

REMOTE SURVEILLANCE VEHICLE USING ANDROID MOBILE

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ABSTRACT

In this project, the robot is controlled by an android mobile phone after installing application. We can on Bluetooth in our android mobile phone. Then after using the application we can send commands to the robot. Robot can receive this Bluetooth command using a Bluetooth decoder. The received signal is processed by the microcontroller with the help of decoder circuit. Microcontroller then sends commands to the motor driver IC to operate the motors. For designing our project we make use of BLUETOOTH decoder to come over the problems with RF-ID. Generally RF-ID has very limited controls. But android mobile phone using BLUETOOTH has more commands so we can easily operate it.

KEYWORDS:-Microcontroller, Bluetooth decoder, Bluetooth receiver, Motor driver, Android mobile, and Wireless camera

I. INTRODUCTION

This paper presents how to monitor movements of enemy or terrorists by using a robot which is controlled by Bluetooth technology via android application. We never forget 26/11 when 164 people including nine foreigners and 14 policemen have lost their lives while about 600 people were injured in the worst terror attack seen in the Mumbai. Soldiers were fought against the militants to free all the peoples from Mumbai hotel. For blocking these kinds of attacks we are in need of the robots to save our valuable soldiers life. In such type of terror attacks these robotic camera are become very useful for giving information to the soldiers and with that they will come to know more about the enemies and they can fight with them efficiently and effectively.

II. PROPOSED MODEL

Over the last few years, number of researches is conducted on robot based on Bluetooth technology. Our model consists of two parts i.e. "Mobile operated Robot", and "Moveable wireless CCTV camera"

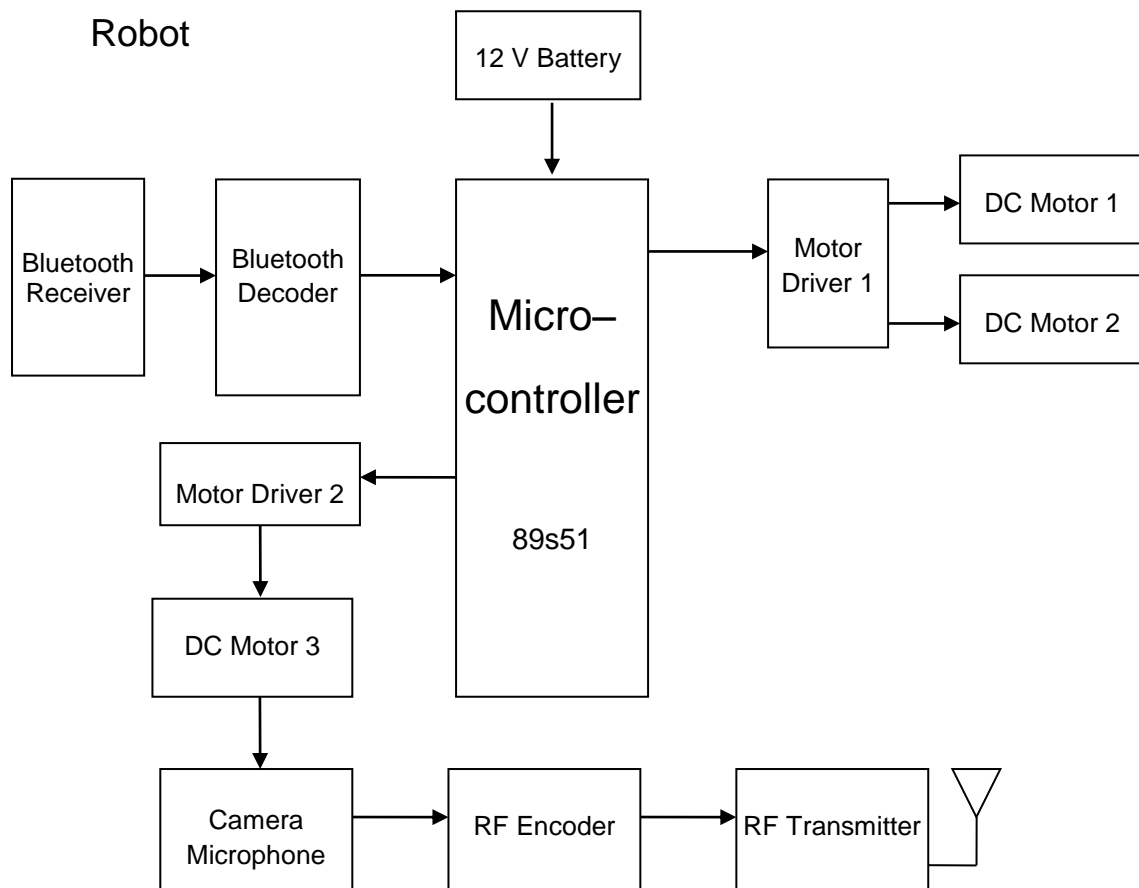


Fig. 1 Block diagram of robot surveillance vehicle using android mobile

The components are following as:-

I) Micro-Controller (89s51):-

It is the major part of the system and maintains the temperature, humidity and light intensity to the desired value. Microcontroller is the heart of the system which controls all the inputs and the controlling action to be taken at the output. Microcontroller used here is the AT89S51.

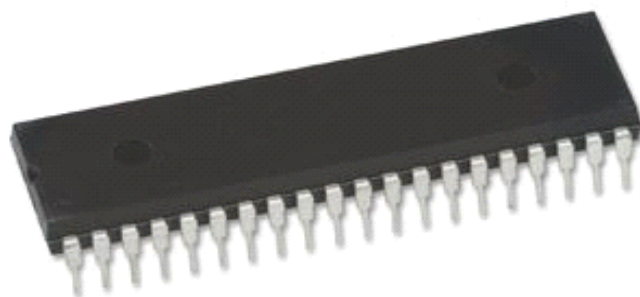


Fig. 2 Photograph of an 89s51 microcontroller.

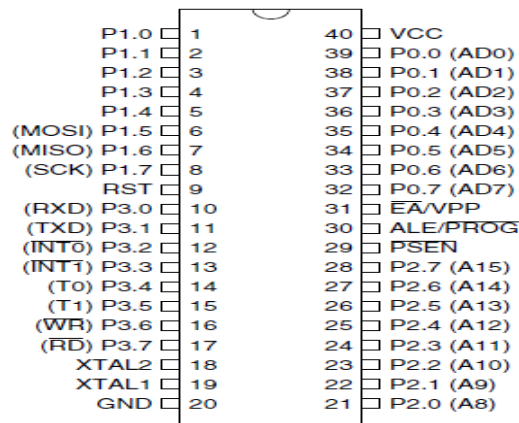


Fig.3 Pin Configuration of AT89S51

The AT89S51 microcontroller is a 40 pin DIP (Dual Inline Package) chip.

II) Display:-

It is used to display the readings of the measuring quantities. Liquid Crystal Display which is commonly known as LCD is an Alphanumeric Display, means of that it can display Alphabets, Numbers as well as symbols. It is 16 x 2 Alphanumeric display.

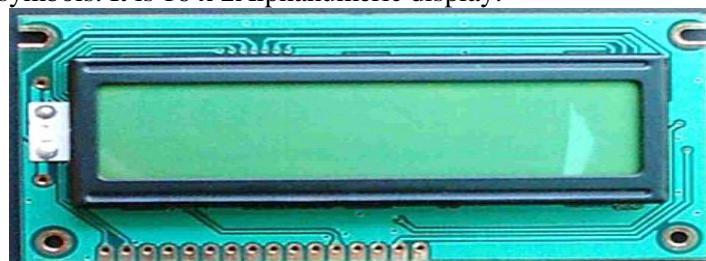


Fig.3 16 by 2 alphanumeric LCD display

III) Android Mobile:-

We need android mobile for installing application to operate Robot Vehicle. This Android Mobile sends commands using Bluetooth technology.

IV) Bluetooth Decoder:-

Robot can receive t Bluetooth command using a Bluetooth decoder. The received command is processed by the microcontroller with the help of decoder circuit. Bluetooth decoder gives ASCII code output. It has 10 meters range.

V) Motor Driver:-

The output of microcontroller is provided to motor driver IC L293D. We know that the output current of microcontroller is insufficient to drive the motors so motor driver IC is required. Motor driver IC is used to convert 5v to 12v, which is required to drive the motor.

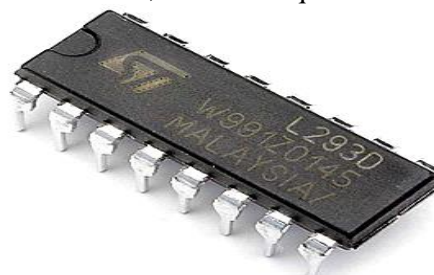


Fig.4 Motor Driver IC

VI) DC Motors:-

Motors driver IC mainly connected to DC Motors. 12 Volts, 100 rpm DC motors are used which move Wheels and also used to rotate the camera and gun.

VII) Wireless camera:

We use a Wireless CCTV camera which is mounted on the front side of the Robot. This camera required 2.4GHZ frequency for working and uses frequency modulation technique. This Camera is Battery operated and required 9 volt battery for operating camera , Dimensions of camera are: 36x28x36 mm (Width x Length x Height) which makes it easy to install on robot.

III. HARDWARE IMPLEMENTATION

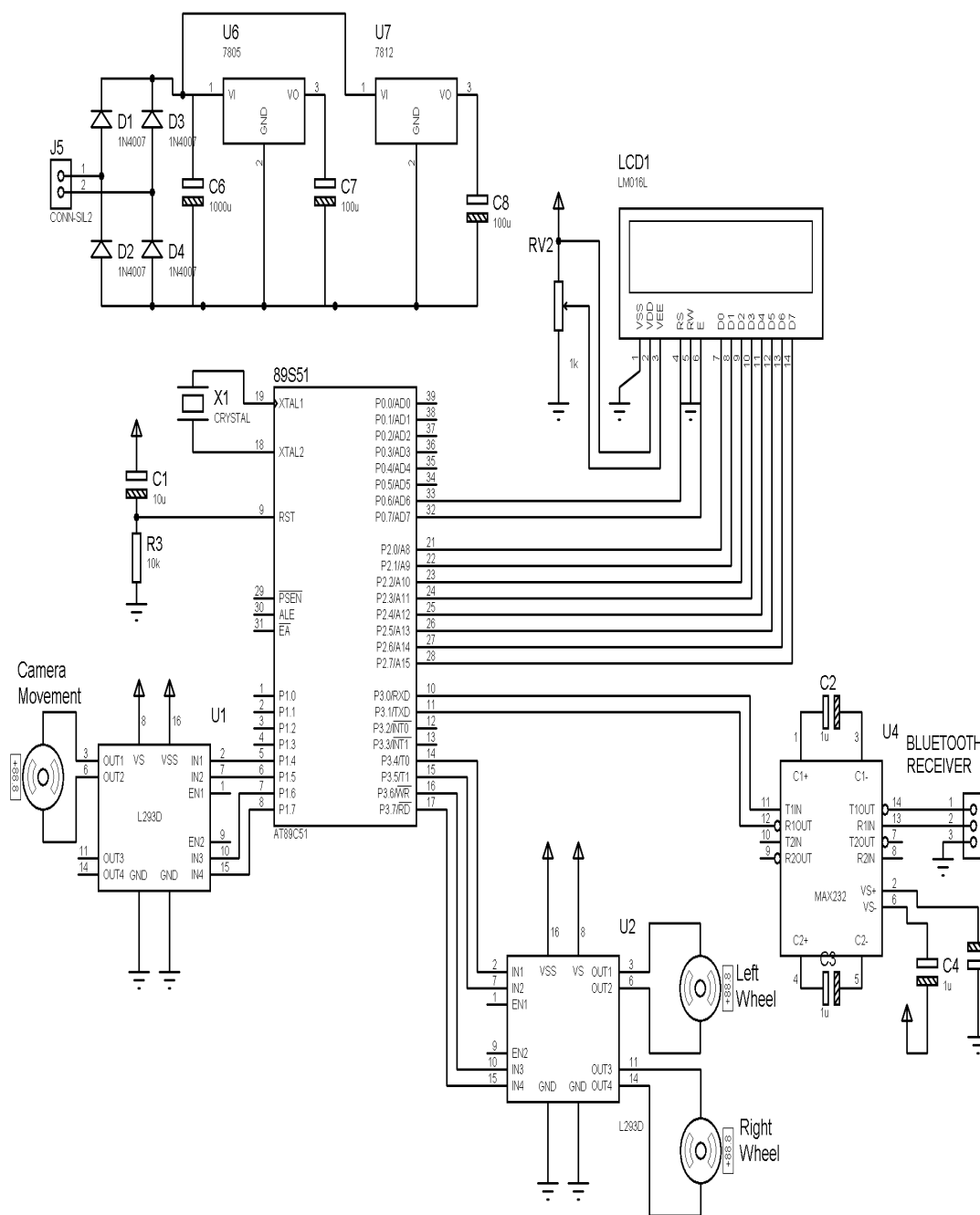


Fig.5 Circuit diagram

IV. CIRCUIT DETAILS

Bluetooth Decoder gives ASCII code output. Then this output is interfaced with microcontroller.

AT 89s51 microcontroller is 8 bit micro controller. It can be programmed using assembly language. LCD is used to display readings of the devices in the field.

V. HOW IT WORKS

First Install application in our Android mobile through which we can give commands. After installing application we set the controlling commands by giving particular input key for each commands. This application has 9 keys / commands. We have used 7 commands. Command 7 and 9 are not used and are reserved for future scope. User can even rename these key text as Forward / Reverse using the Set Keys option. User needs to turn on the Bluetooth on his/her mobile and press scan button as shown below. Then connect to the Bluetooth receiver on robot. Once the connection is established then the application will show connected status .Then using the application we can send commands to the robot.

Robot can receive this Bluetooth command using a Bluetooth decoder. The received command is processed by the microcontroller with the help of decoder circuit. Microcontroller then sends signals to the motor driver IC to operate the motors.

VI. RESULT

In Android mobile application each input key is assigned for particular task. According to the command given by particular Input keys process will start, as shown in table.

INPUT KEYS	INPUT FREQUENCY TO RECEIVER (in Hz)	MOTOR INPUT				DIRECTION OF MOTION
		R2	R1	L2	L1	
2	697 - 1336	0	1	0	1	FORWARD
4	770 - 1209	0	1	0	0	LEFT
6	770 - 1477	0	0	0	1	RIGHT
8	852 - 1336	1	0	1	0	BACKWARD
5	770 - 1336	0	0	0	0	STOP

VII. CONCLUSION

With the knowledge of new techniques in ‘Electronics’ we are able to make our life more comfortable. One such application of electronics is used in “Combat Robot for military application” Various activities of the enemy are going on in border area. Here in this project successfully monitored these through wireless CCTV camera.

We feel that our project serves something good to this world and we like to present it before this prosperous world.

By doing this project, we were better able to understand the various facts of doing an embedded system project which is emerging as one of the most 'in demand' technologies right now.

VIII. FUTURE SCOPE

- Data logging facility can be included in case of recording historical data, special data, special events and system data.
- Computer can be interfaced for more complex & precise application.
- System reliability can be improved.
- Voice interactive services can be added to offer better interaction with user

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BIOGRAPHIES

Akhilesh Shukla currently working as a Assistant Professor in department of ECE in MIT, Moradabad has a teaching experience of 14 years. He obtained his Bachelor's degree in Electronics & Communication Engineering in 1998 and Masters degree (Microwave Engineerin) in 2011 from UPTU, Lucknow. He started his career from MIT, Moradabad. Presently he is working as an Assistant Professor, Deptt of E&C Engg., at MIT Moradabad. He has published number of papers in international & national journals, conferences and seminars



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