Military Tactical Robot

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Abstract- *This paper presents a design and prototype of military tactical robot which helps soldiers at war field. This robot can help soldiers to detect bombs ,fire and gas leakage by using sensors. Also, it provides a camera and gun mechanism mounted on robot ,by using live camera footage a soldier can shoot enemy from safe distance. By integrating all this features on a single robot it improves a war field performance.This robot uses arduino 328p as controller for all devices mounted on robot which provides high processing speed and stability.*

Keywords- Arduino, robot, gun mechanism, camera.

I. INTRODUCTION

Now military robots are considered to be the future of modern war- fare. At the same time, military robotics is measured to be the game-changing technology that could change the structure and employment of armed militaries. Society is aware of the military employment of robots today. The question is why we witness the massive use of military robotics only during the last decade. What factors determine such a development? Is this progress a common trending all armies or just some of them? What advantages can we gain by employing the military robots on the battlefield? The problems above may be answered by implementing the economic theory in the area of military robotics. The military robotics is the application of robotics in the military, such as remotely piloted vehicles operating on the ground, in the air or under water, automated missiles and supply handling devices. Thus, the commercial theory of military robotics is essentially the application of economic values and analysis to the area of military robotics and the text below provides a partial insight into this subject matter.

Nowadays, with the growth of technology, several robots with very special integrated systems are particularly employed for such risky jobs to do the work diligently and precisely.

II. WORKING PRINCIPLE

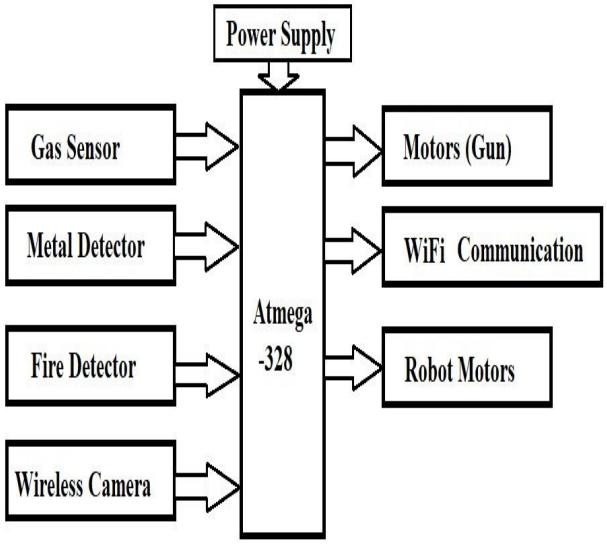
In this project Arduino 328p microcontroller is used for controlling purpose, which controls all the devices on robotic vehicle.

For sensing input like gas, fire, metal three sensor modules are mounted on vehicle which digital data to controller.

All the communication between the controlling device (remote) and vehicle is via wi fi module.
For live video streaming vehicle have camera module and to shoot enemy it has gun mechanism with laser pointer which can controlled via remote.

DC battery is used on robotic vehicle to power up all modules and motors.

Arduino is programmed to perform certain task like controlling vehicle direction, and position of gun. All controlling commands send by remote.



III. SYSTEM ARCHITECTURE

3.1 Elements of system

Arduino 328p microcontroller is the main component of the system as it controlles and monitor all the modules and drives. System have gas detection sensor, metal detection sensor and fire detection sensor. Four DC gear motor and their driver circuits. For communication it uses wi fi module. DC battery is provided on vehicle.Gun mechanism and camera is

also mounted. At transmitter side remote is used to controll all the actions of robot.

3.2 Hardware and software design

In hardware two parts involves those are chassis of vehicle and circuit boards and modules. Chassis is made of metal sheet which makes design compact and stable.

In the circuitry part there is Arduino 328p pcb board.

Three sensor modules which provides digital outputs(0 or 1) on the basis of threshold set on particular module.

Metal detector is a device which can sense the presence of metal nearby, which works on the principle of change in the magnetic field due to presence of another metal come in contact with field and this change give idea about metal presence nearby.

Gas sensor module is used to detect gas leakage or presence.Particular module is available for specific gas.
Fire sensor module works on the principle of conversion of thermal energy into equivalent electrical power further it is digitize,to give it to controller. Also,module has potentiometer to set threshold temperature

System have four **DC gear motors** of sufficient toque to move vehicle in any direction. Motor drivers are for providing correct voltage and current for DC motors.

Camera module for video recording purpose. Gun mechanism have motors to pull trigger of gun which is remotely controlled.

Remote control have the push buttons for controlling the vehicle and gun.

In **software design** part arduino 328p controller is programmed as when it have digital input on pin from particular module it does a predefine task, in this case the task is to send signal to user.

For controlling motors controller generate high logic on particular pin.

For controlling purpose via remote ,wi-fi receives a byte from remote and give it to arduino since it is written in code what to do when particular byte is received.

Unique bytes are assigned for particular task and written in code.

For gun mechanism control a motor is controlled by controller ,when it receives a unique code from transmitter and it matches with a byte written in code of controller.

IV. RESULT

The design result was achieved when turn on power of robot and remote then by using navigation keys on remote robot vehicle was moving. when metal detector have metal nearby it indicating on remote and is same for gas detector and fire detector.

The camera module was sending live video data towards user and by using this video a user is able to see what is in front of vehicle and able to shoot by gun with help of laser pointer which is provided on robot vehicle remotely.

V. CONCLUSION

From this project we conclude that our project provides a better vehicle security that provides easy access to user as well as more security features. Besides this our aim is to military based circuitry and relatively simple cheap, and low cost integrated home security system.

In our project, the robot is designed to move by our command and also by it own according to the command given by the program.In this prototype project, we design in such a way that this robot can be moved anywhere and it can get the information of particular place. It is easy to detect any faults or dangerous on the field. This project is very much useful in the places where a human cannot go into the places like ground canals, smoke oriented caves and this project is very much useful in such situations.

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