

THANK YOU