Advanced Border Security System

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Abstract

This paper displays a plan to secure the fringe in a straightforward and more solid way, The proposed thought has a basic outline and has a high range, it covers an expansive outskirt territory securing the fringe zone from unlawful sections, pirating, illicit development of weapon absent much inclusion of security powers close outskirt. In the wake of dissecting the past assault in our nation and the quantity of mishaps happening every year, it is obvious that in the majority of the cases the security constrain are unconscious of the section of these fear based oppressor subsequently with a specific end goal to shield our country from such assaults and psychological militant action there is a need to actualize a security framework which will be sufficiently shrewd to recognize these action and give legitimate data about every last action occurring close to the outskirt.

In this paper, we propose building a security framework that can be executed by utilizing advance component like deterrent recognition, obstruction distinguishing proof, separate detecting and movement following, and fast correspondence between the source zone and control room. In the event that hindrance enters the fringe it consequently identifies the snag give notices and sends the record of action to control room. It additionally wipes out the foe in more effective and better way.

1. INTRODUCTION

Border security framework is a savvy programmed security framework having long range and giving

precise outcomes. It identifies the hindrance as well as continues detailing all the

exercises occurring close to the zone. An extraordinary kind of sensor is LDR(Light depended resistor) used to identify the measure of light falling on it and with the assistance of Laser bar which are put at three diverse known separation we can distinguish the Snag. The Laser light can create nonstop light emission light, with no misfortune in force over a substantial territory we utilize this unique property of laser to identify the deterrent at various separations. By putting the three-laser bar consistently falling on LDR surface. On the off chance that anybody tries to cross the outskirt then because of intermittence of light falling on LDR surface sensor distinguishes the obstruction and sends the message to the control live with the assistance of GSM. Latent Infrared Sensor (PIR) and Vibration sensor are utilized as a part of this for recognition of protest or individual if any movement is distinguished by the PIR sensor it sends the information to the miniaturized scale controller which through GSM sends the message to the Control room and it is shown in the LCD.

The reason for utilizing three laser pillar is to caution the deterrent at referred to remove as it isn't generally the fear monger who crosses the limit there could be any villager or other individual which may go under location and henceforth to prevent them from advance developments we alert them by giving notices and in the meantime this

additionally enables the security personals to get a short thought regarding the present position and also the movement of the impediment.
An LCD is connected which keeps on providing the current activities happening near the boundary area to the near security station.

2. SECURITY SYSTEM AND COMPONENTS

The system is aimed to identify and detect the target using the Ultrasonic Sensors, PIR sensor, moment detection using LDR sensor, Vibrational Sensor is used in detecting any movement taking place below ground. The ARDUINO is used for processing and instructing. There are two units one is the control unit and the second is the robot unit, here robotic gun is used for attacking and destroying the target. It also consists of the HC-05 Bluetooth module for communications.

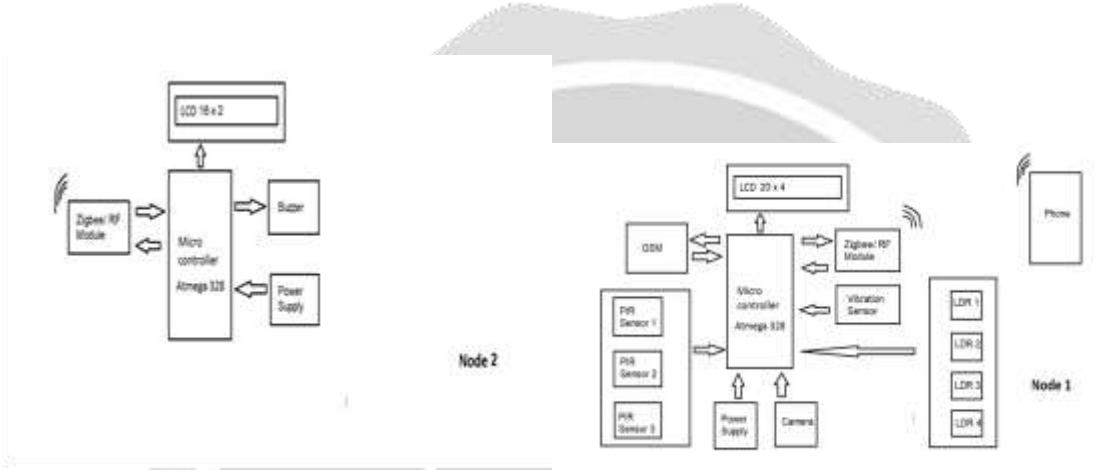

Fig-1: Architecture of System

2.1 Arduino

A microcontroller board contains on-board power supply, USB port to communicate with PC, and an Atmel microcontroller chip.
It simplifies the process of creating any control system by providing the standard board that can be programmed and connected to the system without the need to any sophisticated PCB design and implementation.
It is open source hardware; any one can get the details of its design and modify it or make his own one himself.

2.2. Bluetooth HC-05 module:

HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. The HC-05 Bluetooth Module can be used in a Master or Slave configuration, making it a great solution for wireless communication. This serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. It uses CSR Blue core 04-External single chip Bluetooth system with CMOS technology and with AFH (Adaptive

Frequency Hopping Feature).

Fig-2: HC-05 Module

2.3 Servo Motor

The servo motors are specially used for the motion of machine gun in 180-degree angle. The rotation of Gun is done by two Servo motors. One in horizontal direction & other in vertical direction, so that user can target or see at any direction by rotating gun using remote input device.

Fig 3: Servo motor

A servo is a mechanical motorized device that can be instructed to move the output shaft attached to a servo wheel or arm to a specified position. Inside the servo box is a DC motor mechanically linked to a position feedback potentiometer, gearbox, electronic feedback control loop circuitry and motor drive electronic circuit.

2.4 DC motor:

The DC motors are mainly used for the motion of the robot. The DC motors are mainly used for the motion of the robot. A simple DC motor has a stationary set of magnets in the stator and an armature with one or more windings of insulated wire wrapped around a soft iron core that concentrates the magnetic field. The windings usually have multiple turns around the core, and in large motors there can be several parallel current paths. The ends of the wire winding are connected to a commutator. The commutator allows each armature coil to be energized in turn and connects the rotating coils with the external power supply through brushes.

Fig-4: DC Motor

2.5 Laser:

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 gun's direction.

In our project LASER is used for to point the accurate target. All sensor require some laser light to return to them from the target surface in order to function. The amount of light needed is a measure of the sensitivity of the device. In general, the most sensitive devices are the costliest, and accurate measurement at high sample rates require stronger reflection than for lower sample rates. For diffuse targets, the higher the reflectance of the target, the better a sensor's performance.

2.5 Ultrasonic sensor:

Ultrasonic sensors emit an acoustic wave between 20 hertz and 20 kilohertz and determine the distance. Ultrasonic sensors can be used in many fields.

Basic Ultrasonic Sensor Operation Ultrasonic sensors emit ultrasonic pulses that travel in a cone-shaped beam by using a vibrating Ultrasonic sensor is used at robot side. Ultrasonic transmitter continuously transmit ultrasonic rays and receiver receives the rays when wave strike on obstacle and reflect back. Ultrasonic sensor will have fitted in front of robot. Robot will move automatically, when any obstacle come in between robot path, it will automatically change it's path. If any obstacle is detected then robot unit send alert signal to transmitter side through Bluetooth module.

Fig-5: Ultrasonic Sensor

Ultrasonic sensor will have fitted in front of robot. Robot will move automatically, when any obstacle come in between robot path, it will automatically change it's path. If any obstacle is detected then robot unit send alert signal to transmitter side through Bluetooth module.

2.6 Light Dependent Resistor

A Light Dependent Resistor (LDR) or a photo resistor is a device whose resistivity is a function of the incident electromagnetic radiation. Hence, they are light sensitive devices. They are also called as photo conductors, photo conductive cells or simply photocells.

They are made up of semiconductor materials having high resistance. There are many different symbols used to indicate.

Fig-6: LDR sensors

2.7 PIR Sensor

The PIR sensor circuit is used in numerous electronics projects which are used to discover a human being entering or leaving the particular area or room.

These passive infrared sensors are flat control, consists of a wide range of lens, and PIR sensors.

Approximately have an average value of 10m detection range of the sensor. Pyroelectric sensors that detect the levels of infrared radiation are used to make PIR sensors, here is a PIR sensor with dome shaped Fresnel lens

Fig-7: PIR Sensors

2.8 Vibrational Sensors

Vibration sensors are sensors for measuring, displaying, and analyzing linear velocity, displacement and proximity, or acceleration.

The vibration velocity, acceleration, and displacement in a frequency range of 10 Hz to 1 kHz can be measured.

Fig-8: Vibrational Sensors

2.8 Power Supply

We use here a lithium polymer battery as a power supply, it is rechargeable. it is a great way to power any potable project. this is an excellent choice for anything that requires a small battery with lot of punch. the voltage is low enough not to tax your regulating circuits, and the discharge rate is high enough to accommodate a lot of electronics and a few small motors.

The battery has three cells and outputs 12V storing 1500mA of charge.

2.9 Android Mobile

By using such type of android mobile, we can operate machine gun with the help of mobile apps. A connection is setup between Arduino Nano and a mobile phone via Bluetooth module, to pair the devices and the default password of the HC-05 module is 1234. After we have paired the devices we need an application for controlling the Arduino. There are many applications in the Play Store for this purpose which will work with the Arduino code that we wrote.

Fig-9: Android Mobile

3. PROCEDURE

Once the vigilance person who is at the control room finds any unauthorized entry of adjacent country terrorist or militant he can activate a gun which is located at the border side from the room itself which is done by using the joysticks which is nothing but a input from control unit to the remote unit. In the similar way the laser is used to target the enemy and the gun is triggered remotely from the control unit.

4. RESULT:

There are several Countries which are using Advanced Border security system with fences, robotic guards. Israel is using these Advance Border Security to guard its border from Egypt for Security and to stop illegal immigration. Electronic System detects early, have long range and information is more accurate and they are less important than a human life.

84 Indian Army personnel died in combat in 2017, this could have saved 84 families live and best way to serve humanity. When Enemy is detected This Information is provided to microcontroller and Bluetooth module wirelessly and we operate robot and machine gun with the help of our android mobile by observing video on PC and enemy is destroyed in this way we have successfully operated our machine gun.

Where we have placed robot at the border side when any person tries to enter in the coverage area of the robot unit. Here we have place the robot with machine gun it is in motion as per the user command. When it is moving on the boundary side the camera which is put on it will continuously be providing the live video at the control room.

In this project we have used ultrasonic sensor, which continuously transmits the ultrasonic wave when any enemy is come at the border side it will sonic it and send information at the control room on the android. When we get the information, we operate the robot and machine gun by watching video on the PC and enemy is targeted with the help of laser beam and destroyed by giving command from the android.

In this way we have protected solders life by keeping him out of boundary and also enemy is destroyed.

5. CONCLUSION:

At display in our nation there hasn't been utilized a framework which can naturally identify human interruption and the nearness of any touchy materials at the fringes. By and by at least one troopers are expected to watch the outskirt region in this undertaking, we present Fringe security robot, a crossover remote sensor arrange design for outskirt watch to lessen the human contribution and used to enhance the identification precision of current fringe

watch frameworks. The human association decreased with the assistance of PIR sensor, LDR sensor. It can be finished up from the above.

Tremendous measure of work has been done remote controlling of mechanical weapon and securing the fringe. In this task different approachs have been examined and investigated. Along these lines in less labor and less time we have spare the outskirt. In this manner, we have going to create "Propelled Fringe Security Framework" for ensuring our outskirt. The remote controlling enhances its productivity, security and precision

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