

# Alive Human Detector in War Fields, Using IR Sensor and Live Video Streaming

S.Kruthika, V.Lithika, Nivedha Parthasarathi, G.Nivedhitha

Sri Krishna College of Technology

**Received** 2022 March 15; **Revised** 2022 April 20; **Accepted** 2022 May 10.

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## Abstract

Wars have been a part of human history for thousands of years and involve physical force, violence and the use of weapons, which may lead to human life being threatened. The motive of enforcing this project is to achieve a human detection robot that is used for the detection of humans during a time of war. The rescue robot is capable of detecting humans from afar by using Infrared sensor and PIR Sensor. In this paper, an android application is used to monitor the robot's motion. An ESP32 camera is attached to the module for the night vision and live video streaming is connected to the mobile app. GPS is used to use to track the live location. Our project portrays an accuracy of 93% respectively in comparison with the other existing robots.

**Keywords:** Internet of Things, Esp32, Nodemcu, Android Studio.

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## 1. Introduction

Natural beings use speech signals to communicate. Nearly every interaction is accomplished through speech signals. An electrical signal can be created via proselytizing sounds and speech signals. Voice recognition is a generation that's used to transform speech signals right into a pc textbook format. This voice popularity era may be used to govern and set off speech acknowledgment of the usage of some external garçon. Robotic voices are capable of carrying out a huge variety of vocal commands and engaging in the desired behavior. Voice popularity is a piece-sensitive venture because absolutely everyone has his personal accentuation.

These robotic assistants can be employed in a variety of industries, including manufacturing, defence, and others, for shaping, producing, and driving tasks. Here in this study, developed an aided bot which could be controlled by voice instruction. In this design, we 're going to make an IP surveillance camera with the ESP32-CAM board. The ESP32 digicam goes to host a videotape streaming internet waiter that you could penetrate with any gimmick for your network.

## 2. Associated Works

In [1], the authors propose an alive human detection using the Global System for Mobile Communication (GSM) technology modem, camera, IR sensors, gas sensors, metal detector, and video screen, the robot performs functions such as smoke detection, metal detection, and camouflage technology. The robot has a PIR sensor that can identify living people. When a body temperature reach over the absolute temperature, it discharges radiation that cannot be seen by the naked eye. To detect a live human, it senses these passive infrared rays.

In [2], the author proposes a remotely controlled drone for rescue operation. A key feature that distinguishes UAVs from present systems is that they are completely self-governing system. Additionally, while unmanned aerial vehicles [UAVS] cannot be damaged during detection, existing systems can be damaged. A human detection sensor, an object collision detection sensor, and a communication module are all included with the drone.

[3], the current project assign with instantaneous human detection aboard a completely self-governing redeem UAV. The implemented embedded system uses deep learning techniques to detect open water swimmers using Global Navigation Satellite System (GNSS) technology, computer vision algorithms for accurate human detection and deployment of rescue tools.

In [4], the authors argue that the uncontrollable pace of science and technology, growing skyscrapers and dwellings, encroaching everywhere and increasing the danger of being lost, is a beneficial tool for managing the crisis. We are presenting a living human detection robot. With the lack of life from such disasters, there is increasing chaos and chaos in the use of the radio frequency spectrum to transmit and receive voice, facts and video indicators.

In [5], The authors suggest a novel method for utilising an autonomous robot to find living people in destroyed areas. This method has the potential to perform well in terms of swiftly and efficiently locating live people in damaged areas. The detection is dependent on a number of variables, including body posture and ambient light levels. The ultrasonic sensor is employed to discover the presence of mortals and an affordable camera to obtain a video of the scene as needed.

Finally, the authors of [6] goal to develop a PIR sensor primarily based on semi-self sustaining cellular rescue robotic which could detect live men or women from an unreachable factor of the catastrophe location. To detect internal gas leaks, the building's fuel sensor is used.`, while the ultrasonic sensor is used to identify obstacles in the robotics course of travel. In order to ease human identification in that type of situation with the greatest chance of success, IP Camera is also incorporated to study and investigate situations.

### 3. Existing System

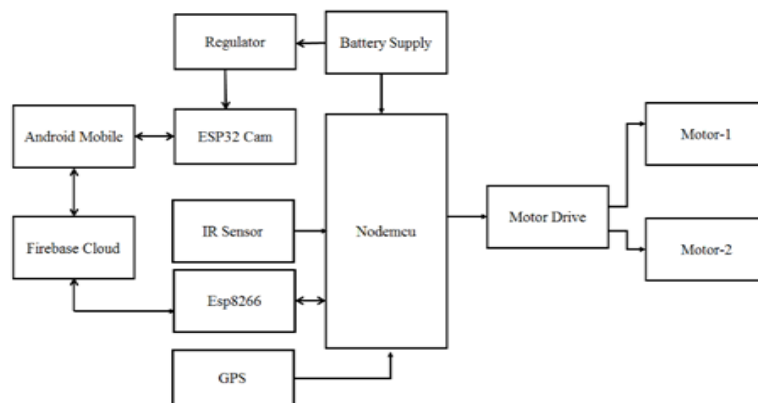
The existing system uses Zigbee, Bluetooth and RF technology which covers only a shorter range of distance's grounded suggestion was given to the concerned person who makes detention in process since it's an aged generation fashion. lodged grounded technology was enforced to view the result of adversary discovery through TV.

### 4. Proposed System

Infrared Detector present in the military areas makes the evidence of the adversary/ mortal detection. However, the essence sensor in there gets detected and suggestion was given, If the detected adversary/ human is with any essence. IOT- grounded GPS (Global Positioning System) tracking technology is used which gives an accurate result further than normal GPS technology. The cloud- grounded monitoring system has been enforced which can be viewed by a concerned person anywhere. Announcement cautions can be initiated for a particular moment.

In our proposed machine regulator used is Node MCU. It has a USB to3.3 V power pressure at the board. The NodeMcu (ESP8266) which is included with the Wi-Fi Module has the functionality to give any microcontroller get admission to on your Wi-Fi community. The complete robotic capability is managed by means of this regulator. It controls the vehicle through a voice-controlled firebase cloud. Skype videotape calling is used to manipulate the robotic in homemade mode. Whenever any detector becomes active an alert communication is transferred to Mobile.

### 5. Block Diagram



### 6. Working

This device may be very beneficial in regions in which there is an immoderate chance for humans to enter. A Voice managed Robot primarily based on a few inputs interfacing machine which affords inputs to the motor. The motor tactics the inputs supplied and take the corresponding movement (in phrases of motion – pass left, forward, backward, proper). The system also includes a vision camera which will allow live streaming during both day and night. GPS Module Continuously sends the vehicle location to our mobile the Google firebase. IR sensor is used to detect the boundaries and send a notification to the mobile.

#### A. NODEMCU

NodeMCU is used in this project to create the WIFI connectivity between the robot and the mobile application. NodeMCU let data transfer using the WIFI protocol.

*B. ESP32-CAM*

ESP32-CAM is used for live streaming and with the help of this camera we can able to know the surrounding of the survivor. It is placed in front of the robot to have better vision and we can also control the motion of the robot by viewing the area by connecting the camera with the robot via hotspot.

*C. NEO-6MV2 GPS MODULE*

GPS is used for knowing the location of the survivor and Robot. It is placed in the center of the robot. We can view the location by clicking the GPS button in the application which is directly connected to Google Maps.

*D. IR Sensor*

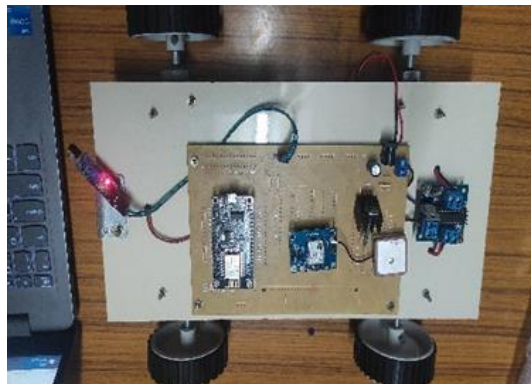
IR sensor is used for detecting the survivor and it is placed Infront of the robot for easy detection. It has potentially higher accuracy than another sensor. Whenever it detects survivor, we get an alert message showing motion detected along with busser sound.

*E. L293d Motor Drive*

Two DC motors can be operated simultaneously by the L293D IC, and each motor's direction can be independently regulated.

*F. DC Motor*

DC MOTOR are used to have a good control over speed, where we can change the direction and speed as they provide good starting torque.



**Figure 1 Working Model**

## **7. Hardware Description**

*A. NodeMCU*

The ESP-12E module, which houses the ESP8266 chip with a Tensilica Xtensa 32-bit LX106 RISC microprocessor, is included with the Nodemcu ESP8266 development board. The configurable timer rates for this CPU range from 80 MHz to 166 MHz, and it supports RTOS. Nodemcu has 128 KB of RAM and 4 MB of Flash memory for storing data and plans. Its high processing power, built-in Wi-Fi, Bluetooth, and Deep Sleep handling features make it ideal for Internet of Things devices. The use of a Micro USB jack and VIN leg can power Nodemcu. The Nodemcu Development Board is simple to programme because the Arduino IDE is user-friendly. Nodemcu may be programmed with the Arduino IDE in between 5 and 10 blinks. The Nodemcu board itself, the Arduino IDE, and a USB cable are all that is required. You can all agree that this savvy Smart Nodemcu Tutorial will hone your Arduino IDE.

*B. ESP32-CAM*

The board is powered by an ESP32-S SoC from Espressif, an important, programmable MCU with outside-of-the-box WIFI and Bluetooth. It's the affordable (around\$ 7) ESP32 dev board that offers an onboard camera module, MicroSD card mount, and 4 MB PSRAM at the same time. Annexing an extrinsic Wi-Fi antenna for signal hoisting requires redundant soldering work. The board doesn't have a conventional USB harbourage, you'll command to employ either an FTDI programmer, or an add-on Chapeau, or an Arduino UNO along with the Arduino IDE/ ESP-IDF DEV tools to upload canons to it. Being a low- charge board in a slight enough figure factor has fabricated it extremely favourite for multitudinous IoT and machine vision operations. The outdated

spec distance and numerous tutorial runners articulate that the ESP32-CAM only supports two camera modules (OV2640 & OV7670), while in actuality you can use numerous cameras with it, exclusively scroll down for further particulars.

*C. NEO-6MV2 GPS Module*

NEO-6MV2 is a GPS (Global Positioning System) module used for navigation. Only its position in the universe and event records, including its location's longitude and latitude, are evaluated by the module. It belongs to a distinct family of high-interpretationuBlox 6 positioning systems that use stage-alone GPS receivers. These flexible and cost-effective receivers provide a variety of connectivity choices in a compact package (sixteen x 12.2 x 2.44 mm). Neo-6 modules are the perfect choice for battery-treated cell bias with genuinely strict price and space constraints thanks to their compact armature, energy, and memory appliances. Even in the most difficult environments, the Neo-6MV2 performs brilliantly in terms of navigation thanks to its intelligent design. One of the most popular GPS modules, it is also cheaply priced.

*D. IR Sensor*

Light is emitted by an IR sensor within the range of infrared frequencies. Since IR radiation has a far longer wavelength than visible light (700 nm to 1 mm), it is invisible to us. Depending on the IR transmitter's design and maker, IR LEDs have a light evolving angle of roughly 20–60 degrees and a pasture of roughly a few centimetres to several feet. The pasture is measured in kilometres by some transmitters. Because IR LEDs are white or clear in colour, they may emit a large amount of light. When sunlight shines on the photodiode, it conducts as an IR receiver. The photodiode is a semiconductor with a P-N junction that has been handled in reverse bias, which is a technique that causes the cutting edge to startlely perform in the reverse direction as Light cascades on it. The quantum of cutting-edge inflow is equivalent to the quantum of Light. It is advantageous for IR discovery because of this asset. The photodiode has a covering of absolute darkness that gives it the appearance of an LED. Black colouring absorbs the most amount of light.

*E. L293d Motor Drive*

Popular 16-pin motor driver ICs include the L293D. As the name suggests, it is basically used to power the motor. Two DC motors can be driven by a single L293D IC at once. Moreover, These two motors' direction is separately regulated. Therefore, if you want to limit a motor that only has a 36V operating voltage and a 600mA operating current, you can use digital circuitry like op-amps, 555 timers, digital hatches, or even microcontrollers like the Arduino, PIC, ARM, etc., the IC is the right choice for you.

*F. DC Motor*

These autos are filthy. The most ideal interpretation properties are offered by DC Motors with gears for the shaft. Because the shaft of these machines extends through the axis of the gearbox, they are known as centre shaft DC geared machines. These well-known length DC Motors are usually reasonably priced to use. In addition, using an Arduino or like board means that you no longer need to spend a lot of money on plutocrats in order to modify cars. This motor, which operates on a voltage between 5 and 35V DC, can be utilised with the L298N H-ground module with an inbuilt voltage controller motor motorist. All-terrain robots and a variety of automated processes can use this DC Motor 30RPM 12Volts. These vehicles feature a 3 mm interlaced drill hole in the shaft's centre, making it simple to connect them to a bus or other mechanical assembly.

## 8. Conclusion

This robot was erected with the aid of preserving military operations in mind. Therefore, it includes handicap finding and initial videotape monitoring so that it can identify subsurface landmines, among other things. This proposed system offers a legal responsibility to layout an easy robotic that can be applied to do multifunction in defense. We are looking at the database for further analysis using the GPRS resource. The digital camera will provide real-time information about the distant unit for analysis.

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