



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 5, May 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

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 6381 907 438

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# Woman Safety : Night Vision Patrolling Robot

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**ABSTRACT:**The implementation of an IoT-based smart night patrolling robot is presented in this paper, utilizing an Arduino Uno, camera module, sound sensor, ultrasonic sensor, motor driver, motors, Nodemcu, and buzzer. The proposed robot is designed to autonomously patrol a designated area and capture images and videos of the area using the camera module. The ultrasonic sensor is used to detect obstacles and prevent collisions, while the sound sensor is used to detect unusual sounds and alert the user. The buzzer is included to provide an audible alarm in case of any significant disturbance in the patrolling area. The robot is designed to move around and change directions using the motor driver and motors, which are operated by an Arduino Uno. The Nodemcu provides internet connectivity, enabling remote monitoring and control. The proposed system can be used for a variety of applications, such as surveillance and security, and has the potential to improve the efficiency and effectiveness of night patrolling operations. The proposed system is developed at a low cost, making it accessible to a wider range of users. The implementation of the proposed system has been tested, and the results indicate that the system is efficient and effective in detecting and responding to environmental stimuli. The system is controlled using a web-based interface, and the users can monitor and control the system remotely.

**KEYWORDS:**Arduino Uno, camera module, sound sensor, ultrasonic sensor, motor driver, motors, Nodemcu, and buzzer.

## I. INTRODUCTION

The world of technology has been advancing rapidly in recent years, and one of the most significant developments has been the rise of the Internet of Things (IoT). The IoT has enabled us to connect devices and systems through the internet, making it possible to automate and control many aspects of our lives. One area that has seen a significant impact from IoT technology is the field of security, particularly with regards to patrolling and surveillance. Smart security systems are becoming increasingly popular, and one application that is gaining traction is the use of IoT-based smart night patrolling robots. An IoT-based smart night patrolling robot is a robotic system equipped with sensors and connected to the internet. It is designed to patrol a designated area, monitor it for any signs of intruders, and alert the appropriate authorities if it detects any suspicious activity. The robot is designed to operate autonomously, eliminating the need for human intervention. The rise in security concerns has led to an increasing demand for effective night patrolling. Traditional patrolling methods rely heavily on manual labor, which can be costly and inefficient. Advances in technology have led to the development of smart robots that can be used for various applications, including night patrolling. IoT-based smart robots are gaining popularity due to their ability to autonomously patrol designated areas and detect and respond to various environmental stimuli. In this paper, we present an IoT-based smart night patrolling robot using an Arduino Uno, camera module, sound sensor, ultrasonic sensor, motor driver and motors, Nodemcu, and buzzer. The proposed system is designed to patrol a designated area autonomously and capture images and videos of the area using the camera module. The Nodemcu provides internet connectivity, enabling remote monitoring and control. The proposed system is controlled using a web-based interface, allowing users to monitor and control the system from anywhere. The users can receive real-time updates, enabling them to detect and respond to any unusual activities in the patrolling area. The proposed system can be customized and adapted to suit various applications, such as surveillance and security in industrial sites, residential areas, and public spaces .

## II. RELATED WORK

To solve this problem, we have proposed a night patrolling robot whose purpose is to ensure the safety of people at night. The best way to reduce the likelihood of becoming a victim of violent crime is to identify, protect and access resources to help us get out of dangerous situation. This method of safety does not prevent crime to happen, but it helps to identify criminals for law enforcement when crime do occur. This robot captures the live stream and 360 degree rotating images. This feed is sent to the user in real time, the user will analyze it and if a problem is observed action will be taken and we can also spray tear gas so that the police have time to take the action. This robot can be operated manually as well automatically. This patrolling robot can move automatically along the base of the foot patrol. Using the built-in automatic guidance system, the mobile robot can independently circumnavigate obstacles and choose the optimal route to follow. This patrolling robot makes almost no noise while on the move, as it uses batteries and modern high-power, lightweight electric motors. This robot is always on its patrol route; unlike humans, it does not need to rest and it does not need to be supervised by a security guard.

## III. METHODOLOGY

The methodology for a IoT based smart night patrolling robot involves both hardware and software components. IoT-based smart night patrolling robot involves the use of various components such as an Arduino Uno microcontroller board, a camera module, sound sensor, ultrasonic sensor, motor driver, motors, Nodemcu, and buzzer. Arduino IDE (Integrated Development Environment) is a software tool used for programming and development of Arduino boards. It is an open-source platform, available for free, and is compatible with multiple operating systems including Windows, Mac OS, and Linux.

## IV. EXPERIMENTAL RESULTS

Wide range of area surveillance is done using the night vision camera fitted on the rover and also automatic system when the sound is detected robot will follow the particular path and go to that spotted area and capture the area and send to police station server using IoT. This concept is an automatic smart way to patrolling overnight to safe women.

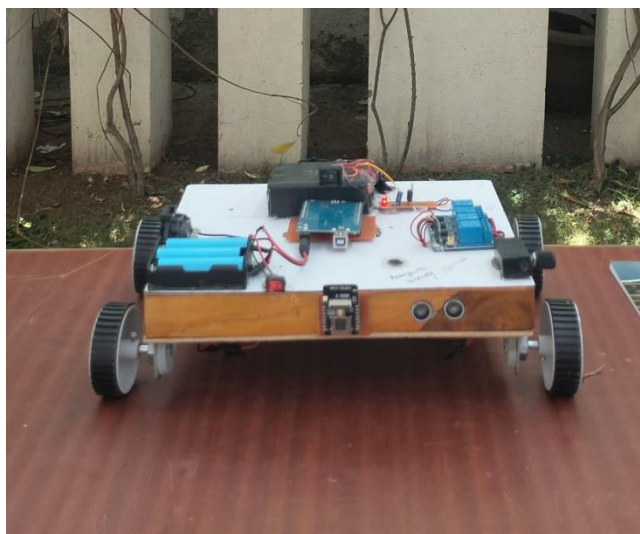


Figure shows Front view of night patrolling robot

The location and photographs are shared from the situation successfully through this project. Hence with the help of this robot, we can save the victim in time and catch the accused. Thus, surveillance and the security of the society is provided in an efficient manner.



## V. CONCLUSION

After carefully considering this system model, we can conclude that this technique will undoubtedly aid in the reduction of crime rates as they are at an all-time high. Grants are available through the project when it came to designing for crime, there were a lot of challenges. Current scenario and will assist in clarifying Using a compressed kit and concept, they can be studied scientifically. The Night patrolling robot has the ability to keep public safe. A difficult scenario it has an alarm, and SOS light, and a flashlight. Even incorporated a safety app for its extremely important environment. The Night patrolling Robot can be improved. Lot more in the future, thanks to the use of ultra-compact technology Modules for the Arduino microcontroller.

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SJIF Scientific Journal Impact Factor

Impact Factor: 8.423



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