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MILITARY SECURITY SYSTEM FOR IDENTIFICATION OF TRESPASSERS USING ULTRASONIC SENSOR

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Abstract—
Terrorists cross our borders unknowingly. It is not possible for our soldiers to watch the borders at each and every moment. An essential requirement in security is the capability to automatically detect terrorist in borders. In this paper we propose system which identifies terrorist using IR sensor and capture image of terrorist using WIFI sends notification to respective admin. If admin accept to shootout that terrorist then that notification is sent back to robot through server to kill that person, if admin decline to shootout then the process will stop their itself. This development enables security personnel to effectively detect terrorist at low cost.

Keywords—IR Sensors, WIFI, Camera, DC Motor.

INTRODUCTION

An autonomous robot system is an innovation of modern technology. It has been able to provide significant support to mankind by accomplishing task that is impossible for human beings. These robots can be used to accomplish tasks like rescue, security, surveillance in unstructured and natural environments. An Internet- based intelligent robot security system, "iBotGuard" in [2] detects trespassers using face recognition algorithm. System can detect a trespasser using intruder detection subsystem which relies on invariant face recognition and it tracks the trespasser using intruder tracking subsystem based on streaming technology. Intruder detection subsystem captures images periodically when it detects trespasser in a secure area and verifies whether the object detected is human using invariant face recognition algorithm then robot will alert the security guards through alert signal using internet. The security guards use the images in robot camera to control robot motion and to recognize trespasser.

The reconnaissance robot [3] can be operated in three different ways in accordance with user requests and possessions of task: (a). Patrolling mode: Here reconnaissance robot roams in the environment and tracks predefined routes unconventionally. It will send key information related to security to the server for further analysis. (b). First Responder mode: The reconnaissance robot will work in collaboration with fixed monitoring devices and it is programmed. It will be directed to target location in order to perform on-site inspection when a security related event is reported by one of the monitoring device. Obstacles in its path can be avoided by creating a deviation or unswervingly jumping over them. (c). Remote Control mode: In this mode remote user will navigate the surveillance robot to the target region. Security system can be accessed by the users through PCs, mobile phones and PDAs.

The word robot was derived word from robot that had done the development in the field of robotics

in various forms like manipulators, humanoids, micro robots etc. In the current situations the industries are turning towards is the automation to robotization. Thus, the robot technology is advancing rapidly the robot that we are going to develop is a command and control robot. The robot takes commands from the user in the form of signal and performs the right action. We have developing this system just to secure the life bomb diffusers. We have to take a fix distance to perform the action. Which he normally has to do with his bare Arm .The main idea of this robot is to provide the bomb disposal squad with safety and security from the risks that they face every day. The bomb disposal squads of have metal detectors and other equipment for bomb detection and disposal, but they have to risk their lives by approaching the bomb or the suspicious packet without any safety and precautions.

EXISTING METHOD

Smart objects are ever-growing network. It refers to the physical objects which are capable of exchanging information with other physical objects. It introduces various services and human's routine life depends on its available and reliable activities. Therefore, the challenge of implementing secure communication in the WSN network like ZIGBEE based Tx and Rx must be required. The WSN network is secured with encryption and authentication, but it cannot be protected against cyber-attacks. Therefore, the Intrusion Detection System is needed. Some security attacks and various intrusion detection approaches to mitigate those attacks are presented.
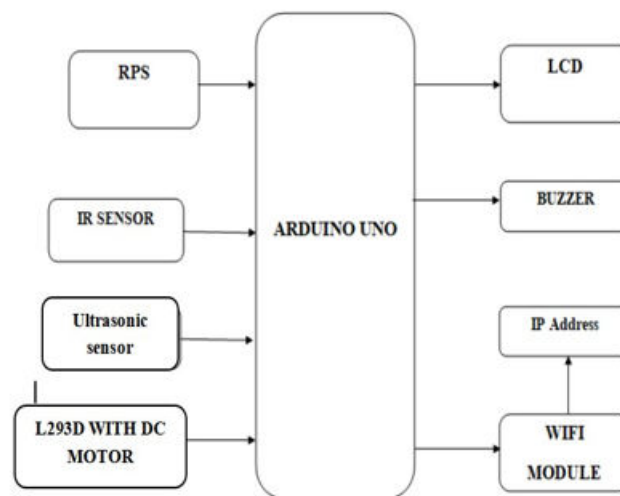
PROPOSED METHOD

Fig.1.Block Diagram For Proposed Method

POWER SUPPLY:

All digital circuits require regulated power supply. In this article we are going to learn how to get a regulated positive supply from the mains supply.
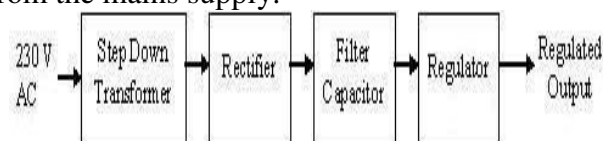

Fig:2.2 shows the basic block diagram of a fixed regulated power supply. Let us go through each block.

LCD DISPLAY

LCD Background:
One of the most common devices attached to a micro controller is an LCD display. Some of the most common LCD's connected to the many microcontrollers are 16x2 and 20x2 displays. This means 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.

**Basic 16x 2 Characters LCD Figure 1: LCD Pin diagram**
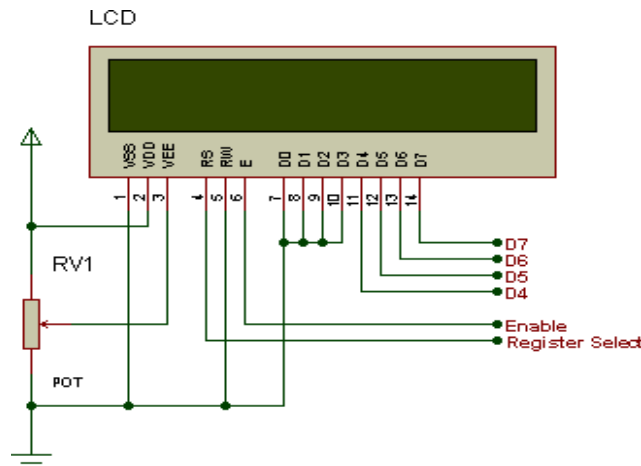
The LCD requires 3 control lines as well as either 4 or 8 I/O lines for the data bus. The user may select whether the LCD is to operate with a 4-bit data bus or an 8-bit data bus. If a 4-bit data bus is used the LCD will require a total of 7 data lines (3 control lines plus the 4 lines for the data bus). If an 8-bit data bus is used the LCD will require a total of 11 data lines (3 control lines plus the 8 lines for the data bus).

IR SENSOR:

IR transmitter and receiver Basics of IR transmitter:
An electroluminescent IR LED is a product which requires care in use. IR LED's are fabricated from narrow band hetero structures with energy gap from 0.25 to 0.4 eV. Infra red transmitter emits IR rays in planar wave front manner. Even though infra red rays spread in all directions, it propagates along straight line in forward direction. IR rays have the characteristics of producing secondary wavelets when it collides with any obstacles in its path. This property of IR is used here.
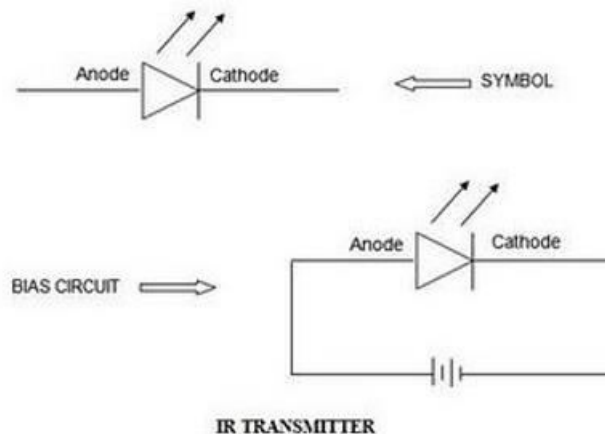

When IR rays gets emitted from LED, it moves in the direction it is angled. When any obstacle

interferes in the path, the IR rays get cut and it produces secondary wavelets which propagates mostly in return direction or in a direction opposite to that of the primary waves, which produces the net result like reflection of IR rays.

Basics of IR receiver:

Infrared photo receiver is a two terminal PN junction device, which operates in a reverse bias. It has a small transparent window, which allows light to strike the PN junction. A photodiode is a type of photo detector capable of converting light into either current or voltage, depending upon the mode of operation. Most photodiodes will look similar to a light emitting diode. They will have two leads, or wires, coming from the bottom. The shorter end of the two is the cathode, while the longer end is the anode.

A photodiode consists of PN junction or PIN structure. When a photon of sufficient energy strikes the diode, it excites an electron thereby creating a mobile electron and a positively charged electron hole. If the absorption occurs in the junction's depletion region, or one diffusion length away from it, these carriers are swept from the junction by the built-in field of the depletion region. Thus holes move toward the anode, and electrons toward the cathode, and a photocurrent is produced.


IR RECEIVER
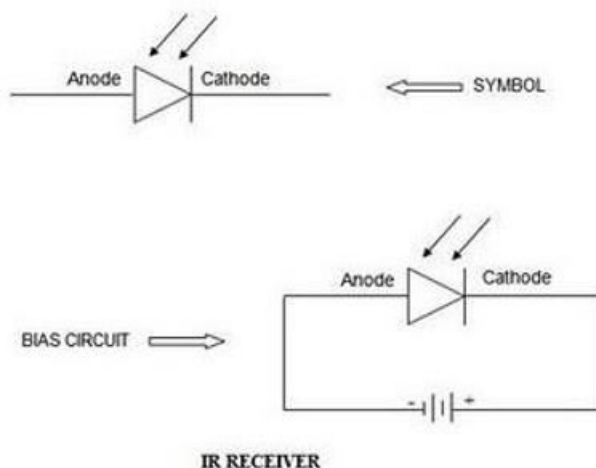
WIFI MODULE:

ESP8266:

The ESP8266 is a low-cost Wi-Fi microchip, with a full TCP/IP stack and microcontroller capability, produced by Espressif Systems in Shanghai, China.

The chip first came to the attention of Western makers in August 2014 with the ESP-01 module, made by a third-party manufacturer Ai-Thinker. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes- style commands. However, at first there was almost no English- language documentation on the chip and the commands it accepted.[2] The very low price and the fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, the chip, and the software on it, as well as to translate the Chinese documentation.

The ESP8285 is an ESP8266 with 1 MiB of built-in flash, allowing the building of single-chip devices capable of connecting to Wi-Fi.
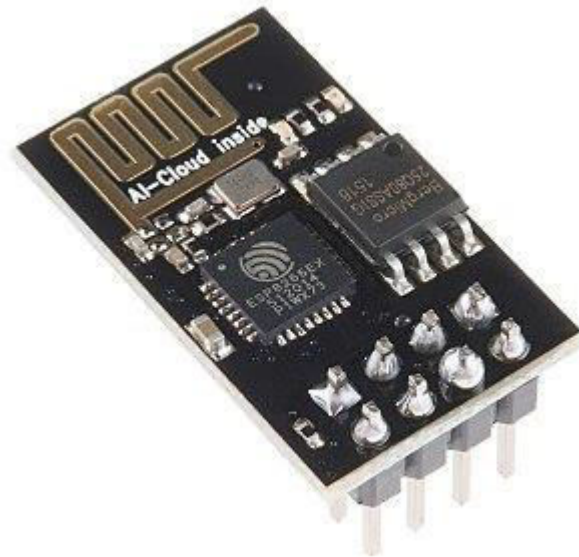
ARDUINO CONTROLLER

Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control both physically and digitally. Its products are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form or as do-it-yourself (DIY) kits.

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards or breadboards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project
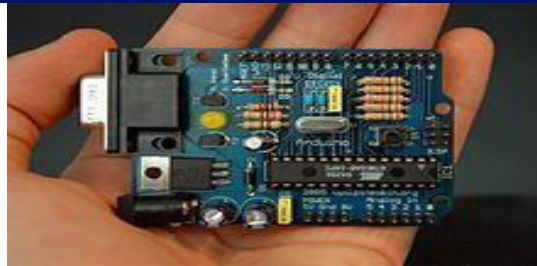

Fig.4.2. Back side of module.

Fig.4.3. Ardino board.

ADVANTAGES

- ➢ Easily track the missile.
- ➢ To easily disposal of missile.
- ➢ Buzzer indications also get here.
- ➢ WSN also possible here

APPLICATIONS

We have designed it as an assistant robot to the bomb disposal squad but there are a number of other applications of this robot. It can be used by:

Police: In hostage situations.

Military: For reconnaissance missions.

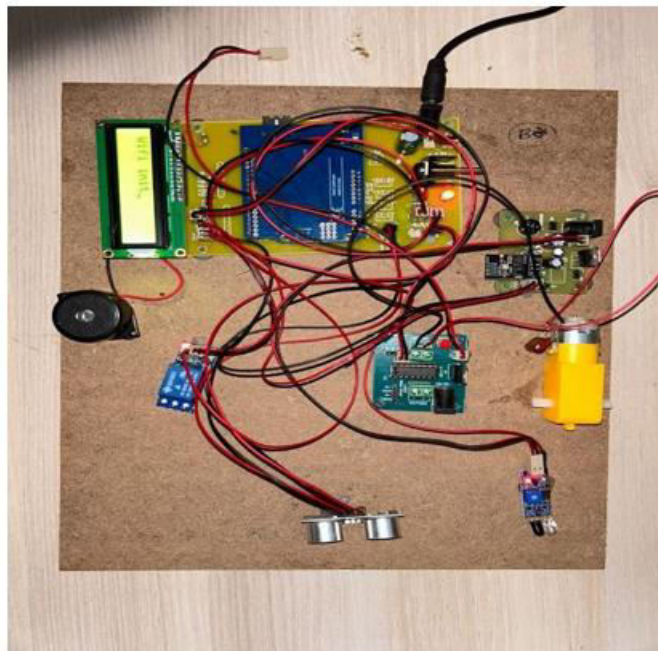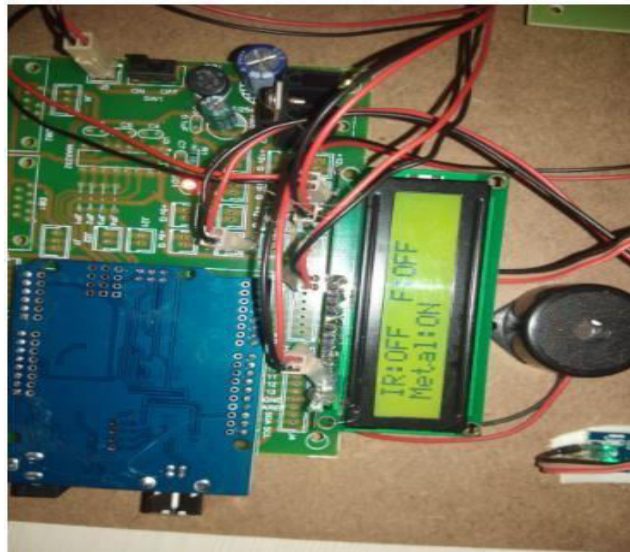Fire: To provide video feedback of the site for analysis.

RESULT

Fig.5.1. Hardware kit.

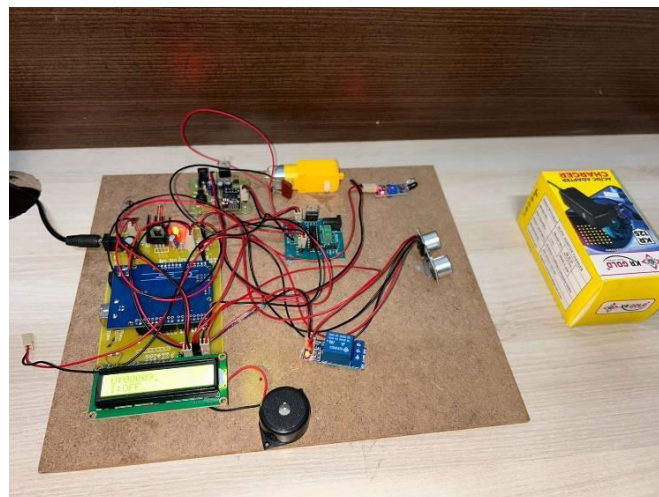**Fig.5.2. IR sensor On condition human detectedtime.**

Fig.5.3. Ultrasonic sensor ON condition.

Fig.5.4. OUTPUT get in TELNET application.

FUTURE DEVELOPEMENT

In the future enhancement can be done by incorporating an IR camera that can exactly capture IR pattern emitted by human body. Furthermore, metal and bomb detector can be used to protect from possible damage.

CONCLUSION

The purpose of the proposed system is to provide a cost effective system for rescue of human in border. The proposed system uses a low cost sensor which is easily available. It is impossible for an individual to visit the border. So, in such situations, the proposed system can be useful.

ACKNOWLEDGEMENT

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