

Bomb Destroyer and Road Maker Robot

Mr.M.V.N.R.P.Kumar¹, Ms.B.Hombal², Mr. H. G. Virkar³, Mr.A.Y. Kharade⁴, Mr.P.V. Bagade⁵

Dept. Of E&TC, L.N.B.C.I.E.T. Raigaon, Satara,(Maharashtra)

E-mail- mvnrpk@yahoo.com¹, hvirkar111@gmail.com³, kharade.akshay@gmail.com⁴, praj10jun@gmail.com⁵

Abstract- Bomb detection and destroyer using metal sensor and road maker Robot control through RFID is as interesting proposition .Here is a tele-remote circuit which enables switching “Forward, Backward, Right, Left”. It can be used to move the Robot from any distance, overcoming the limited range of infrared & radio remote controls It. detects the bomb which is placed by rival underground and defused it. As well as it make the road for convenience of others. This consists of microcontroller, RF encoder, RF decoder, motor drives.

Index Terms- Microcontroller, Metal detector, Bomb Detection Robot, RF module.

1. INTRODUCTION

Defense Robot control through remote is as interesting proposition. Although these concept circuits based on the same were developed almost ten years back, it however became more popular with the introduction of RF module. Here is a tele-remote circuit which enables switching “Forward, Backward, Right, Left” and up& down the bled through remote. It can be used to move the Robot from safe distance. Metal detectors are considered as the most reliable sensors for mine detection work. However, landmine detection performance of the metal detectors is highly dependent on the distance between the sensor heads and the buried landmines. Therefore, the landmine detection performance of the metal detectors could be substantially improved if the gap and attitude of the sensor heads can be controlled.

In case of robots assisted land mine detection, this function can be performed in a convenient manner where the sensor heads should accurately follow the ground surface maintaining almost uniform gap between the ground surface and the sensor heads by controlling the gap and attitude of the sensor head to the ground surface.

2. LITERATURE SURVEY

Few years ago, In military they detect bomb manually but by using this application we can detect the bomb automatically. They search the bomb by hand using metal detector therefore the possibility is they die, by using this application we can use the remote .The original idea was adopted from National Conference on Emerging Trends in Engineering & Technology (VNCET-30 Mar’12) named “HAND GESTURE RECOGNITION BOMB DIFFUSING SURVEILLANCE ROBOT”. This is an interesting robot that can be controlled by hand gestures Marmara University Faculty of Technical Education Department of Mechatronics Education Istanbul, named “THE DESIGN OF REMOTE CONTROLLED BOMB DESTRUCTION ROBOT

IMPLEMENTED”. Here the robot is controlled by remote and in our application the robot is controlled by remote as well as it makes the road for convenience of others.

3. MODIFICATION

A compact design results is much faster motion and thus increases the accuracy and efficiency. Microcontroller perform main role in this project. RF receiver is connected to the microcontroller. This is an input of the system. As per input a program is written into microcontroller & microcontroller performs operation as per programming. The DC motor is connected to the microcontroller. DC motor is used for base as well as road making & bomb destroyer assembly.

4. TECHNOLOGY

This radio frequency (RF) transmission system employs Amplitude Shift Keying (ASK) with transmitter operating at 434 MHz Encoder IC (HT12E) receives parallel data in the form of address bits and control bits. the control signals from remote switches along with 8 address bits constitute a set of 12 parallel signals the encoder HT12E encodes the parallel signals into serial bits. Transmitter, upon serial data from encoder IC (HT12E), transmit it wirelessly of HT12D. the decoder then retrieves the original parallel format from the received serial data. Decoder convert the serial input into parallel output. It decode the serial addresses and data received by an RF receiver, into parallel data and send them to microcontroller.

5. SYSTEM DESCRIPTION:

5.1 RF Transmitter:

This radio frequency (RF) transmission system employs Amplitude Shift Keying (ASK) with transmitter operating at 434 MHz Encoder IC

(HT12E) receives parallel data in the form of address bits and control bits. The encoder HT12E encodes these parallel signals into serial bits.

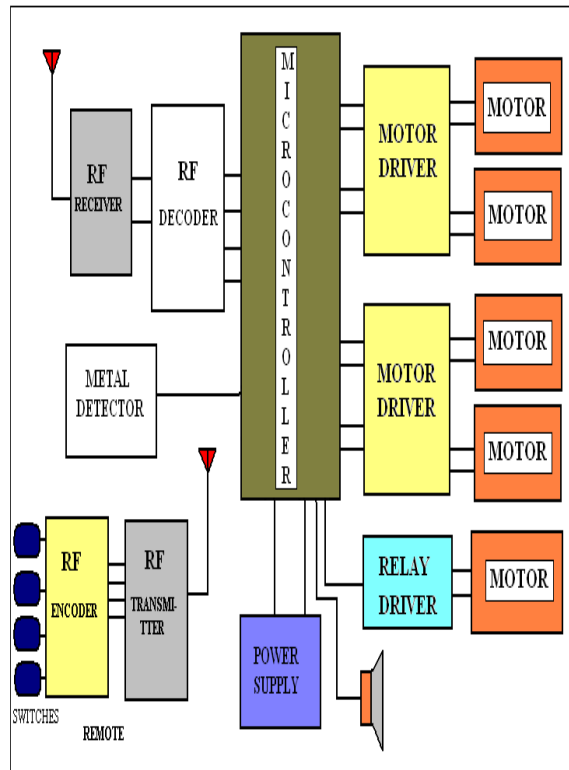


Fig.1 Block Diagram of Transmitter and Receiver

5.2 RF Receiver:

The given block diagram shows control through the RF Technique using a micro-controller. RF receiver receives the serial data through antenna. Send to decoder. Decoder converts the serial input into parallel outputs. It decodes the serial addresses and data received by, an RF receiver, into parallel data and sends them to microcontroller.

5.3 Microcontroller:

The AT89C52 is a low-power, high-performance CMOS 8-bit microcomputer with 8K bytes of Flash programmable and erasable read only memory (PEROM). 4 Kbytes of in-System Reprogrammable Flash Memory Endurance: 1,000 Write/Erase Cycles. Fully Static Operation: 0Hz to 24 MHz 128 X8 Bit Internal RAM32 Programmable I/O Lines. Two 16 Bit Timer/Counters SIX Interrupt Sources. The device is manufactured using Atmel's high-density non-volatile memory technology and is compatible with the industry-standard 80C51 and 80C52 instruction set and pin out. The on-chip Flash allows

the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT89C52 is a powerful microcomputer which provides a highly-flexible and cost-effective solution to many applications.

5.4 RF Module:

The RF stands for Radio Frequency .Frequency range varies between 30 kHz & 300 GHz .In this RF system, Transmission through RF is better than IR (infrared) because signals through RF can travel through larger distances making it suitable for long range applications. IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter & receiver. RF transmission is more strong and reliable than IR transmission.

5.5 Drivers:

Drivers are used to control the devices because signal coming from controller is low signals to drive the motors we need a drivers so that motor will control easily.

5.6 Metal Detector:

A metal detector is a device which responds to metal that may not be readily apparent. The simplest form of a metal detector consists of an oscillator producing an alternating current that passes through a coil producing an alternating magnetic field. If a piece of electrically conductive metal is close to the coil, eddy currents will be induced in the metal, and this produces an alternating magnetic field of its own. If another coil is used to measure the magnetic field (acting as a magnetometer), the change in the magnetic field due to the metallic object can be detected.

6. EXPERIMENT RESULTS



Fig 2 –Transmitter of Bomb Destroyer and Road Maker Robot

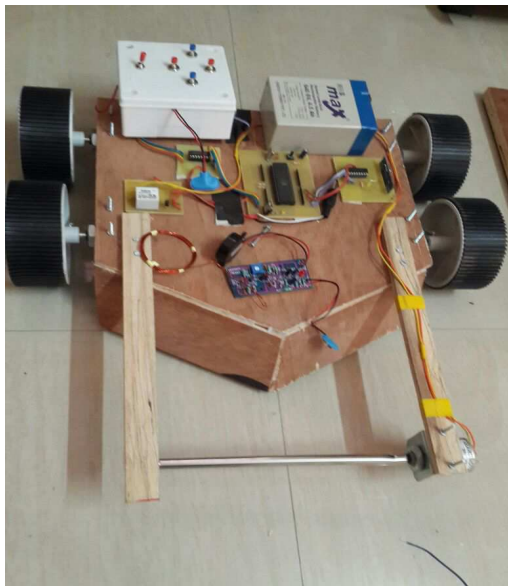


Fig 3 –Receiver of Bomb Destroyer and Road Maker Robot

It detects the bomb which is placed by rival underground and defused it. As well as it make the road for convenience of others. This consists of microcontroller, RF encoder, RF decoder, motor drives.

8. CONCLUSION

Although this research is still a proto-type only and for the demonstration purpose only. It is successfully demonstrated And also has proven to

allow a two-way communication between robot and its controller which will allow a non-expert to interact with and can control it. We are currently extending this system to allow for real time control over the robot from a remote place. The speed of robotic arm is also supposed to control using PWM. At the end of the research, we will get a fully automated robot with simple control over it and can be used as a real time “BOMB DETECTION ROBOT”

The trajectory planning algorithm makes it robust against any accidental collision of the sensor head when it is intended to scan an uneven mine affected area. The trajectory planning algorithm makes all efforts to control the gap and attitude of the sensor head such that it follows the Uneven ground surface that is conducive for the mine Detection by the metal detector. The experimental results presented in this paper exhibit the effectiveness of the CMD for buried landmine detection over uneven ground.

REFERENCES

- [1] William H. Yeadon, Alan W. Yeadon. Handbook of Small electric motors. McGraw-Hill Professional, 2001.
- [2] Michael Barr. "Embedded Systems Glossary". *Neutrino Technical Library*. Retrieved 2007-04-21.
- [3] "Robotics: About the Exhibition". The Tech Museum of Innovation. Retrieved 2008-09-15.
- [4] W .Leohard ,”control of electric drives”, 3rded.,New York:springer 2001
- [5] T .Song, J .Park, s. June and J. Jeon ,”The development of interface devices for human robot interaction” ,Control, Automation and Systems, 2007.
- [6]Mazidi Muhammad Ali, “The 8051Microcontroller and Embedded Systems” Prentice Hall of India, New Delhi, India, pp. 492-507, Chap 17, 2007.