Border Security

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Abstract— These system offers a complete robot action which design to keep the enemy out of reach from line of control. that is what it saves the most worthy human life. Now a days our soldiers continuously observe the border of country though it is a normal day or during a war, and they observe any of d terror moment on the actual line of control. But unfortunately, the system is not safe for soldier's life and there are chances of mistake and dangers. the proposed system is mainly design to provide remote accessibility using wireless technology for land soldiers on battle field. In this we use an ultrasonic module which connect to UNO Arduino to find missile object. An ultrasonic transducer comprising of a transmitter and receiver are used on same module. The distance is calculated by a program running on the Arduino and display on a screen. Which is also connected to UNO Arduino through Bluetooth wireless communication. When the microcontroller receives the signal from US receiver then the gun which set up on the robot will activate. .The sensor is attached to this module and is rotated and controlled by servo motors and gun moves in 180 degrees. If there will any target come in front of the robot, a will shoot the target.

*Keywords:* Border Security, Uno Arduino, Ultrasonic Sensor

I. INTRODUCTION

The android 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 and vertical motion of machine gun, wireless camera and LASER beam to point the target, wireless connectivity between control room and robot in it using Bluetooth technology and system software which is operated by user which provides full system monitoring functionality at the control room. System will be controlled using wireless signal. The wireless and embedded technology will be used for the design and development of this system.

So, the proposed system is the novel idea to build wireless android operated machine gun which operate as per defined by user. Proposed system will be a combination of android operated machine gun and the control room. This system will provide security on border and protect soldier life. 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. Ultrasonic sensors, cheap, readily, available and increasingly at high resolution sensors.

II. METHODOLOGY

1) 1 The major part of missile detection and destroy system is detection of target. For good implement we use us sensor based detection system.
2) 2 The robot will move through its wheel which will we attach to lower side of system and for operation of robotic wheel signal will be sent through the android app and robot wheel we are going to use Bluetooth Module.
3) 3 Bluetooth app will be used to send control signal i.e. to move forward and backward, left and right. Main part of this system is UNO Arduino in which has already ATMEGA 32 microcontroller.
4) 4 The aim is to secure our frontiers and safeguard our nation from the risks involved in the movement of goods and people from India to other countries and vice versa. Border management itself is a multifaceted term and may include, but is not limited to, the regulation of legal and illegal immigration, ensuring safe and secure movement of authorized people and goods.
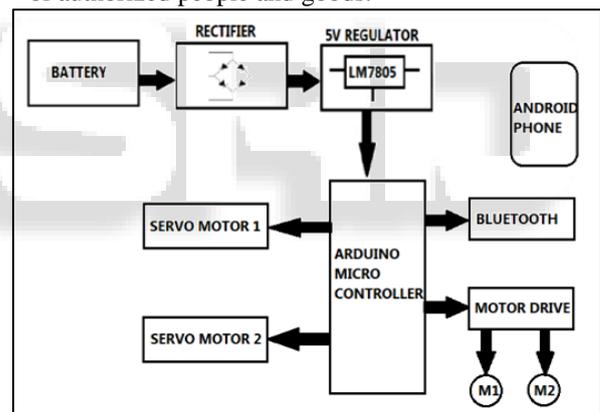
III. FEATURES OF ALL PARTS

A. Arduino Uno:

The Arduino Uno is one kind of microcontroller board on AT mega 328, and Uno is an Italian term which means one. Arduino Uno is named for marketing the upcoming release of, board 1.0. This board includes digital I/O pins-14, a power jack, analog inputs-6, ceramic resonator-A16 MHz, a USB connection, an RST button, an ICSP header. ALL these can support the microcontroller for further operation by connecting this board to the computer. The power supply of this board can be done with the help an AC to DC adapter, a USB cable, otherwise a Battery.
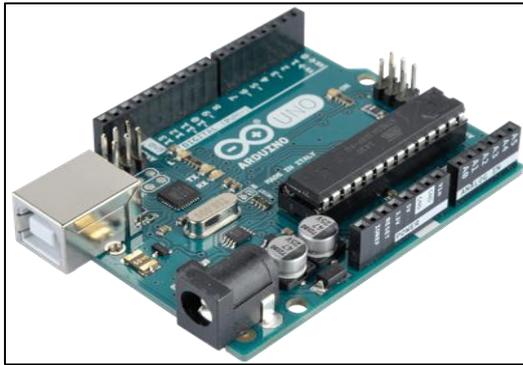
Uno Arduino

B. Ultrasonic Sensor:

The ultrasonic sensor is used to find ultrasonic range finder. It is compact and measures and amazingly wide range 2cm to 4cm. This ranger is perfect for any robotic application or any other projects. This sensor can be connected Directly to the digital I/O lines of your microcontroller and distance can be measured in time required for travelling of sound signal by using simple formula as:

Distance = (Echo pulse width high time*Sound velocity (340m/s)/2)

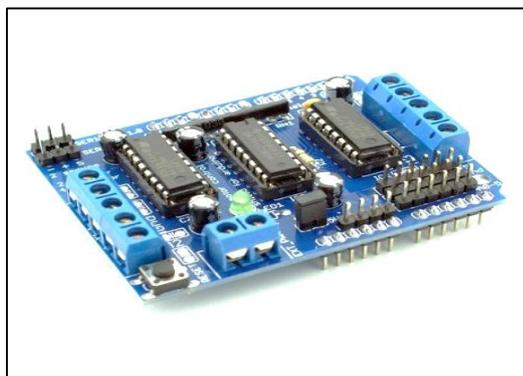Distance in cm = (Echo pulse width high time (in micros)* 0. 017)


Ultrasonic Sensor

C. Motor Driver:

It is also known as DC drives. The DC motor drives is a type of amplifier of power modulator that integrate between the controller and the Dc motor. It takes the low current and then converts into a high current which is appropriate for the motors.

Motor Driver

D. Servo Motor:

The servo motor is specialized for high response, high precision positioning. As a motor cable of accurate rotation angle and speed control, it can be used for a variety of equipment. Servo motor works on the PWM (Pulse Width Modulation) principle, which means its angle of rotation is controlled by the duration of pulse applied to control PIN. Basically servo motor is made up of DC motor which is controlled by a variable resister. In this system we added two servo motors one for robot movement and second for gun which is connected to the system.
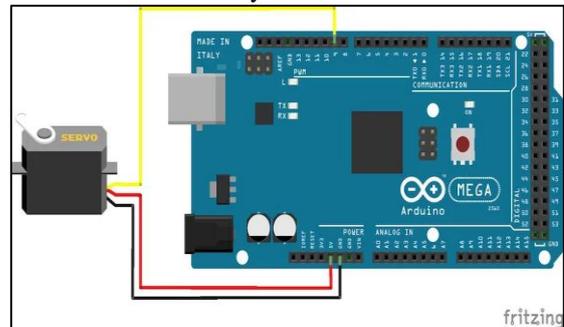
Servo motor with Arduino

E. Metal Detector:

The operation of metal detector is based upon the principles of electromagnetic induction. Metal detectors contain one or more inductor coils that are used to interact with metallic elements on the ground. It is useful for finding metal inclusions hidden objects, or metal objects buried underground.

The simplest form of a metal detector consists of an oscillator producing an ac current that passes through coil producing an alternate magnetic field. If a piece of electrically conductive metal is close to the coil, eddy currents will be induced in the metal, and produces a magnetic field of its own. If another coil is used to measure the magnetic field (acting as a magnetometer), the change in the magnetic field due to metallic object can be detected.


Metal Detector

F. Camera:

In this system we added a 13Mp camera for vision against the robot and this camera is connected to our Android Phone through the help of android phone we will see the image of our target and destroy it.
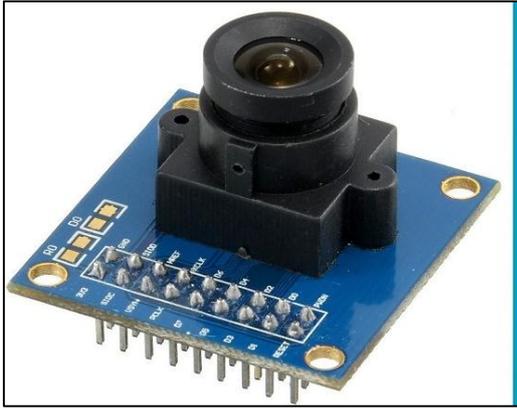
G. Bluetooth Module:

Bluetooth transceiver modules are widely used in all kind of projects. They are intended for serial communication and preloaded with serial port (SPP) firmware. The module has user configurable parameters like Devices name, Pairing PIN and serial speed. In most cases the default value of these parameters should be changed to suit as application. It is only done through entering special AT commands when the module is not connected to any other Bluetooth device. Bluetooth transceiver modules connected to the serial port (or USB to serial converter) of our machine.
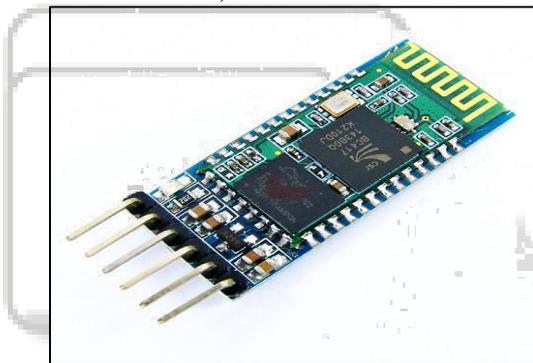
Bluetooth Module

H. Power Supply:

Power supply circuit is used to supply power throughout the series, the power need for the whole series is equal to 5 volts DC. There are several components in the power supply circuit, such as transformers that serve for lowering the voltage. Capacitors are used as filters. And the last is the type LM7805 regulator IC that functions as a regulator of the power output by 5 volt
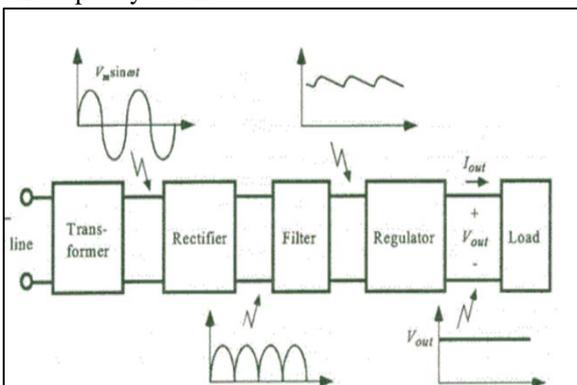
Power Supply

IV. CONCLUSION

The Ultrasonic transceiver (Transmitter & Reciever) detects missile direction on Android through microcontroller. If there is any target within the detection range, the system will turn ON the Laser gun to the nearest detected target and fires. An ultrasonic sensor identifies the target to alert the nearest people.

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