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A Wireless Portable, Self -Defensive Machine Gun

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Abstract: ***This paper describes the novel idea to build wireless automated defensive machine gun which will take decision on its 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. Some features we are trying to add in our project like 360 degree rotation of base and machine gun, laser beam, emergency torch, motion detection using sensors, Camera Based Motion Identification, LDR based Light detection, Temperature Detection (Thermostat), Wireless Connectivity. The wireless and embedded technology will be used for the design and development of this project. This system can be very useful in ground level combat save most worthy human life.***

Keywords: Portable device, Fire sensor, Wireless camera, Rf transmitter.

1. Introduction

The aim of this project is to build the system which will offers the worlds most complete line of remote armed delay/denial and unarmed reconnaissance platforms. It uses the design of TRAP sys-tem. The TRAP (Telepresent Rapid Aiming Platform) is a remotely operated weapons system. It is designed to keep soldiers out of the line of fire. 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 our project like machine gun and stepper motor for hori-zontal and vertical motion of machine gun, wireless camera, and LASER beam to point the target, Wireless Connectivity between transmitter and receiver and System Software which is operated by user which provides full system monitoring and controlling functionality. 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 project. This system can be very useful in ground level combat save most worthy human life. So the proposed system is the novel idea to build wireless automated defensive machine gun which operate as per defined by the user. Proposed system will be a combination of the robotic controlled bunker and remote operated machine gun. 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 can be very useful in ground level combat save most worthy human life.

2. Literature Survey

A personalized gun or a smart gun is a concept from various previous military applications gun from the different Manuscript Details Manuscript Submitted March 11, 2015. Prof. Pokharkar Sagar B., Department of Electronic Engineering, Savitribai Phule Pune University, All India Shree Shivaji Memorial Societys Institute of Information Technology, Pune (Maharashtra), India.



Figure 1: Super Aegis F2

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These machines are built to completely eliminate its target from far distance without any harm to the soldiers. One of its kinds is the robot gun built by the South Korean company shown in Fig. 1. This robot gun was introduced in the Korean robot world 2010 expo named as Super Aegis F2.This robot gun was manufactured by the South Korean company named as DoDAMM. This robot gun is capable to do a lot of things for military use. For military use it has been made with certain features. It is equipped with 12.5m machine gun with grenade launcher built in it. It also consists of a 30x zoom CCD camera on it. This camera is used for surveillance. Also it has laser range finder to predict the range of the particular object or a human and also consist of infrared sensors to detect the presence of human beings also it is having ability to shoot in 360 degree. Ability of this is such that it can shoot up to 3km away target in day time and can shoot up to 2.2km in the night darkness with the help of CCD camera. But the biggest disadvantage of this robot gun is that it is stationary built on a particular base which cannot move.

The Fig. 2 shown below is a camel robot armed with

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automatic weapons, anti-tank missiles and even grenade launchers. This machine has an capability to move in several direction but has an disadvantage to shoot in a single direction. Instead of this there are several advantages like it has a capability to become power source as it runs on diesel. By getting together these two robot gun ideas we came to a decision to make a robot gun which will eliminate the disadvantages of the above robots and should be proved a complete war machine.

3. Problem Definition

Proposed system will be a combination of the robotic controlled tank and remote operated machine gun. 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 can be very useful in ground level combat save most worthy human life.

4. Proposed Work

We have built an unmanned vehicle which would work on com-plete wireless technology. This vehicle should work on automatic mode as well as manual mode. In automatic mode the vehicle should detect the position of an enemy with the help of an array of proximity sensor and shoot to the target without any permission.

In this project we will build wireless defensive machine gun which take Decision as per defined by the user. This system is mainly design to provide

1) Real time operation
2) Continuous monitoring using camera
3) Remote controlling using wireless technology for land soldiers in battle field.

A. Block Diagram

In manual mode the whole operation of the robot including triggering mechanism is handled by the user through portable device with the help of Rf module. Microcontroller rotates the motor on which gun is mounted into desired direction, after rotating motor the robot will wait for command from the operator through portable device. Fig. 3 shows TRANSMITTER SIDE and fig. 4 RECEIVER SIDE.



Figure 2: Camel Robot

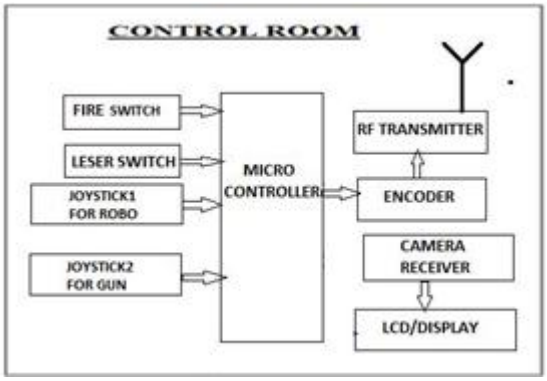


Figure 3: Transmitter Side

This command is send by wireless communication between the robot and operators portable device through Rf module. In both the modes the surveillance by the camera is continuously done which we are able to watch on our portable device.

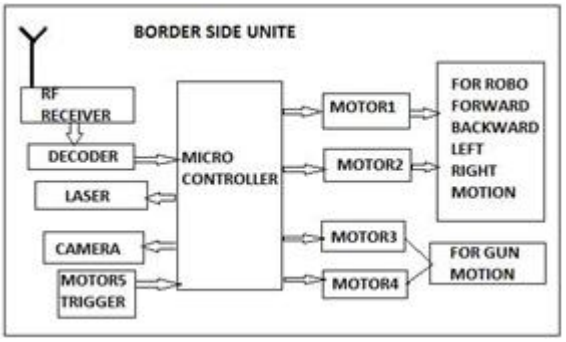


Figure 4: Receiver Side

B. RF Modules (434MHz)

It is used for wireless communication between control room (transmitter) and border side (receiver).

Overall system is wireless for this system will use RF transmitter and RF receiver. These sets are use for wireless connectivity and communication. Available for operation between 433.075 and 434.725 MHz in 50 KHz steps these modules give the possibility of 34 different frequency channels and are able to transmit at distances of up to 400m. The RF module, as the name suggests, operates at Radio Frequency. The corresponding frequency range varies between 30 kHz and 300 GHz. In this RF system, the digital data is represented as variations in the amplitude of carrier wave. This kind of modulation is known as Amplitude Shift Keying (ASK). Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter and receiver. Next, RF transmission is more strong and reliable than IR transmission. RF communication uses a specific frequency unlike IR signals which are affected by other IR emitting sources. This RF module comprises of an RF Transmitter and an RF Receiver. The transmitter/receiver (Tx/Rx) pair operates at a frequency of 434 MHz an RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected at pin4. The transmission

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occurs at the rate of 1Kbps - 10Kbps.The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter.

C. Wireless Camera

Here system will continuously capture video frames using wire-less camera.

1) Wireless car rearview camera kit
2) TV System: NTSC
3) Image sensor: color CMOS
4) Included Rearview camera, wireless transmitter, wireless receiver
5) Adds car rearview function for your car GPS
6) 300000 Pixels camera, picture is stable and clear
7) Water-proof and dust-proof design
8) Camera with max wide angle 170 degree view
9) Night vision effective view range: 5 meter
10) 2.4GHz wireless transmission technology
11) Real-time rear view while back up- suitable for vehicle, trucks, bus and trailer
12) Prevents accidents while driving in reverse or parking.

D. 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 and other in vertical direction, so that user can target or see at any direction by rotating gun using remote input device.

E. Infrared Laser Light

For accurate target at the aim user can use this LASER. 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 guns direction.

F. Joystick/Keypad

Joystick switches or joysticks are manually actuated control devices for installation in control and front panels as well as in portable control equipment. They are used wherever motion sequences analogous to the actuation direction are controlled by hand. They are ideal for rising, lowering and triggering move-ments to the right and left, just to name same few possibilities. EUCHNER joysticks are used for radio and cable controls, building machinery and cranes. Joysticks as control equipment in remote control devices Remote cable control for concrete pumps.

G. Global System for Mobile

The Global Service for Mobile (GSM) is used for transmit and receive the msg.

5. Applications

Proposed system can be used in various fields like military, spying, tracking etc.

1) In military it can be used for land soldier automation.
2) Using same technology we can develop different mini robots. These robots can be used for pipe line inspection for wiring checking and device faults detections.
3) Same robots can be sending to detect different environmental statistics in remote area or in space.

6. Conclusion

Self -Defensive Machine Gun system is mainly design to provide remote accessibility using wireless technology for land soldiers in battle field. With the sensors technology it will provide environ-mental statistics and also give full power of atomization system. In future with more development and enhancement it will be ready to work in real world environment.

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