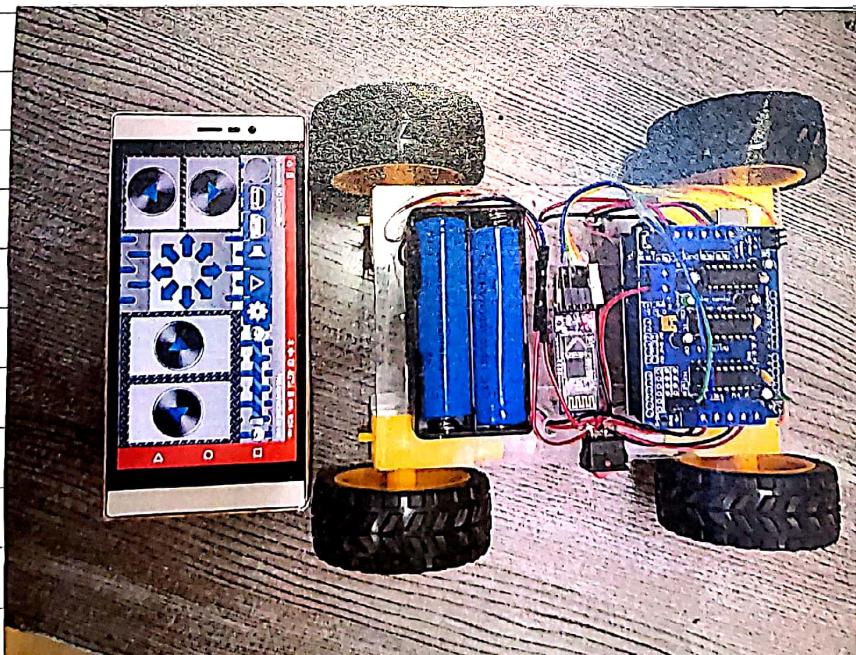


ARDUINO BASED

WIRELESS

CONTROLLED

REMOTE CAR



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Acknowledgement

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Keep away from people who try to belittle your ambitions. Small people always do that, but the really great make you feel that you too, can become great.

We, take, this opportunity to express my sincere thanks and deep gratitude to all those people, who extended their wholehearted co-operation and have helped me, in completing this project successfully.

First of all, we, could like to thank Mrs. Seema Miss (HOD) for creating opportunities for us, to enhance our skill through the project. Her inspiring suggestions and timely guidance entitled me to perceive the various aspects of the project in a new light.

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We, would also like, to thank our parents & project mates for guiding and encouraging me, throughout the, duration of the, project.

PROJECT OBJECTIVES

- To develop an android application that will provide user an interface to interact with the Arduino powered car.
- To develop an appropriate program in the arduino microchip to interact with the android controller.
- To compile all the developed modules that we constructed above.
- To produce Arduino car that is controlled by android phone remote which can be used in various fields, like defence, scientific expeditions and so on.

INTRODUCTION

Due to the recent development of open source software, and more recently open source hardware, as well as decreasing prices in the world of electronic tools, engineers find themselves in a situation where they can think of and carry out a vast range of projects. These projects may start out of the industrial environment, however, most of the experience, technical abilities and new ideas are subject to be applied later on in the industry of robotics. Considering these open tool as framework a big project is being developed at this time combining innovative ideas, wireless technologies and an open philosophy for users to become an active part of the big system. Nowadays, smart phones are becoming more powerful with reinforced processors, larger storage capacities, richer entertainment function and more communication methods. Bluetooth is mainly used for data exchange; add new features to smart phones. Bluetooth technology, created by telecom vendor Ericsson in 1994, shows its advantages by integrating with smart phones. It has changed how people use digital device at home, office and has transferred traditional wired digital devices into wireless devices. A host Bluetooth device is capable of

communicating with up to seven Bluetooth modules at same time, through one link. In this paper we present a review of current remote car controlled by mobile phone and discuss a closed loop control systems using audio channels of mobile devices, such as phones and tablet computers. In our work, move the robot upward, backward, left and right side by the android application such as Arduino Bluetooth RC Car.

Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input / output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to computer with a USB cable, or power it with a AC - to - DC adapter or battery to get started.

You can tinker with your UNO without worrying too much about doing something wrong.

'Uno' means one, in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards and the reference model for the Arduino platform; for an extensive list of current past

or outdated boards, see the Arduino index of boards.
The L298 is an integrated monolithic circuit in a
15-lead Multi Watt and Power SO20 package.
It is a high voltage, high current dual full-bridge
driver designed to accept standard TTL logic
levels and drive inductive loads such as relays,
solenoids, DC and stepping motors. Two enable inputs
are provided to enable or disable the device
independently of the input signal. The emitters of
the lower transistors of each bridge are connected
together and the corresponding external terminal
can be used for the connection of an external
sensing sensor. Range is approximately 10 meters
(30 feet). These modules are based on the
Cambridge Silicon Radio BC417 2.4 GHz Bluetooth
radio. This is complex chip which uses an
external 8 M bit flash memory.

COMPONENTS LIST

Name of Components

1. Arduino UNO
2. Bluetooth module HC - 05
3. BO - BO MOTORS 150 RPM
4. L293D MOTOR Shield
5. BO - BO MOTOR, TYRE
6. RECHARGEABLE Batteries 3.7 V
7. Battery holder
8. Male to Female, Connecting wires.

COMPONENTS & DETAIL

⇒ ARDUINO UNO :-

Arduino Uno is an open source prototyping platform based on easy to use hardware and software. Arduino boards are able to read inputs like light on a sensor, a finger on a button, or a Twitter message, and turn it into an output like activating a motor, turning on a LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language based on C/C++ and the Arduino Software (IDE) based on processing.

Arduino was born at the Iuera Interaction Design Institute as an easy tool for fast prototyping, aimed at the students without a background in electronics and programming. As soon as it reached a wider community, the Arduino board started changing to adapt to new needs and challenges differentiating its offer from simple 8-bit boards to products for IoT applications, wearable, 3D printing, and embedded environments. All Arduino boards are completely open source, empowering users.

to build them independently and eventually adapt them to their particular needs. The software, too, is open source, and it is growing through the contributions of users worldwide.

⇒ HC-05 Bluetooth Module :-

Bluetooth is a wireless technology standard for exchanging data over short distance (using short wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed phone device and building personal area networks (PANs). Range is approximately 10 meters (30 Feet). These modules are based on the Cambridge Silicon Radio BC417 2.4 GHz Bluetooth Radio chip.. This is a complex, which uses an external 3 Mbit flash memory.

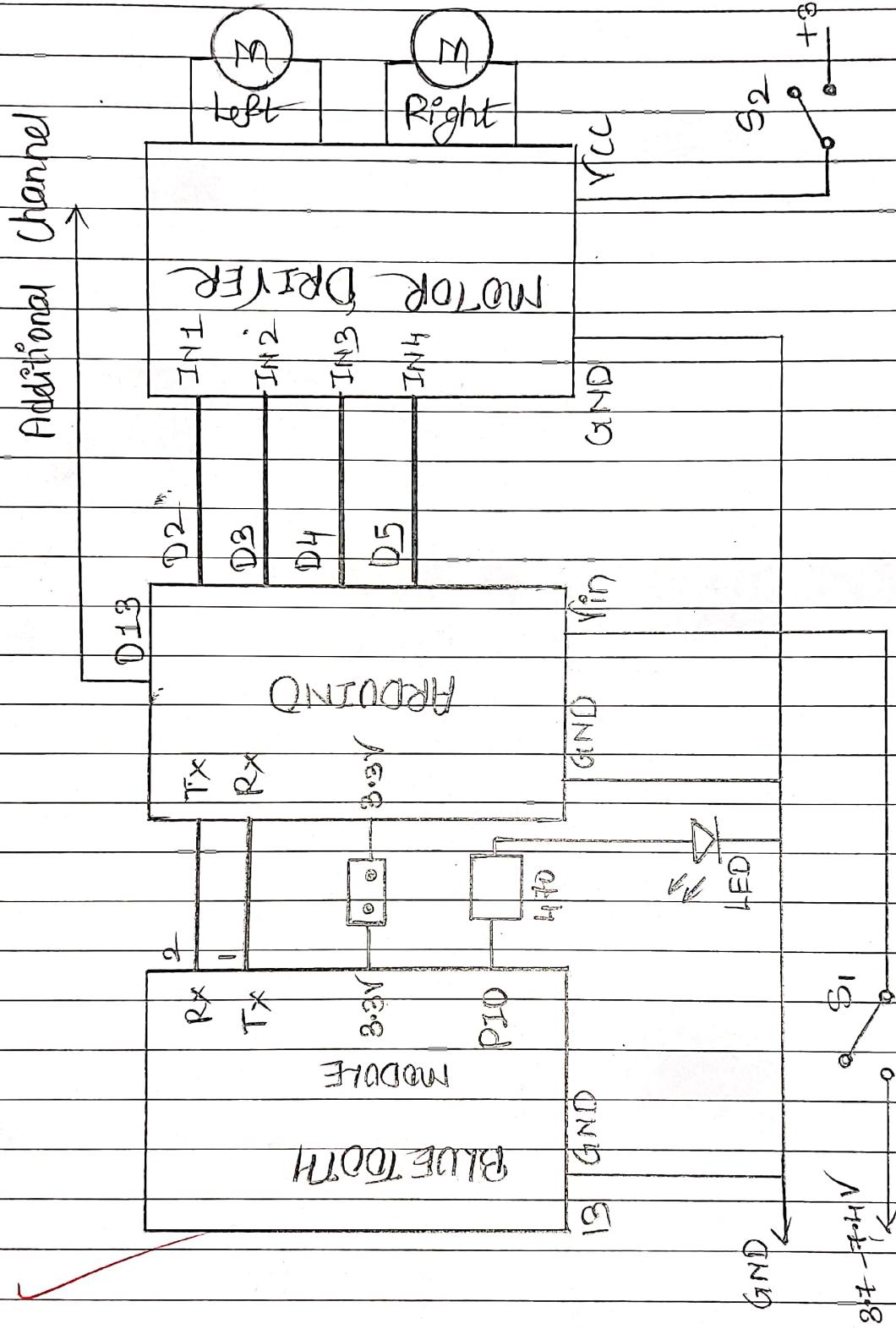
- HC-05 is a more capable module, that can be set to be either Master or Slave.
- HC-06 is a slave only device. (It looks physically just like HC-05).
- These, small (3cm long) modules run on 3.3 V power with 3.3V signal levels. They have no pins and usually solder to a larger board.

The module has two modes of operation ie Command Mode, where we can send AT Commands to it and Data mode where it transmits and receives data to another Bluetooth module.

- "Breakout" Boards that make these easy to use are available and recommended. Those mount to use submodule like that shown on the right on a slightly larger board.

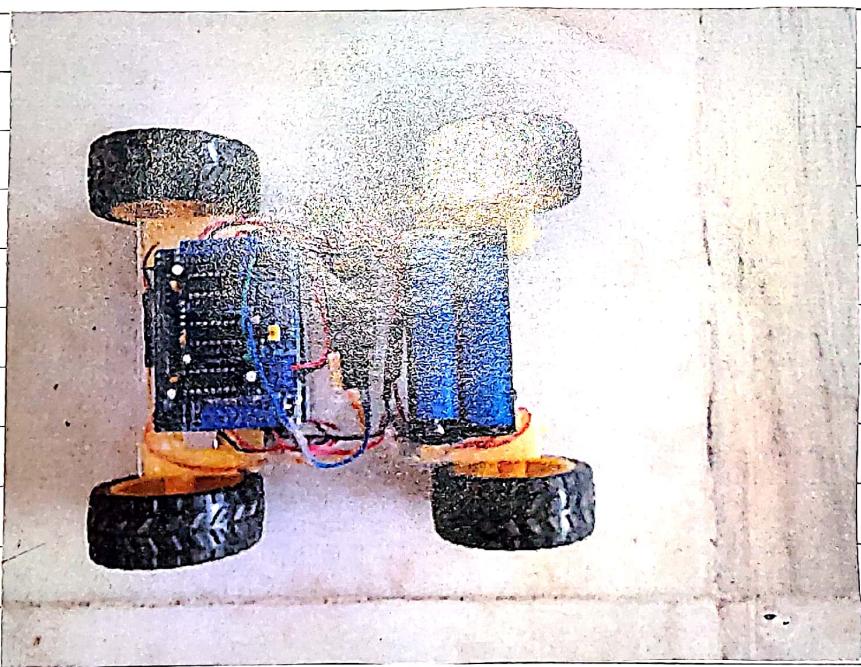
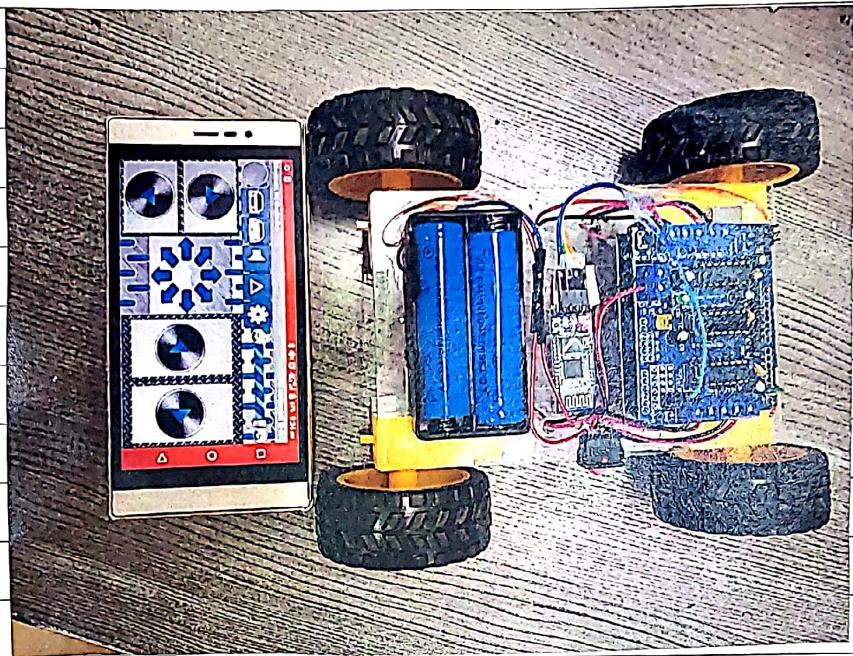
HC-05 includes the Radio and Memory chips, 26 MHz crystal, antenna and RF matching network. The right section of the BT Board has connection pins for power and signals as well as a 5V to 3.3V Regulator, LED and level shifting.

CIRCUIT DIAGRAM



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PHOTOS



WORKING OF PROJECT

- Analysis the working of our remote controlled vehicle can be understood easily by observing the block diagram shown by circuit diagram.
- Block diagram of Bluetooth controlled car. Here, the whole system is divided into four principal blocks, viz Bluetooth block, microcontroller block, and motor driver block. The bluetooth block, comprises of Bluetooth module present in the mobile phone used along with Bluetooth module used in our Robot car. The mobile phone consists of an application that provides us an interface to send ASCII characters via Bluetooth which is then received by the Bluetooth module on the robot car.
- The microcontroller then receives the data from the Bluetooth module and then manipulates the data received into series of digital outputs which run the motor driver section. The data rate of communication is set of 9600 bauds per second.

CONCLUSION

→ The objective of the paper is to utilize the smart living, more specifically the home lighting control system using Bluetooth Technology. Remote car and smartphones are a perfect match. As phones and mobile devices are each time more powerful, using them as remote for building car with advanced feature such as tracking purpose. - Android Bluetooth - enable phones and Bluetooth module via HC-05 and communication among Bluetooth devices. It is concluded that consumer can control their home, remotely and wirelessly.

The project work has been studied and implemented a complete working model using a ATmega 328p microcontroller. The programming and user interface of ATmega microcontroller has been mastered during the implementation. This work includes the study of energy saving system in many applications. The design and verification of Arduino based wireless controlled remote car successfully. The main advantage of the present system is power saving. It requires the initial cost only for designing and installation and not for utilization. Hence, such systems are very

much useful for the government to reduce the utilization of conventional power. Therefore, such systems once implemented on a large scale can bring significant reduction of the power consumption caused by other vehicles. This initiative will help the government to save this energy and meet the domestic and industrial needs. The other advantages of the circuit are that it is simple circuit avoids constant supervision of time and flexibility in design.

