DEFENCE ROBOT

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Abstract— This paper presents a modern approach for surveillance at remote and border areas using multifunctional robot based on current technology used in defence and military applications. This robotic vehicle has ability to substitute the solider at border areas to provide surveillance. The robotic vehicle works remotely controlled vehicle. This multisensory robot used to detect human, bombs at remote and war field areas. Conventionally, wireless security robot obsoletes due to limited frequency range and limited manual control. These limitations are surmounted by using wireless technology. This system can also enhance the use of renewable resource of energy by equipping with solar panel in future.

Index Terms — wireless technology, renewable energy.

I. INTRODUCTION

The soldiers may sometimes cross their area limit without their knowledge. This causes a lot of problems. They may be caught by the other people or lose their life due to presence of metal or chemical bombs. In this paper the robot is developed for the soldiers to find out the border and to check whether the person is authorized or unauthorized and also detect metal or chemical bombs near the border region with help of metal sensors, chemical sensors and Passive Infrared Motion Detectors, if any traces found then the information is sent to base station wirelessly. The main modules in this paper are RF transducer, MICRO- controller unit and LCD display. The RF transmitter is connected at the border area. It transmits RF signals within the particular limit. The RF receiver with the MICRO- controller unit will be under the control of commander. When the soldier reaches the particular area, the RF signals are received by the receiver and given to the MICRO- controller unit. The MICRO- controller analyses the signal and sends corresponding message to the LCD display and the same information is transmitted to commander via RF. The receiver which is there at the commander receives the signal which was transmitted from the transmitter via RF, and displays the information on the display. The MICRO- controller program is written in embedded c language and the microcontroller used is MICRO.

II. LITERATURE SURVEY

Literature on the topic is extensive, but projects which place emphasis on economic aspects of military robotics are rare. Publications deal Introduction to the economic theory of military robotics 139 mainly with the importance and employment of robotics in armed forces from military (Aldridge 2003), legal and ethical points of view (Carr 2012). The authors paying attention to the economic aspects of the issue do it only partially.

Areas of scientific research Type of publication Monographs Articles Popularization articles Military, technical and technological level of problem solving Schneider, Roning 2006; Nath, Levison 2014; Boon, Lovelace 2014; Winnefeld, Kendall 2013 Horowitz, Scharre 2015; Work, Brimley 2014 Nail 2011; The Economist 2012; Ranasinghe 2015 Ethical, legal and societal level of problem solving Kurzweil 2005; Krishnan 2009; Arkin 2009;Galliott 2015 McDaniel 2008; Foy 2014; Arkin 2015 Carr 2012; United Nations 2015 Economic and financial level of problem solving Singer 2009; Springer 2013 Goos 2014; Haal, Coyne 2014; Scharre 2014; Burg, Scharre 2014 Strickland 2007; Francis 2013 Source: own elaboration. Within the economics of military robotics demarcation it is assumed that new branches of defence economics can be derived from the basic definitions of defence economics. The definitions of defence economics developed by prominent economists are applied in case of demarcating the economics of military robotics. Hartley and Sandler have stated that the economics of defence is a study of basic issues of both defence and peace by applying modern economic tools (Hartley, Sandler 1995). Kennedy considers the defence economics to be an application of economics on defence issues (Kennedy 1984). Krč and Stankiewicz have demarcated the defence economics as a scientific discipline looking for economic relations that influenced national security (Krč 2001; Stankiewicz 1981). Olvey writes about the application of basic economic principles in the area of national defence (Olvey 1984). Based on analogy, comparison and simplification, there are selected the economic principles which are suitable for demarcating the economics of military robotics. Subsequently, these principles can serve for the explanation of economic aspect of military robotics, the examination of military robots cost benefit and the description of barriers to further development of military robotics.

III. MOTIVATION

Robots are going to be the centre piece of the future. We are going to be driven around in robotic driverless cars, our food in restaurants will be served by robots and we will even be looked after by them in our old age. What about our defence? Could we be defended by robots and the armies of the future be also robotic?

India has spent a total of INR 838 billion (USD13.1 billion) on defence imports over the past three years, with related expenditure climbing by more than 50% during this period, new figures published by the Indian Ministry of Defence (MoD) show. Citing parliamentary remarks made by defence minister Manohar Parrikar on 24 April, the MoD said spending on "orders placed on foreign vendors" increased from INR 224.6 billion in 2011-12 to INR 263.1 billion in 2012-13 to INR350.8 billion in 2013-14. This represents an overall increase of 56% and average annual increases of 25%.

IV. METHODOLOGY

1. This whole module is embedded on robotic module.
2. The chemical and metal bomb detector sensor will be used to detect the respective bombs in the border areas. If the bomb detected in the border areas then this module will be activates the buzzer to indicate the bomb detection.
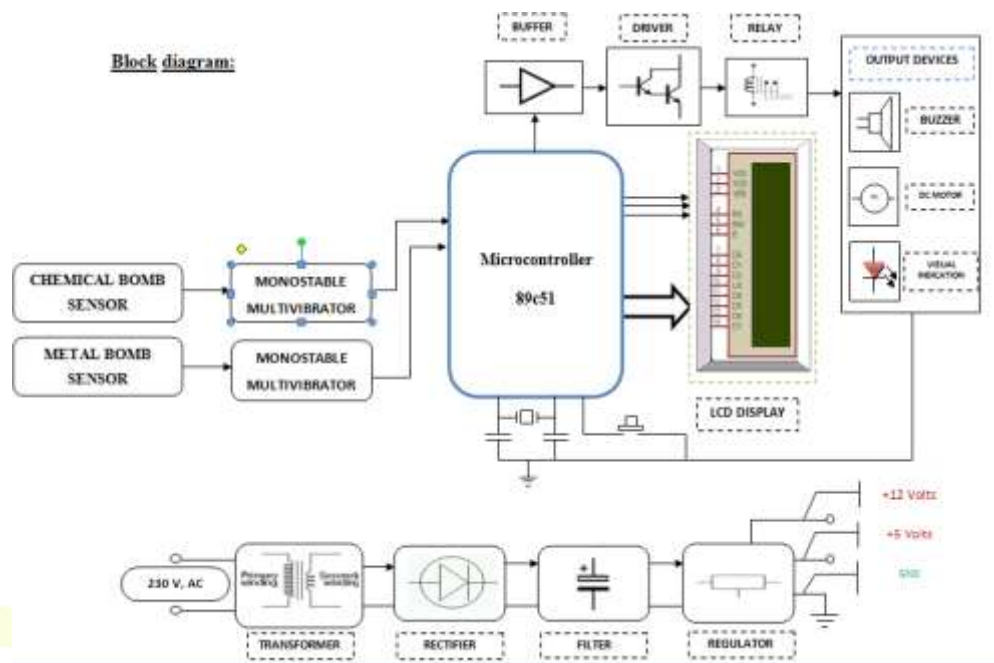
3. Passive Infrared Motion Detector and Sensors are used detect motion of any animal or human near the robot, if any traces found then the information is sent to base station wirelessly.

4. Wireless camera will be used to monitor the border area visually. The visual information of border area will be captured by camera and that captured information will be send to base station wirelessly.

V. PROPOSED SYSTEM

In this paper we are implementing various applications like monitoring the terrorisms activity in the border areas and detecting various explosives planted in the war fields or public areas with video surveillance.

Fig 1: BLOCK DIAGRAM

Block diagram explanation

- Power supply unit: This section needs two voltages viz., +12 V & +5 V, as working voltages. Hence specially designed power supply is constructed to get regulated power supplies.
- Passive infrared sensor (PIR sensor): A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. They are most often used in PIR-based motion detectors.
- Operating principle: All objects with a temperature absolute zero emit heat energy in the form of radiation. Usually this radiation is invisible to the human eye because it radiates at infrared wavelengths, but it can be detected by electronic devices designed for such a purpose.
- PIR based motion detector: A PIR-based motion detector is used to sense movement of people, animals, or other objects. They are commonly used in burglar Micro and automatically-activated lighting systems. They are commonly called simply "PIR", or sometimes "PID", for "passive infrared detector".
- Buffers: Buffers do not affect the logical state of a digital signal (i.e. a logic 1 input results in a logic 1 output whereas logic 0 input results in a logic 0 output). Buffers are normally used to provide extra current drive at the output but can also be used to regularize the logic present at an interface
- Drivers: This section is used to drive the relay where the output is complement of input which is applied to the drive but current will be amplified
- Relays: It is a electromagnetic device which is used to drive the load connected across the relay and the o/p of relay can be connected to controller or load for further processing.
- Buzzer: A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include Micro- devices, timers and confirmation of user input such as a mouse click or keystroke.
- DC motor: A DC motor relies on the fact that like magnet poles repel and unlike magnetic poles attract each other. A coil of wire with a current running through it generates an electromagnetic field aligned with the centre of the coil. By switching the current on or off in a coil its magnetic field can be switched on or off or by switching the direction of the current in the coil the direction of the generated magnetic field can be switched 180°.

VI. CONCLUSION

This Defence Robot can replace soldiers in the border and also in fact save soldiers life near the border regions. Where this robot detects metal or chemical bombs and signals are sent to base station wirelessly. Where precaution steps can taken before we lose soldiers in the border.

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