

Wireless Restrained Military Discoursed Robot

Aviral Kumar Singh

Bachelor of Technology

*Department of Electronics & Communication Engineering
MIT, Moradabad*

Alok Kumar Singh

Bachelor of Technology

*Department of Electronics & Communication Engineering
MIT, Moradabad*

Arun Kumar

Bachelor of Technology

*Department of Electronics & Communication Engineering
MIT, Moradabad*

Abhishek Kumar Lodhi

Bachelor of Technology

*Department of Electronics & Communication Engineering
MIT, Moradabad*

Pushpendra Kumar Singh

Assisstant Professor

*Department of Electronics & Communication Engineering
MIT, Moradabad*

Abstract

In this project we have implemented various useful applications which are needed in a vehicle for accident prevention as well as in military to deal with terrorist activities. The vehicle is controlled through an android application installed in a mobile device. This application is used to control the vehicle movement in all four directions, namely, left, right, backward, forward and also stop feature. The vehicle or the robot is controlled through the android application using bluetooth technology. There are some applications of the robot which may be very useful for military like metal detector and wireless live streaming with a shooter LED. Because of several applications and uses provided by single robot, it becomes very utilitarian and serviceable.

Keywords: LCD, LED, PCB, LASER, OPTOCOUPLER, UART

I. INTRODUCTION

The Wireless Restrained Military Discoursed Robot is mainly implemented to prevent accidents and provide assistance to the military. After manifesting the present condition of the world and increase in the terrorist activities, a need to provide some assistance to the military was felt. Also, other than this the role of technology in the development of country and emerging it into a leading nation is well known. So, keeping all these factors in mind, we at our level have designed a vehicle cum robot with several useful applications. The robot consists of front and deep accident preventions. On facing any obstacle from front and sensing any zigzag place, it stops according to the condition and produces alarm with a message of the accident's reason on a LCD screen of 2 x 16 and producing alarm. Other than this the robot consists of wireless live streaming option which may be used for great advantage. Through wireless live streaming we can send our robot to dangerous places without any need of human intervention at the site. Further, we have added a shooter LED which depicts the role of a LASER gun. This LED shooter may be used for the purpose of shooting a terrorist after acknowledging them with the help of live streaming or live image processing other than all these features we have implement a metal detector which on further modification may also be used as a bomb detector. All these features are easily accessible. We have provided vehicle movement in all four directions with a stop feature. The movements of the vehicle can be controlled through an android application. Our robot already consist all multi features yet it is versatile for some other modification when needed.

II. OBJECTIVES

The main objective of the robot is to provide military assistance with accident prevention. Both the objectives aim in preventing human loss and saving life of innocent people. With the use of this robot some unreached targets may be reached easily. Further, the efforts have been provided for easy accessibility of the robot. Thus, the robot becomes a very useful device and may become a boon for the technology, society and the country.

III. WORKING

Power supply of 9V is given which is further converted or regulated into constant 5V supply. Further, a LCD of 2x16 is connected to display the required message. A Microcontroller named at89s52 is used which consists of 8kb ROM, 256byte RAM, 3 timer and counter, 8bit processor. It is a 40 pin IC. To prevent front accidents and deep accidents a photo diode is used for detection of light. A reset switch is used to reset all the values of microcontroller to default, like stack pointer and program counter. This reset switch stops the current performing operations performed by the microcontroller. We are using a crystal oscillator which provides

the machine cycle to the microcontroller and with the help of a ceramic capacitor we can easily stabilize the frequency of the crystal oscillator. We have used a optocoupler and H bridge for the purpose of to drive the motor. We use a Imo software for live streaming through the mobile phone. We are using Bluetooth modem which works on UART communication to send the command from the android app installed in the mobile phone. A circuit is designed for any metallic body detection by detecting the variations in the high frequency Eddy current losses. With an external tuned circuit they act as oscillators. Output signal level is altered by an approaching metallic object. Output signal is determined by supply current changes. Independent of supply voltage, this current is high or low according to the presence or the absence of a close metallic object. If the metal object is near the searching coil, the output current will flow more. On the other hand, the current will be decrease when the object is far from the searching coil.

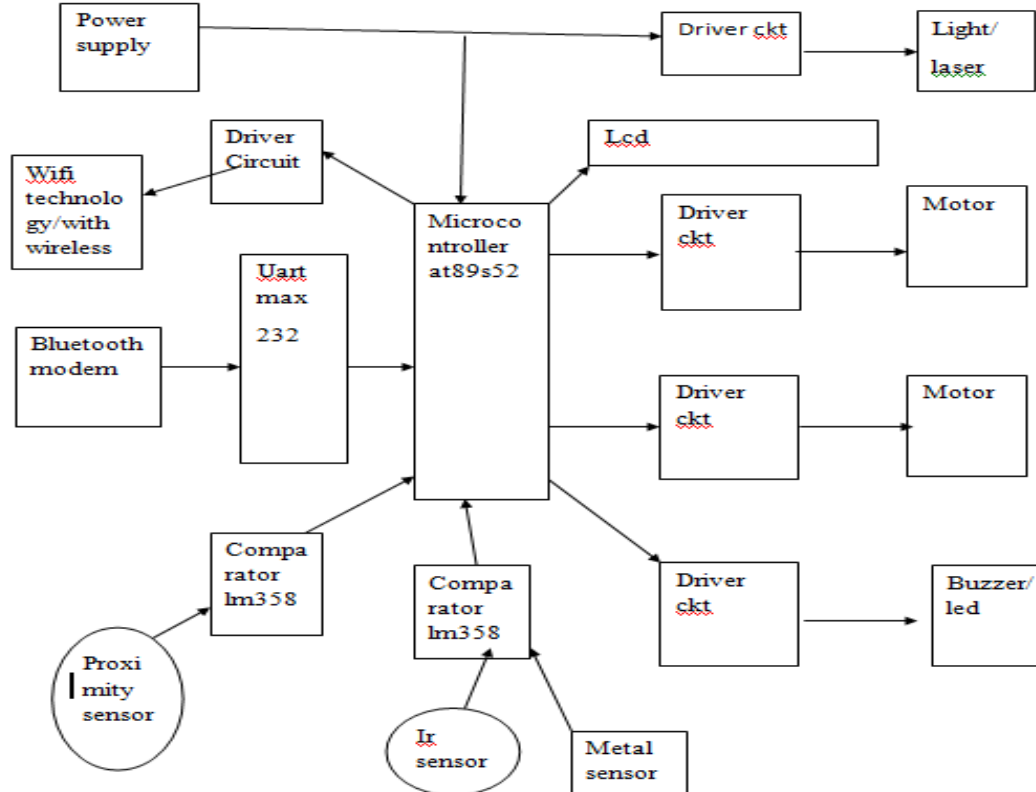


Fig. 1: Block diagram of Wireless Restrained Military Discourged Robot

IV. POWER SUPPLY

All digital circuits require regulated power supply. Through the block diagram below we can easily learn how to get a regulated positive power supply from the main power supply. The step down transformer used here is provided with input of 230V AC supply which reduces it and further sends it to rectifier. The rectifier converts ac signal into dc signal or dc voltage. Then this signal is filtered with the help of a capacitor. The filter capacitor passes the signal to the regulator which converts the varying input voltage into a constant regulated output voltage of 5V. This whole process is needed because the component can't work on varying and such a high voltage of 230v.

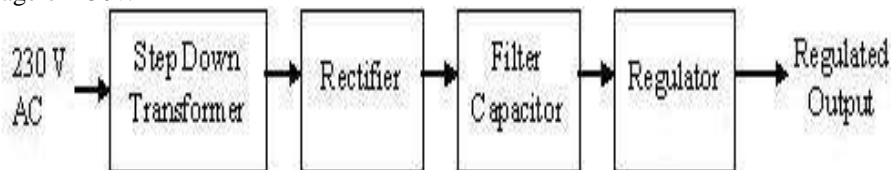


Fig. 2: Block diagram of power supply

V. MICROCONTROLLER AT89S52

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry standard 80C51 instruction set and pin-out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications. The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two-level interrupt

architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM contents but freezes the oscillator, disabling all other chip functions until the next interrupt or hardware reset.



Fig. 3: Microcontroller I.C AT89S52

VI. BLUETOOTH TECHNOLOGY

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz from fixed and mobile devices, and building personal area networks (PANs). Invented by telecom vendor Ericsson in 1994, it was originally conceived as a wireless alternative to RS-232 data cables. It can connect several devices, overcoming problems of synchronization. Bluetooth is managed by the Bluetooth Special Interest Group (SIG), which has more than 25,000 member companies in the areas of telecommunication, computing, networking, and consumer electronics. The IEEE standardized Bluetooth as IEEE 802.15.1, but no longer maintains the standard. The Bluetooth SIG oversees development of the specification, manages the qualification program, and protects the trademarks. A manufacturer must make a device meet Bluetooth SIG standards to market it as a Bluetooth device.



Fig. 4 : Bluetooth Module

VII.LCD

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16 x 2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segments LEDs. The reasons being: LCDs are economical and easily programmable. A 16 x 2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5 x 7 pixel matrix. The LCD has two registers, namely, Command and Data.

The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on LCD. The data is the ASCII value of the character to be displayed on the LCD. The brightness of LCD can be controlled by variable resistor. The CMOS technology makes the device ideal for application in hand held, portable, hand held & used low power consumption.



Fig. 5 : LCD

VIII. LIST OF COMPONENTS

- Step-down transformer.
- Capacitor (1000uf, 10uf, 27pf, 100uf, 55uf).
- Resistor (1k, 10k, 470ohm, 22k, 56k).
- Transistor (npn and pnp).
- Diode (in4007).
- 555 timer.
- Bluetooth modem hc205.
- Driver darlington.
- Switch.
- H-bridge.
- Socket.
- PCB.
- Crystal oscillator.
- Motor.
- Optocoupler pc-817.
- Imo software.
- Wireless camera or a mobile phone.
- Microcontroller (at89s52).

IX. APPLICATIONS AND ADVANTAGES

There are many applications and advantages of the robot. All the applications of this robot are itself its Advantage. Some of them are-

- Front accident : In this mode we use proximity sensor that sense the obstacle and according to requirement it stop the car.



Fig. 6: Front accident

- Deep accident : In this case we use IR led and photo diode sensor that sense the deep and zigzag place and according to condition it stop the vehicle and provide accident avoid feature.



Fig. 7: Deep accident

- Metal Detector : It can be used to detect metal and bomb for security purpose.
- Shooter LED : It can be used as a LASER gun or a shooter for military purpose.



Fig. 8: Shooter LED

- Bluetooth controlled vehicle : It can be used as a Bluetooth controlled vehicle to move it Left, Right, Forward and Backward.
- Wireless Live Streaming : It can be used for live wireless streaming and enter in a terrorist network.

X. CONCLUSION

With our efforts and hard work we have implemented several useful applications in a single robot. Hence, this robot may be used for many purposes, thus showing the versatility of our model. Further, the robot can be easily modified when needed. This robot will provide military assistance and help in the prevention of accidents (front and deep). The features implemented in the robot will help to send the robots in dangerous areas where human interference may be risky.

REFERENCES

- [1] G.L Peterson ,”the wireless control system”.
- [2] U.S Department of energy, ”Energy saver system,”
- [3] S.kopparthipratul Kajmera : Signal delivery for remotely located micro-system.
- [4] Discrete Semiconductors. ”2n22222”.
- [5] TEXAS Instruments.”max232,ht-12e and ht-12”.
- [6] Atmel corporation,” microcontroller at89s52”. Digikey,”BJT,TIP”
- [7] Programming,”8051 microcontroller Mazidi,”
- [8] Programming ,”Kenneth jayala” western Carolina university.
- [9] Harry keybett and earl boysen,”basic electronic.
- [10] Front line electronic,” application of electronics”.