

Self Defensive Security System Using Wireless Machine Gun

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ABSTRACT

This project aims to develop a system which will provide the security on border and protect soldiers life. The system will be a combination of remote operated machine gun and control room. Here we will build wireless self defensive machine gun which takes decision as per defined by the user. System will be more powerful and it will give more controlling and operational flexibility to the user. This system will provide us remote accessibility for soldiers in the battlefield or on the borders of the country using wireless technology.

Keywords-RF Technology, Embedded System, gun, AVR Microcontroller, camera, self defense.

I. INTRODUCTION

The aim of the proposed system is to build a system which will offer the world's most complete line of remote armed delay/denial and unarmed reconnaissance platforms. It is designed to keep enemy out of the line of control. This system can be very useful in ground level combat and save most worthy human life.

Now-a-days we use manual method on the borders of the country or during wars i.e. the soldiers continuously observe any of the terror movement on the actual line of control. These systems are not safe for the soldiers life and there are ample of chances of mistakes and dangers. The proposed system is mainly designed to provide remote accessibility using wireless technology for land soldiers in battle field.

Major limitation with only remote operated machine gun is non-portability so by providing transportation capability system will be more powerful and it gives more controlling and operational flexibility to the user. Some features we are trying to add in the system are servo motor for horizontal & vertical motion of machine gun, wireless camera, and LASER beam to point the target, Wireless Connectivity between transmitter and receiver using RF technology and System Software which is operated by user which provides full system monitoring and controlling functionality at the control room.

System will be controlled using wireless signal. We need to build a remote signal transfer platform. This remote signal transfer platform will be used for wireless network. The wireless and embedded technology will be used for the design and development of this system. This system can be very useful in ground level combat and save most worthy human life. So the proposed system is the novel idea to build wireless self defensive machine gun which operate as per defined by the user.

Proposed system will be a combination of remote operated machine gun and the control room. Major limitation with remote operated machine gun is non-portability so by providing transportation capability system will be more powerful and it gives more controlling and operational flexibility to the user. This system will provide the security on border and protect the soldier life. It will be a combination of remote Operated machine gun and control room. This system is mainly designed to provide real time operation by continuous monitoring using camera, remote controlling using wireless technology for land soldiers in battle field

II. Background History

A Wireless Portable, Self -Defensive Machine Gun

Tejashree M. Hedao , Dr.N.G.Bawne (2009)

This paper describes the novel idea to build wireless automated defensive machine gun which will take decision on it's own and operate itself as per requirement or as per defined by the user. Proposed

system will be a combination of the robotic controlled tank and remote operated machine gun. It uses the design of TRAP system.

Border Security System

Karthikeyan. A & Sarath Kumar.V(2012)

In this system sensor uses the concept of Black Body Radiation. If anyone tries to cross the border sensor detects and it sends a signal to The microcontroller switch on the camera which captures the image of the human and it transmit the signals to the near security station. In the receiver circuit which displays the image captured on the monitor. After sensing the image, the official can send control signal, in the border side the micro controller activate the relay driver which drives the load such as automatic function guns.

Problem Statement:

Today we use manual method for protection. i.e. by, soldiers continuously observing terror movement on actual Line Of Control which is not safe for the soldiers life, there may be human errors also which is dangerous hence to overcome these issues we have proposed a system which provides an easy solution for this by providing remote accessibility using wireless technology

III. BLOCK DIAGRAM

Block diagram of proposed system

There are two blocks, the transmitter side and the receiver side. At the transmitter side continuously monitoring from location of the machine gun will be done. And at the receiver side, the gun actions will be performed under the decisions taken by the user at control room. There is the interconnection between the transmitting and receiving ends which are properly synchronized with each other. The resonance helps in perfect matching two ends.

Transmitter Section:

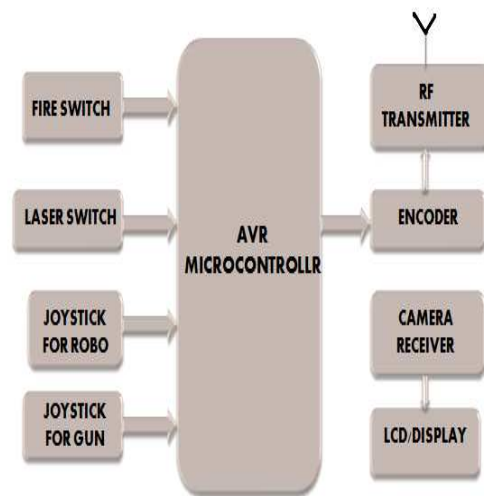


Fig 1: Block diagram of the transmitter side (control room).

Receiver Section:

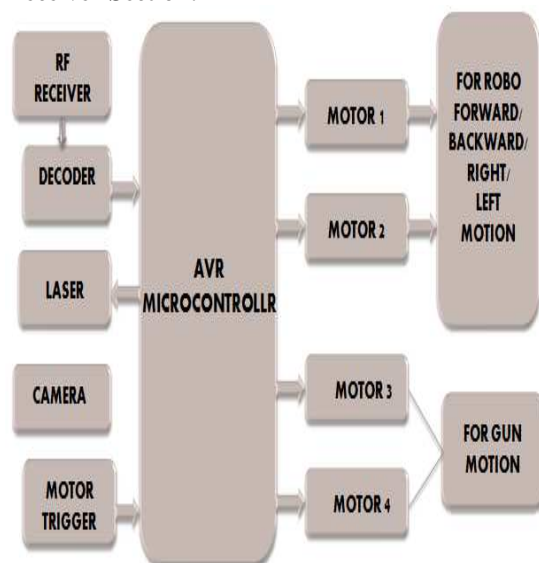


Fig 2: Block diagram of the proposed system at the receiver side (remote unit).

In the proposed method, there are two units, one is transmitter/control sections at the control room and the second one is the receiver or the remote unit which is placed at the border (unmanned area). Transmitter unit consists of joysticks which control the motion of the gun, vehicle and the laser switch also well as the trigger. It also includes the camera receiver. The wireless camera at the receiver section or the remote unit on the border continuously captures the videos at the border and transmits it to

the control unit. Once the vigilance person who is at the control room finds any unauthorized entry of adjacent country terrorist or militant he can activates a gun which is located at the border side from the room itself which is done by using the joysticks which is nothing but a input from control unit to the remote unit. In the similar way the laser is used to target the enemy and the gun is triggered remotely from the control unit. All these transmission are taken over by a RF transmitter and a receiver which are placed at both the ends. The RF units is a 433MHZ transmitter receiver units.

IV. Proposed Work

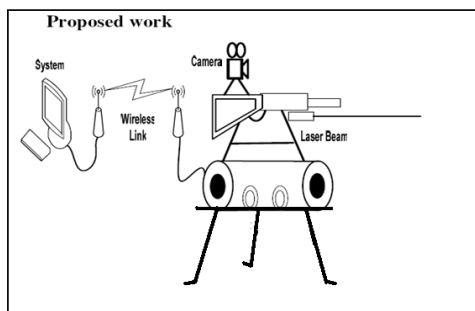


Fig 3: Proposed system structural diagram

Above diagram shows the basic structural diagram of the system. It contains the following parts,

A. Base Vehicle :

This is designed to move or transport the whole system from one place to another location. It has two individual motors system on both side that is on left and right it will create tank like structure due to which vehicle can run in forward and backward direction and it can also turn at 360° which will reduce vehicle turning radius which is most important parameter in any vehicle.

B. Machine Gun:

Another main unit in the system is remote controlled and auto triggered machine gun. It is situated on the basement. User can send signal to operate the gun remotely using remote input device from the control room.

C. Machine Gun Rotation:

The basement of the system is transportable but if the system is stay steady and not able to rotate then user can rotate upper part that is machine gun part 360° so that user can target or see at any direction by rotating gun using remote input device.

D. Infrared Laser Gun:

For accurate target at the aim user can use this laser (light amplification by stimulated emission of radiation) gun. It is light emitting diode which generate long distance red laser beam. It is attached with machine gun so that it will move at machine gun's direction

V. METHODOLOGY

The design methodology will be used for the given

work. The details are as follows

A. Motion Detection:

Proposed system is less with motion identification system. This task is completed using logical and physical methods. Those are as follows,

B. Camera Based Motion Identification:

Here system will continuously capture video frames using wireless camera and transmit them to the control room.

C. Wireless Connectivity:

Overall system is wireless for this system will use two set of transmitter and receiver. One set is at user side and another is at vehicle side. These sets are use for wireless connectivity and communication. The radio frequency technology is used for this purpose.

D. System Software:

This is main interface operated by user which provides full system monitoring and controlling functionality.

VI. COMPONENT DESCRIPTION

A. RF MODULES (434MHz) :

Features:

- Miniature Module
- FM Narrow Band Modulation
- Optimal Range 400m
- Operates Within 433 License Free Band
- 34 Channels Available
- Single Supply Voltage

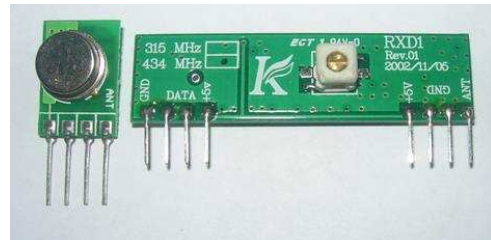


Fig 5 RF module

B. WIRELESS CAMERA :

Features:

- Wireless car rearview camera kit
- TV System: NTSC
- Image sensor: color CMOS
- Included Rearview camera, wireless transmitter, wireless receiver
- Adds car rearview function for your car GPS



Fig 6. Wireless camera

C. MACHINE GUN:

Another main unit in the system is remote controlled and auto triggered machine gun. It is situated on the basement. User can send signal to operate the gun remotely using remote input device

MACHINE GUN ROTATION:

The rotation of Gun is done by two motors. One in horizontal direction & other in vertical direction, so that user can target or see at any direction by rotating gun using remote input device.

D. JOYSTICK SWITCH

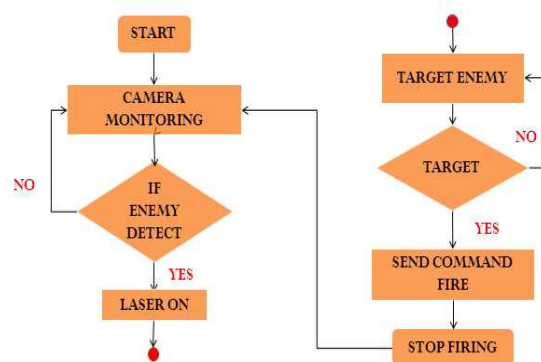
FEATURES:

- Easy to use & handling.
- Simplification of the command control station
- Easy mounting due to the slots in the panel
- Small space requirement
- Long service life
- Robust and lasting construction.



Fig 7 Joystick

VI. FLOW CHART



VII. RESULT

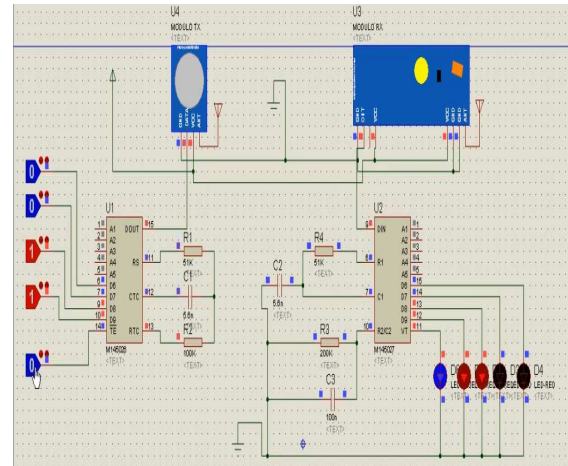


Fig 8: Simulated results of RF module.

This is the simulated result for the radio frequency module, which shows the wireless transmission of the data. It uses encoder and decoder which is used to convert the parallel data to serial and serial to parallel data respectively.



Fig 9: Remote unit at the receiver section.

The given image shows the assembly which is to be placed at the receiver side that is the assembly of the gun along with the laser, the camera and the vehicle used for the movement of the gun and the camera.

VIII. SUMMARY

Wireless machine gun system is mainly designed to provide remote accessibility using wireless technology for land soldiers in battle field and on the line of control. The remote controlling improves efficiency, security and accuracy, which results in increase of the military power and reduces man power. In future with more development and enhancement it will be ready to work in real world environment.

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