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Automatic Robot Gun

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***Abstract*— The project named "Automatic Robot Gun" proposes an innovative design for military application. Two years ago some Korean companies introduced two armed robots for war field; these robots were unique in their own style. These are very important in military they reduces the risk of soldier's life in war field and military operations. One of them was a standing robot gun shooting in only one direction and the other was the eagle eye gun which can rotate 360 degrees and also has infrared sensors and CCTV camera on it. These two robots are very useful but by combining both of them together will be a complete power pack military machine. In our project we are using proximity sensors to sense the human being and we are also introducing an automatic as well as manual mode in it. The manual mode can be controlled through any portable device by using Zigbee and in automatic mode the gun will shoot in the direction of the proximity sensor. After being implemented it will be a successful war field machine.**

***Index Terms*— Portable device, Proximity sensor, Wireless camera, Zigbee.**

I. INTRODUCTION

For the last few decades, robots are becoming very popular and common in military organizations. There are many advantages of these robots as compare to human soldier. One of the most important things about these robots is that they have the capability to perform missions remotely in the field, without any actual danger to human lives. Keeping this objective in mind several companies have built a robot guns or military robot to do the specific task without harming the soldier's life. These robot guns impressed a lot but have some disadvantage in it which is stopping them to get introduced in to military operations. Some of the proposed robot guns are Camel gun, Super Aegis F2. These both are manufactured by some Korean companies and were proposed to Korean military.

II. EXPERIMENTAL PROCEDURE

A. Literature Survey

A personalized gun or a smart gun is a concept from various previous military applications gun from the different countries. These machines are built to completely eliminate its target from far distance without any harm to the soldier's. 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.

Fig. 1 Super Aegis F2

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

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Fig. 2 Camel Robot

B. *Proposed Work*

We have built an unmanned vehicle which would work on complete 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.

On the contrary in manual mode robot should work on commands given by the operator through portable device with the help of Zigbee and according to that the gun should be pointed out automatically in that direction and should wait for the shoot command from the operator.

This all video surveillance should be captured by the wireless camera placed on the gun and the operator should be able to watch the real time video on the portable device.

C. *Figures*

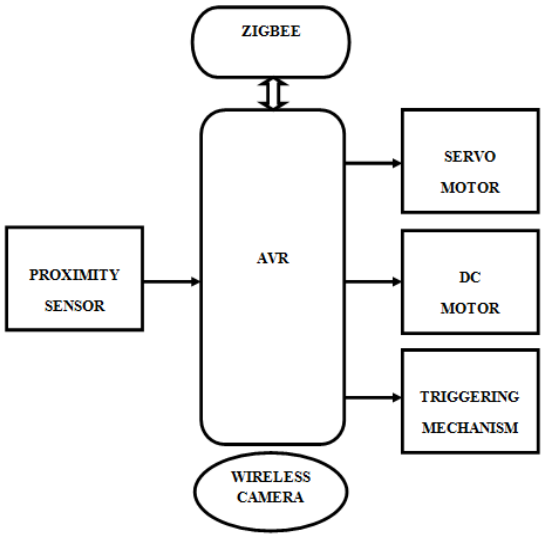

Fig 3 Block Diagram

The above Fig.3 shows the block diagram of project which works in two modes Automatic Mode as well as Manual Mode.

In automatic mode:

The array of proximity sensors senses the presence of human being around the robot as soon as the presence detected in one of the proximity sensor it will send the signal to the microcontroller. Microcontroller will rotate the motor on which gun is mounted in that direction and will shoot without any confirmation or command from the operator's portable device. All the action is captured by the wireless camera built on the gun and the operator is able to watch the real time video.

In manual mode:

In manual mode the whole operation of the robot including triggering mechanism is handled by the user through portable device with the help of Zigbee. 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. This command is send by wireless communication between the robot and operator's portable device through Zigbee.

In both the modes the surveillance by the camera is continuously done which we are able to watch on our portable device.

III. Merits

1) Very useful in rescue operation
2) Can save life of soldiers in wars
3) Proves itself a boon in terrorist attack
4) Can reach small areas where soldiers cannot reach
5) Can also be used as surveillance robot

IV. Applications

1) Can be used as combat robots at places like stadiums, government offices, etc.
2) Can be used as machine soldier in jungle operations instead of human soldier
3) Can be used as surveillance robot for investigation

V. Future Scope

It's an electronic product which we are designing and can be modified in its own way in future.

Many modifications can be done in future by adding mechanical parts to it.

We can use various other technologies like:

1) Security can be provided to transmission of data
2) GPS module can be added to locate the position
3) Transmission and reception of data can be possible with the help of GSM module .
4) Bomb detection and diffusion can be possible
5) Rescue algorithm can be possible to add
6) Can carry load if implemented mechanically
7) Self-Detonator

VI. Conclusion

Implementation of this project will reduce the risk of soldier's life in many military operations and in any war field.

We are developing an Automatic Robot Gun which will ensure mobility and has an easy interfacing with the Zigbee. It will be very user friendly robot with good reliability and specifications.

Driving and shooting of robot in manual mode will be as easy as driving and shooting in the video games.

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