Spy Robot that is Controlled by Bluetooth Android Mobile

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Abstract—**A robot is usually an electro-mechanical machine that is guided by computer and electronic programming. Many robots have been built for manufacturing purpose and can be found in factories around the world. The design of the robot is such that it is controlled by a mobile app. We use Bluetooth communication to interface Arduino UNO and android. Arduino can be interfaced to the Bluetooth module though UART protocol. According to commands received from android the robot motion can be controlled. The consistent output of a robotic system along with quality and repeatability are unmatched. This robot is capable of spying using a wireless camera. This robot can be reprogrammable and can be interchanged to provide multiple applications.**

Keywords: Arduino, wireless camera, IR obstacle detection module, HC-05 (Bluetooth module), L293D (motor driver IC), DC motor

I. INTRODUCTION

Currently Android phones or what we often refer to as smart phones are becoming stronger with the addition of an enhanced processor, both in terms of greater storage capacity, richer entertainment functions and more communication methods, and others. especially Bluetooth which is often used for data exchange; add new features to smart phones [2]. A smart phone is a mobile built on a cellular computing platform, with computational capabilities and connectivity more advanced than feature phones. Smartphones are more affordable and efficient handheld devices that can be used to support collaborative activities in a community [1].

There are many mechanisms of the controller that can be used to control robots and other devices that are controlled remotely

Working Needs

This system aims to achieve targets in designing systems that can provide the following functionality:

- Development of robots that will assist applications in spying.
- Develop robots that are easily developed with minimum cost and complexity.
- Here the focus is on the latest android technology, and robots are also referred to as mobot.

The robot control design using an Android cellphone or smart phone is direct use of a simple device that is as simple as the one we carry, the cell phone used to move the robot is already considered complex at the time when the comparison

was made with an Android phone.

This Android application will communicate with the robot using the help of the Bluetooth module that is installed on the Robot. The mobile application used here is a spy robot that is controlled by an android bluetooth mobile

II. TECHNICAL SPECIFICATION OF COMPONENTS USED

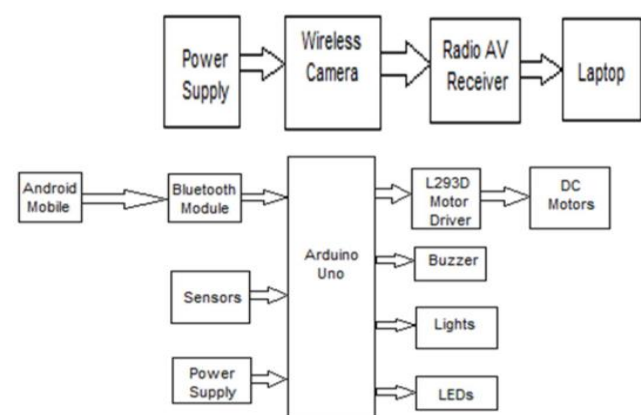| Components	Parameters	Value
Arduino	Clock speed	16MHz
	Operating voltage	5v
	Analog input pins	6
	DC current per i/o	40ma
Bluetooth	Frequency	2.4GHz
	Power	3.3-5v
	Baud rate	9600
	RF transmit power	Up to 4dbm
Wireless A/V Camera & Receiver	Scan frequency	EIA 60Hz
	Min illumination	2LUX
	TV system	NTSC
	Power supply	DC 8v/9v

III. SYSTEM BLOCK DIAGRAM AND DESCRIPTION

Fig.1. Block Diagram

The project block diagram is shown in Figure 1.

- In this block diagram the Arduino Uno

microcontroller, the L293D motor driver circuit, Bluetooth HC-05 module, DC motor, android phone, buzzer, wireless camera, AV radio receiver, laptop, lights, LEDs, and 9V-12V power supply.

- The 9V power supply is made compatible with microcontroller and Bluetooth modules by connecting a battery to the 7805 Lm which will turn it into a 5V supply. While the camera and receiver need 9V power supply directly.
- An Android smartphone will act as a remote controlled device for robot movement.
- The Bluetooth module will act as an interface between the smart phone and the microcontroller.
- Arduino Uno will act as a robot brain. The robot's movement will be determined by the micro controller.
- The microcontroller will be programmed with the help of software namely Arduino Genuino software in the Avr-g ++ language.
- The next step is to burn the program on the microcontroller.
- This work is done using the same Arduino Genuino software.
- Android phone or smart phone is connected to HC-05 via Bluetooth by entering a security password.
- After the two devices are connected the command is sent to the Bluetooth module and then sent to the Arduino Uno microcontroller.
- The robot responds to commands received according to the code inside.
- A/V wireless camera is mounted on the robot. And that can record video, clicking pictures provides constant video on a laptop through an A/V radio receiver.
- At the same time, the sensor continues to transmit its status to the cellphone. As soon as the sensor detects obstacles in both directions it sends
- Obstacle feel' status to the cellphone and at the same time the robot moves in the opposite direction without any commands received by the cellphone.
- When the sensor detects the barrier buzzer, the user and the LED connected to the sensor will also be turned ON.
- For at night, the camera can see images using lights mounted on the front of the robot. This light is controlled using an Android cellphone.
- Collection of data for keys in the Android application is as follows:
  - 'f'- Forward   > 's'- Stop
  - 'l- Left   > 'g'- Lights On
  - 'r'- Right   > 'n'- Lights OFF
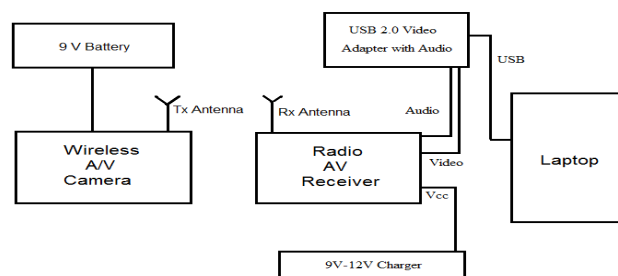 - 'b'- Backward

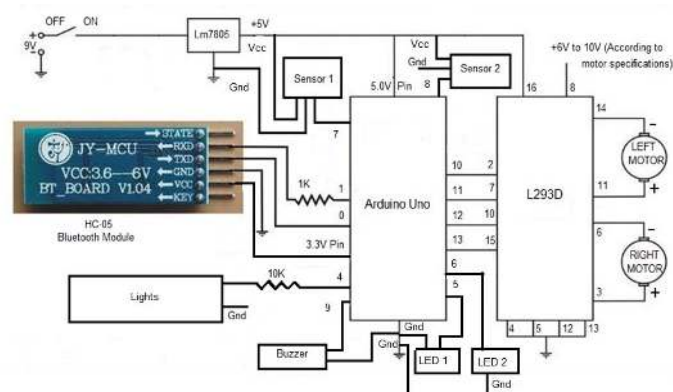## IV. SCHEMATIC CIRCUIT DIAGRAM

Fig.2. Schematic Circuit Diagram 1
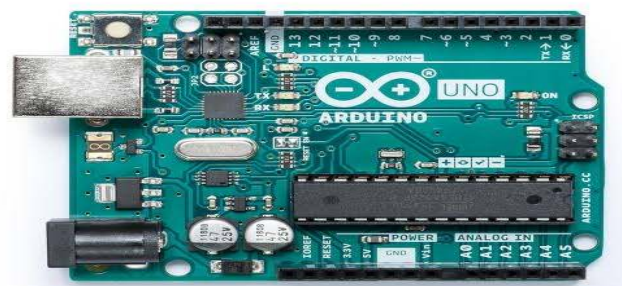

Fig.3.Schematic Circuit Diagram 2

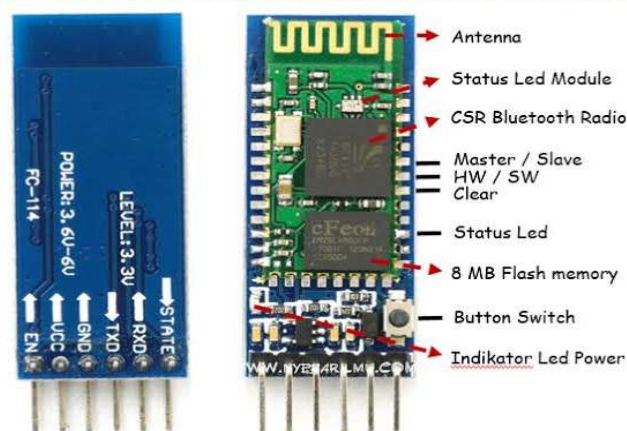
Fig.4.Arduino Uno micro controller

Fig.5.Modul Bluethooth HC-05

V. Applications

A. Spying

This robot can help in spying operations

B. Surveillance Device

The robot can be used for surveillance or reconnaissance.

C. Military Applications

This robot can be used on the borders for disposing hidden land mines.

D. Home Automation

This project can be used at homes for many purposes like controlling lights and fans of rooms.

E. Wheelchairs

This project can help the handi capped people especially those who had lost their feet unfortunately

VI. Conclusion

Wireless control is one of the most important basic needs for everyone throughout the world. But unfortunately this technology is not fully used because of the large amount of data and communication costs. Generally many robots are controlled wirelessly using RF modules. But our project to control robots using Android phones is very cheap and easy to obtain.

For this purpose the android mobile user must install the application designed on his cellphone. Users can use several commands such as moving backward, forward, moving left, moving right using these commands given from an Android phone. The proposed system also shows that how robots can be used for the purpose of spying.

For this purpose, a wireless camera has been used which we can see, click photos and record videos on laptops. This has been proven to enable meaningful two-way communication between Android phones and robots that will allow unskilled people to interact with and adjust the functionality of systems that use Arduino Uno. The use of sensors also helps the robot to act without commands being received. After the obstacle is felt it will automatically move in the opposite direction.

With this spirit, it is hoped that current activities will lead to further improvement. For example: GSM can be used instead of Bluetooth to increase communication range. GPS can also be connected to GSM to find out the location of the robot if the camera is broken or stops working.

VII. Recognition

After completing the project we learned that there are many uses of Arduino Uno. Arduino can easily take input from the real world and produce outputs that are compatible with it and can control almost everything and its knowledge continues to grow and so does the problem that mankind is trying to solve.

References

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