

# Rescue Human Detection Robot By Using PIR Sensor

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**Abstract-** The PIR sensor is widely used in wireless communication induces into automation, data acquisition, building control, monitoring process etc. Due to wireless technology improvement robotic control system is mostly favored. Some tasks are feasible to human so that can accomplished with greater efficiency and less effort. Existing system is unreliable due to high expense. This system could overcome all the above difficulties. Proposed system can detect an alive human from catastrophic environment which is very helpful for the rescue operation during disasters. Such disaster can be natural or man-made. Natural disasters cannot be prevented. The aim of paper is to implement rescue operation using PIR sensor for Alive human detection. We achieved 98% correct detection. It can provide 89 to 95% accuracy depending upon component. It's well suited for real time implementation with 1.3 % higher accuracy than exiting system and false alarm is reduced to 4.0%.

**Keywords-** PIR sensor, Dc Motor Driver, Arduino Uno , Bluetooth Module.

## I. INTRODUCTION

A passive infrared sensor is used to detect the human. The main aim of this project used for rescue operation and security. Alive human detection robot is based on arduino Uno. If the PIR senses any radiation from alive human then it send signal to operator and buzzer is on and motor used to move robot in specific direction. Human body temperature is above 93 degree Fahrenheit. Radiation of infrared energy is in between wavelength of 9 to 10 micrometer. Therefore the sensor typically in the range of 9 to 12 micrometer. In this project the PIR sensor can detect human up to 3 meter. To drive the robot the L293D driver IC is used along dc motor to drive robot in forward and reverse direction. Bluetooth model are used for communication purpose between operator and robot.

## II. PROBLEM STATEMENT

In the present scenario there is need to development in automation field. The natural calamities, the human get trapped under debris. There is very important to save the life of human. A live human detected through the PIR sensor &

rescue operation is accomplished by rescue team. Other purpose is for security system in banks and jewellery shops. Under these situations the human detection robot is used.

## III. METHODOLOGY

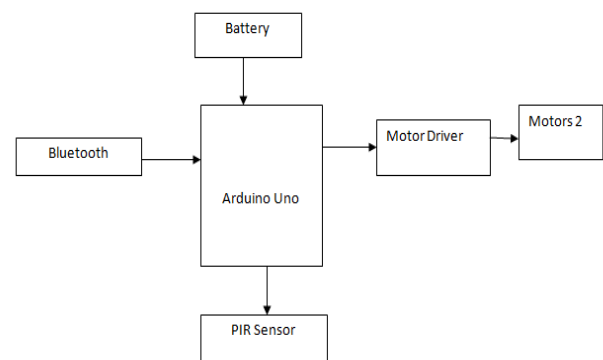


Fig. block diagram of human detection robot.

Human detection robot consists of receiver and transmitter side. Receiver side consists of micro controller ATmega328 (Arduino Uno.) The input of micro controller is PIR sensor and output is motor driver IC L2933D. The dc motor is used to drive the robot into left, right, forward and reverse direction. While robot is moving if any human detected then motor stop moving and sends signal to operator and buzzer is on. Bluetooth model is used for connection. Firstly start the kit, initialize the microcontroller initialize motor. If any human detected the buzzer is on send signal to operator for presence of human.

## IV. COMPONENT USED

### Arduino Uno (ATmega328)

Arduino is an open source platform used for building electronics project. Arduino Uno has 14 pins out of 6 pins provided for PWM output. Its operating voltage is 5V. Input voltage is 7 to 12 V and input voltage limit is 6 to 20 V.

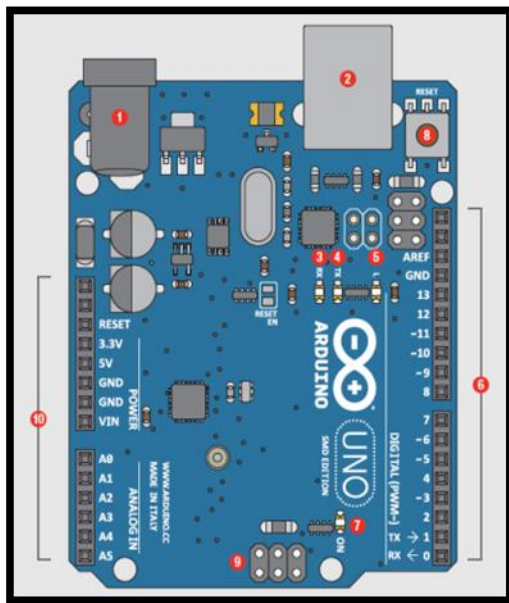


Fig. Arduino Uno

**DC motor driver (L293D)**

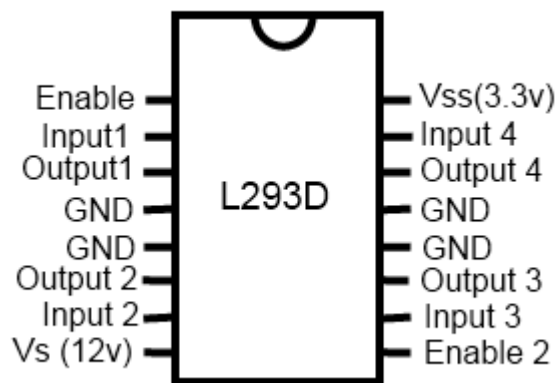


Fig. L293D driver IC

Dc motor driver are used to drive dc motor. Dc motor converts the electrical energy in to mechanical energy. Driver IC used drive robot in forward & reverse direction. Driver IC available in wide range such as 4.5v to 36v.

**PIR Sensor**



Fig. PIR Sensor

It's a passive infrared sensor used for human detection. It sensed the radiation from detect human body. A PIR is an passive infrared electronic sensor that measures infrared energy radiation from human body into field of view.

PIR sensors are used to detect human. Fresnel lenses are used in PIR sensor which increases the range of detection. These lenses are made up of translucent which captures from sensor depending upon component used. This is an average value as the actual detection range is 5 to 12m. The radiation from visible spectrum of light the PIR sensor detect human within around 3 meter.

**Bluetooth Module**



Fig. Bluetooth module

It is a short-range wireless networking technology and is used to link (or pair) two devices, such as smart phones and headsets, cameras and printer and keyboards and computers, it is sometimes called a cable-replacement technology. Both devices must support Bluetooth in order to be paired, if they do, though paring the paring is designed to happen automatically, with little to no user interaction. The Bluetooth module used here is a HC-05 based on SPP support. HC-05 module is an easy to use. In our idea we have made use of Bluetooth Control App available on Android as controlling software more like a remote control for the manual operation of the robot.

**V. ADVANTAGES**

- Rescue operation can be efficiently done by using human detection robot.
- It is designed to withstand/operate in any severe climatic condition.
- It is time efficient.
- User friendly interface, economical.
- The programming of the microcontroller is easy.
- In military surveillance and rescue operation.

## VI. APPLICATION

- In military operations to detect the existence of human being.
- To rescue human from disaster.
- In disaster management.
- In crisis management.
- This equipment can be used at mines, earthquake prone areas.

## VII. CONCLUSION

The robot is developed to be efficient by optimisation in design and working principle. Its outlooks are also changed to meet our requirement for successful operation of human detection robot to detect human in disastrous situation and monitoring purpose for military and security purpose.

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