

Night Vision Security Patrolling Robot with Sound Sensing

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Abstract- Nowadays Women Safety is the biggest concern in many parts of the world. There is still a fear in alone areas for women as well as men. So here we propose a security patrolling robot using ARM 7. The system uses cameras and mica mounted on robotic vehicle for securing any premises. It monitors each area to detect any problem using camera. It has the ability to monitor sound in the premises. Robot hears any sound after area is quite and it starts moving towards the sound on its predefined path. It then scans the area using its camera to detect any human faces detected. It provides continuous monitoring together with live broadcasting of the site off crime.

I. INTRODUCTION

From its initiation in the 1950s, modern robots have come a long way and root edit self as an immutable aid in the advancement to human kind. In the course of time, robots took many forms, based on its application, and its size varied from a giant 51 feet to microscopic level. In the course of technological developments of robots, one aspect remained instrumental to the function, and that is mobility. Women are not so physically fit as compared to men so in case of a need a helping hand would be a boon for them. Vision robot Patrolling System The best way to reduce probability of becoming a victim of violent crime (robbery, sexual assault, rape, domestic violence) is to recognize, defense and look up resources to help you out of hazardous situations. If a women is in dilemma or get split from friends during a night out or someone is following with bad intention (sexual assault) or don't know how to find back residence then this device with her will guard her and bring assistance when she need sit by giving her current location and health conditions to her associates and control center through SMS and call. This device not only provides family and police support but also helps in getting medical support as fast as possible.

II. LITERATURE SURVEY

- A Surveillance System using Internet protocol of Raspberry Pi was implemented by [1] in which the Raspberry Pi and internet protocol are used to build a surveillance device with a spy robot.
- A survey of a mobile robot with GPS observations is suggested in this paper. When it comes to the robot's monitoring, GPS technology is crucial. The system can further be improved to provide outputs of high accuracy and stability.
- Chinmay A. Dandekar (Electrical Department, VIVA Institute of Technology, India) VIVA Institute of Technology 9th National Conference on Role of Engineers in Nation.
- Arduino-controlled war field spy robot with a night vision wireless camera and an Android application was developed by [6][13][14].The main goal of creating this robot is to track human activities in war zones or border regions in order to minimize enemy infiltration. The robot is equipped with a night vision wireless camera that can relay images of the battle ground in order to avoid human casualties. The range of distance of the system might be increased to improve its efficiency.
- Research on sound source localization and real-time facial expression recognition for security robot [5] lead to the development of a security robot with abilities of sound source localization and real time facial expression recognition. The real time facial expression recognition is made possible with the help of image acquiring devices and deep data processing capabilities.

III. METHODOLOGY

In this proposed device, Node MCU is equipped with the night vision camera that helps the user to go for automation and helps to find the person or any problem detected using the sound sensor and automatically goes to that area and captures the image and sends it to the user using IOT technology according to the sound generated .

In this proposed device, Node MCU is equipped with the night vision camera that helps the user to go for automation and helps to find the person or any problem detected using the sound sensor and automatically goes

to that area and captures the image and sends it to the user using IOT technology according to the sound generated. The robot has a range of knowledge to protect the greater region. This robot uses two infrared sensors that are capable of detecting obstacles robot on both hands. When the barrier does is at the front of the robot it changes its direction to the opposite side of it.

IV. DESIGN STRUCTURE AND HARDWARE USED

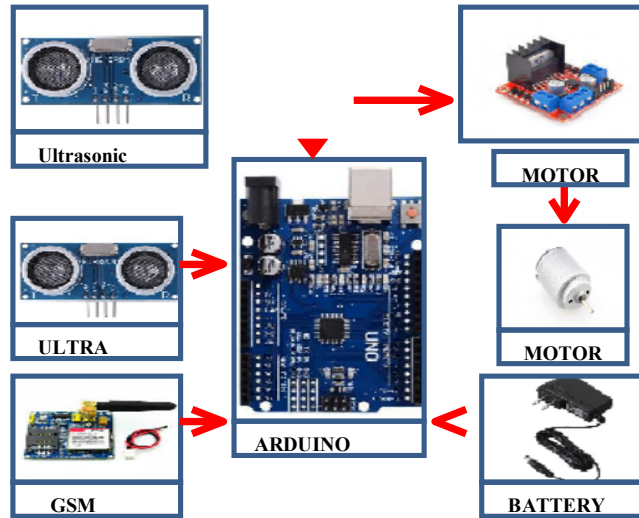


Figure.1 Block Diagram of an Avoiding Robot.

Explanation of Block Diagram

There is a sound sensor using in the robot. This sound sensor will sense the sound with the particular frequency and after sensing the sound the robot will move towards the sound recognized side and the camera will be switched on and the camera will record the video with the audio file. This video and the audio file will be monitored by the operator who is having with robot...

Arduino UNO:



Fig-2: Arduino UNO

Fig2. Shows the Arduino UNO board. It is basically a micro-controller kit that issued to get data from peripheral devices (sensors, motors, etc.). The Arduino UNO Micro-controller board is based on the AT mega328PIC. The AT mega328P is good platform for robotics application which makes robot to extinguish fire in real time. Arduino UNO board consist the sets of digital and analog pins that may act as an interface to various expansion boards and other circuits. It contains everything needed to support the microcontroller.

MOTOR DRIVER L298N:

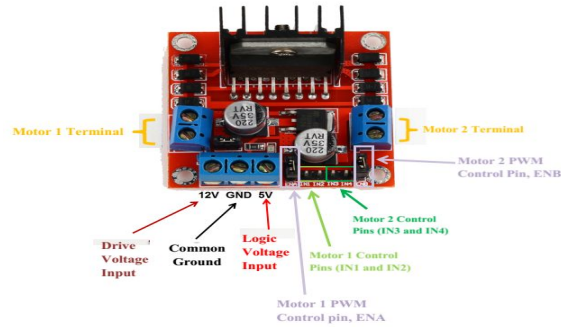


Fig-3: Motor driver L298N

L298N is a dual H-bridge motor driver integrated circuit (IC). Motor drivers act as current amplifiers since they take a low-current control signal and provide a higher-current signal. This higher current signal is used to drive the motors. L298N contains two inbuilt H-bridge driver circuits. In its common mode of operation, two DC motors can be driven simultaneously, both in forward and reverse direction. The motor operations of two motors can be controlled by input logic at pins 2 & 7 and 10 & 15. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anti-clockwise directions, respectively.

SOUND SENSOR:

A Sound sensor is defined as a module that detects sound waves through its intensity and converting into electrical signals. Generally, this module is used to detect the intensity of sound. This application of this module mainly includes switch, security.



Fig-4: Sound sensor

ULTRASONIC SENSOR

An ultrasonic sensor is an electronic device that measures the distance of an object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear). Ultrasonic sensors have two main components: the transmitter (which emits the sound using piezoelectric crystals) and the receiver (which encounters the sound after it has traveled to and from the target).



Fig-5: Ultrasonic sensor

Ultrasonic sensors are used primarily as proximity sensors. They can be found in automobile self-

parking technology and anti-collision safety systems. Ultrasonic sensors are also used in robotic obstacle detection systems, as well as manufacturing technology. In comparison to infrared (IR) sensors in proximity sensing applications, ultrasonic sensors are not as susceptible to interference of smoke, gas, and other air borne particles (though the physical components are still affected by variables such as heat). Ultrasonic sensors are also used as level sensors to detect, monitor, and regulate liquid levels in closed containers (such as vats in chemical factories). Most notably, ultrasonic technology has enabled the medical industry to produce image so in eternal organs, identify tumors, and ensure the health of babies in the womb

V.

EXPECTED RESULT

- There are numerous enhancements to the current design and technology that can be made, as well as numerous extra features that may be introduced.
- In Future we can use IOT then we can control this robot from any place in the World User will able to change direction of vehicle
- This system can be further improved in to a full-fledged security robot to reduce human work...
- This system can be more advanced by adding calling feature also the location can be also sent to the nearest police station We Can add alert option in future

Advantages:

1. Automatic control
2. Quick response
3. It can move from one location to another location.
4. Camera can be used in day as well as night

Applications:

- I. Used for safety of woman
- II. Used for safety of children
- III. Used to record
- IV. Used to send video for necessary condition
- V. Applicable as legal evidence of crime

VI.

CONCLUSION

Nowadays, mainly women safety is the biggest issue in all parts of the world due to increased violence against them. The existing system either lags one of these features or require high end microcontroller such as Raspberry pi for its proper operation. Hence, the proposed women safety night patrolling robot makes the best use of its features such as sound sensors, ultrasonic sensors, ESP cameras and IOT in order to patrol in its assigned area with least human intervention. The paper concludes with a design of security robot for patrolling robot which uses night vision camera to securing its premises. The robot move with particular intervals in the same direction. It is also equipped with night vision camera and sound sensors. It is used by a predefined path which is given to the controller for the moment of patrolling. It captures and send the images directly to the control monitor room, for further actions.

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