Blutooth Controlled Robot

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Abstract— the project is designed to develop android application based a robotic vehicle for remote operation. This is a kind of robot can be helpful for mobility aid for elderly and disabled people. And images transmission and reception. Advantages of Bluetooth has low costs and low power and nature can be pointed to parts of Bluetooth has been added into various types of mobile devices such as mobile phones, PDAs and other wireless set

Keywords: Bluetooth, GUI (Graphical User Interface).

1 INTRODUCTION

Nowadays smart phones or android is an open-source operating system which means that any manufacturer on use it in their phones free of charge. More properties make the Android system very appli- cable for university use: Android uses the Java programming language, which our students are familiar with. Getting started with the Android API is easy; the API is open, i.e. develop- ers can access almost every low-level function and are not sandboxed. In addition, the Android API allows easy access to the hardware components

In principle, RF (Radio Frequency) emitted by Bluetooth can be regarded as the control which deals with the use of radio signal to remotely control any device. A remotely controlled car may be defined as any mobile device which is control by means that it does not restrict it motion with origin external to the device that is the possibility of an existence of a radio control device, a wireless medium between the Remote Mobile and Smart car. A Remote Car is always control by a human operator and it takes no positive action autonomously.

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Motor IC

1 High-performance, Low-power AVR® 8-bit Microcontroller

• Advanced RISC Architecture
High Endurance Non-volatile Memory segments
JTAG (IEEE std. 1149.1 Compliant) Interface
Special Microcontroller FeaturesPower-on Reset and Programmable Brown-out Detection
– Internal Calibrated RC Oscillator
– External and Internal Interrupt Sources
– Six Sleep Modes: Idle, ADC Noise Reduction, Power-save, Power-down, Standby
and Extended Standby
upto 16 MIPS throughput at 16MHz
32*8 General Purpose Working Registers
Six ADC channels in PDIP package
Internal Calibrated Oscillatator

LITERATURE REVIEW

2.1 Conventional Wireless Robotics:

A robot is a mechanical or virtual artificial agent, usually an electro-mechanical machine that is guided by a computer program or electronic circuitry in conventional robotics, the controlling and operation of robots is usually done by using RF [Radio Frequency] circuits

2.2 Bluetooth:

Bluetooth is a wireless technology standard for exchanging data over short distances from fixed and mobile devices, and building personal area networks. Bluetooth technology was created by Ericsson in 1994 and is used to replace the cables in the office, in laboratories or at home as in. Bluetooth device operated in the range of 10 meters.The IEEE standardized Bluetooth as IEEE802.15.1

2.3 DC motor

All tables and figures will be processed as images. You

2.5 HC -05 BLUETOOTH

The HC-05 Bluetooth Module has 6 pins – Vcc,GND,TX,RX,Key,and LED.It comes pre-programmed as a slave,so there is no need to connect the key pin,unless you need it change it to master mode the major difference betwween master and slave modes is that,slave mode the Bluetooth module cannot initiate a connection,it can however accept incoming connections.After the connection is established the Bluetooth module can transmit and receive data regardless of the mode it is running in.If you are using upon to connect to the Bluetooth module, you can simply use it in the slave mode.The defau;lt data transmission rate is 9600kbps.

The range for Bluetooth communication is usually 30m or less.The module has a factory set pinoff "1234"which is used while pairing the module to a phone.

Frequency:2.4GHz ISM band,Power supply:+3.3VDC 50mA,Working temperature:-20 `+75 Centigrade

2.6 SENSORS

A **sensor** is a device that measures a physical quantity and

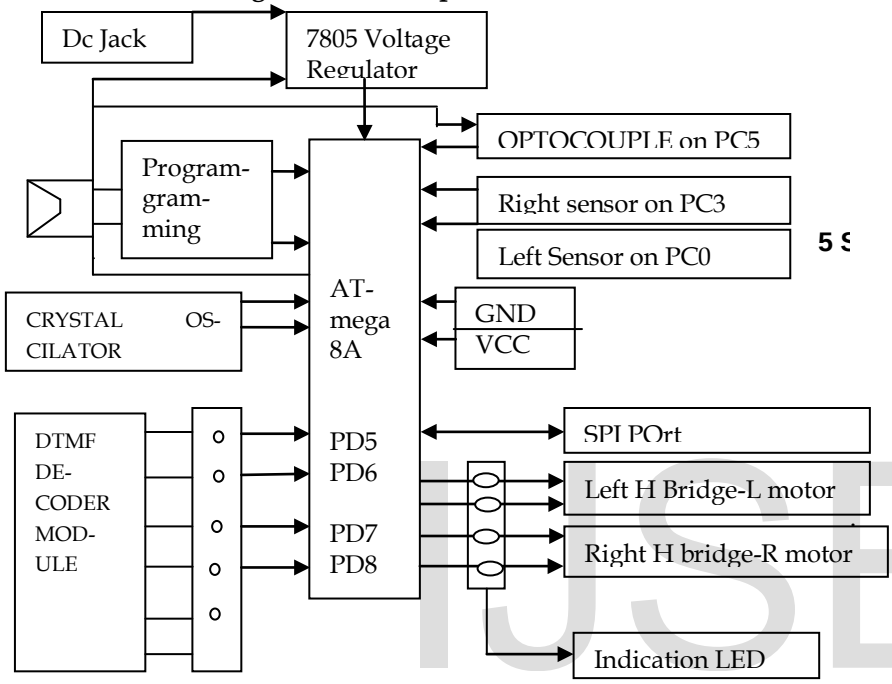
converts it into a signal which can be read by an observer or by an instrument.

Sensors are used in everyday objects such as touch-sensitive elevator buttons (tactile sensor) and lamps which dim or brighten by touching the base.

Applications include cars, machines, aerospace, medicine, manufacturing and robotics.

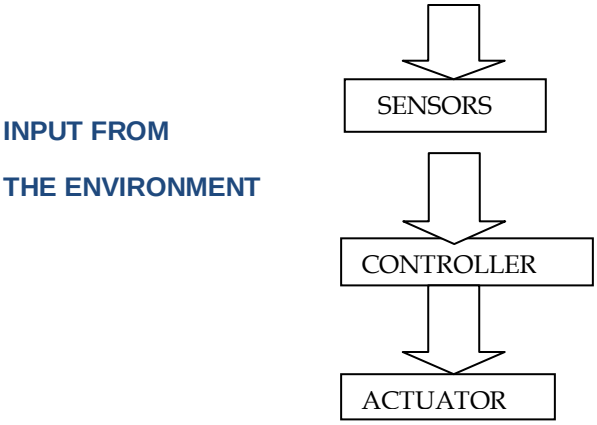
2 BLOCK DIAGRAM

Block Diagram of Development Board Connected

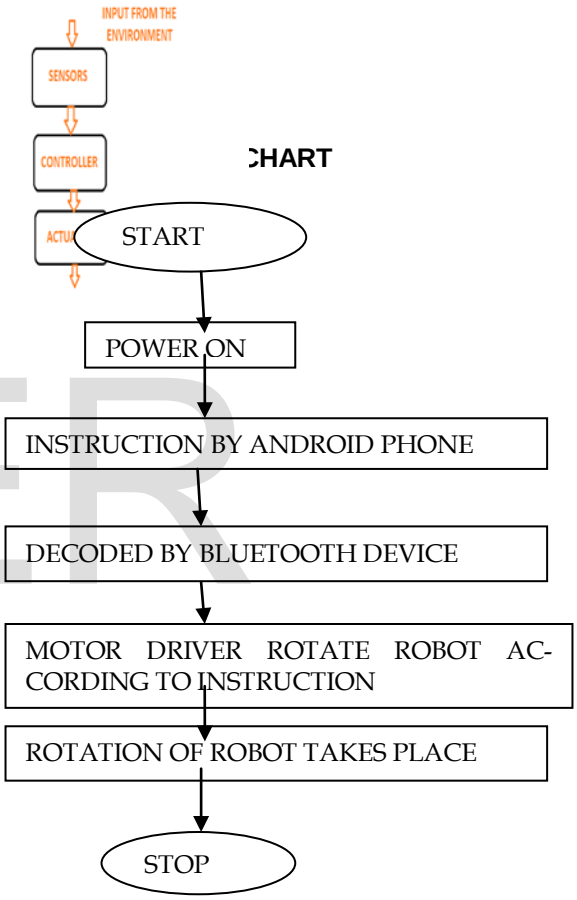


The project is designed to control a robotic vehicle using an android. Bluetooth module is interfaced to the control unit on the robot for sensing the signals transmitted by the android application. This data is send to the control unit which moves the robot. 8051 microcontroller is used as control device in this project. Remote operation is achieved by any smart-phone/Tablet etc., with Android OS, upon a GUI (Graphical User Interface) based to screen touch operation. At transmitting end, an android device through commands is transmitted. Commands are used for controlling the robot in all directions at receiver end. Movements of two motors that are interfaced to the microcontroller. Android application is send data serially and received by a Bluetooth receiver interfaced with controller. The program on the microcontroller interfaced to the serial data to generate respective output based on the input data to operate the motors through motor driver integrated circuits. The motors are connected to the control unit through motor driver IC.

4 ANATOMY OF ROBOT



5 S CHART



6 PROPOSED ALOGORITHM

Step 1: Establish Communication between Android and Bluetooth Module.

Step 2: Press Command input button from App.

Step 3: Corresponding Command input string is send to Bluetooth Module.

Step 4: Check Command is received by the Bluetooth module.

Step 5: If "Disconnect" Command given then end communication.

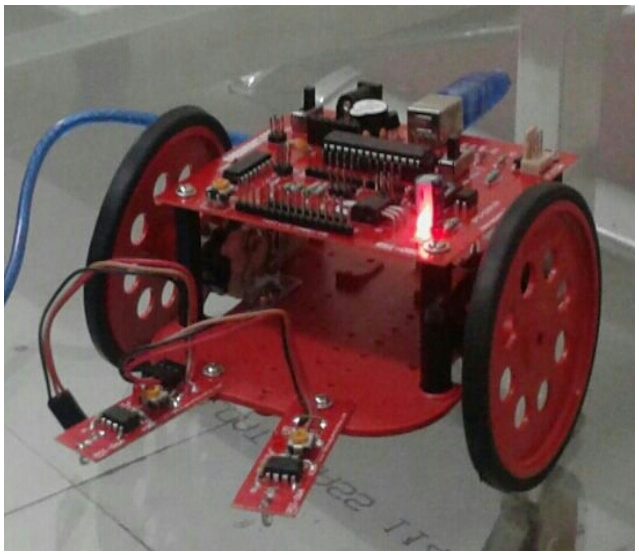
Step 6: Close Application.

Algorithm for Aurdino

Step 1: If input is received, check for a string received.

Step 2: Compare contain of string received with pre-defined command in Arduino.

Step 3: Command matches with desired if-else block and motor will drive accordingly to output of that block. Step 4: If Command received is "Stop" entire process will stop. Step 5 If Command received is "Disconnect" it will reset all the codes.



Model of BluROBOT

7 Theorems

THE THREE LAWS ARE:

1. A ROBOT MAY NOT INJURE A HUMAN BEING OR, THROUGH INACTION, ALLOW A HUMAN BEING TO COME TO HARM.

2. A ROBOT MUST OBEY THE ORDERS GIVEN IT BY HUMAN BEINGS, EXCEPT WHERE SUCH ORDERS WOULD CONFLICT WITH THE FIRST LAW.

3. A ROBOT MUST PROTECT ITS OWN EXISTENCE AS LONG AS SUCH PROTECTION DOES NOT CONFLICT WITH THE FIRST OR SECOND LAW.

9 RESULT

We control the movement of the ROBOT through

Blue control application named Arduino RC.

The Result of this project as follows:

10 FUTURE SCOPE

We can modify the rover as per our requirement. If we want to use this for surveillance purpose so we can implement the camera or thermal sensors along with others sensors. Again once develop the Andriod application, the robot can respond to intuitive foreum gesture based on the accelerometer sensor data,respond to your voice,at a click of a button,or at the swipe on the touchscreen.Further if we want to improve the accuracy of the rover, we can implement sonar sensors so controlling rover from remote place can be possible. We can also implement GPS system so it can be semi-autonomous. The proposed work can be enhanced with the help of more security function like passwords and so on.

CONCLUSION

The objective of the paper is to realise the smart living , more specifically the home lighting control system using Bluetooth Technology. Wireless control is one of the most important basic needs for all the people all over the world. But unfortunately the technology is not fully utilized due to a huge amount of data and communication overheads.Generally many of the wireless-controlled robots use RF modules. But our project for robotic control make use of Android mobile phone which is very cheap and easily available. The available control commands are more than

RF modules. For this purpose the android mobile user has to install a designed application on her/his mobile. Then he/she needs to turn on the Bluetooth in their mobile. The wireless communication techniques used to control the robot is nothing than Bluetooth technology

ACKNOWLEDGMENT

I bow in Gratitude to Prof.Debashis Jana,for giving us courage and wisdom to reach this point of completetion.I thank my parents who had faith in me and supported me throughout my lives,In the end I would like to thank and praise our director MR.A Patra who helped me for this project and make me capable of stepping into professional life with courage.

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