



## Night Patrolling Robot

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### ABSTRACT –

In this paper, Night Patrolling Robot has been implemented with monitoring and control algorithm. Night Patrolling Robot is based on Raspberry PI. Robot uses Internet of Things (IOT) to do so. This Robot is used as platform to safeguard the nation from enemies, it is used as security solution in various organizations such as banks, hospitals, etc. Raspberry PI which we called as tiny single board computer, night vision camera and sound sensor make up the Night Patrolling Robot system. the spy robot system. Users receive information through the sound sensor's ability to detect objects via web server and pi camera simultaneously records moving objects and send it to server. The user in control room to access the robot through database created on server. Robots can also be programmed to move automatically by using obstacle-detecting sensors to steer clear of smashing. This spy robot surveillance system can be tailored for use in a variety of settings, including airports, retail centres and businesses.

Keywords:- Internet of Things, Virtual network Computing, Security, Database.

### 1. INTRODUCTION

The field of robotics is growing significantly in today's world, and military organisations, business, academic and research areas are the main users of some of the well-known robotic goods. Compared to engaging a human carer, the cost required for designing and implementing a robot is significantly less. Reprogramming the robots can be done more quickly and effectively. The robot is intelligent enough to cover the maximum area and provide proper monitoring. With or without human guidance, the intelligent robots can perform their required tasks on unstructured conditions. Since safety and security are crucial components of remote monitoring and control systems

like consumer surveillance systems and intelligent home settings, real-time object detection is necessary.

Real-time human body detection is crucial for many different applications, including communication, surveillance and home security systems. Crime has also evolved to be ultra-modern in today's globe! Numerous instances, including theft and robbery, take place all the time.

The robots that are trained to patrol at night or in low light add an additional degree of protection to the system. They lessen hazards to human security personnel by operating in dangerous or distant regions. But their best performance comes from combining them with human security guards, who can react to events and make vital choices based on the information these robots provide.

Security plays an important role for any organization such as hospitals, banks, etc. Mostly man power is used for security purpose. The Doors redesigned to be secure and to determined unauthorized entry. Because thieves and scammers can fabricate keys or create master keys that can be used to break into such rooms or offices, people and cooperative bodies are growing increasingly conscious of the risks involved in depending solely on keys and perimeter fencing to provide security to exclusive areas of their apartments and organisations. Night patrolling robot provides technological solution for security. It helps to reduce man power required for security purpose. In today's modern world it helps us to automate security system with less efforts and task.

### 2. Literature Survey

1. A. K. Bandani (2023) [1] A. Bollampally, S. Sahithi, R. Naik, N. Kumar and Goutham designed and developed a spy robot with wireless night vision camera using Android. The primary goal of Design of spy Robot with wireless night vision camera using android is to create a robot that can monitor human activities. The robot goes around and collect audio-video data from the surrounding. The robot send data to distant IOT cloud database. By Transmitting commands via the Bluetooth software on our android phone we can direct the robot moments. The robot travels in the direction shown by the mobile device. We can watch camera footage on a PC.

2. D. Abhyankar (2021) [2] The Authors D. Abhyankar, G. Suresh, H. S. Karjule, P. Bhardwaj, H. Muleva and A. Mahajan focuses on developing a Night vision Bot using Dynamic IR and Object Detection, various sensors. This robot has the ability that can be controlled from the distance. It uses the concept known as Dynamic IR to produce better images. There is also an addition of object detection using machine learning Algorithm, there is an integration of IOT to control robot remotely.

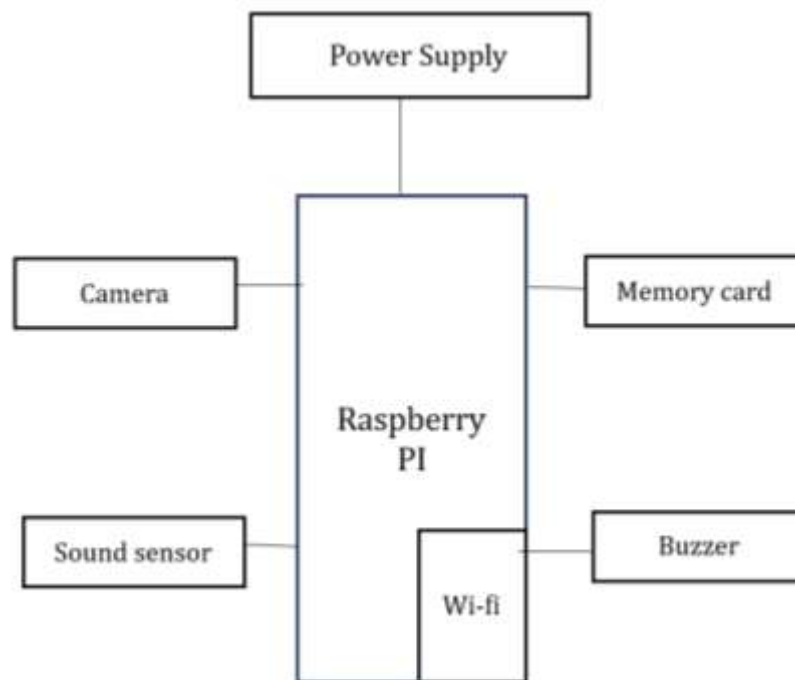
3. D. Sharma (2020) [3] The authors D. Sharma and U. Chauhan published war spying robot with wireless night vision camera, which published in paper 2020 in 2nd International Conference on Advances in Computing communication control and Networking. The main objective of this model is to deal with the security issues. Such as Terrorist activities. This is achieved by RF based spy robot. It consists of a wireless night vision camera which will record footages in dark and displayed it on our mobile screen. The project is more concerned and focused on Wi-Fi based communication.

4. J. N. Amrutha, K. R. Rekha (2020) [4] Night Vision Security Patrolling Robot Using Raspberry Pi was published at International Journal of Research in Engineering, Science and Management. This paper makes use of Raspberry pi to deal with monitoring system. Nowadays video surveillance is an important for security. High end camera is required to be used in various indoor and outdoor places. This paper makes use of night vision camera to capture video during night time. It also uses PIR sensor and IR LED. It uses Wi-fi module and Sound sensor.

5. G. O. E. Abdalla (2017) [5] Implementation of spy robot for a surveillance system using Internet protocol of Raspberry pi was published on 2017 at 2nd IEEE International Conference on recent trends in Electronics, Information and Communication technology. It deals with the Monitoring and control algorithm through Internet of Things (IOT) has been developed which will save human live, reduces manual error and protect the country from enemies.

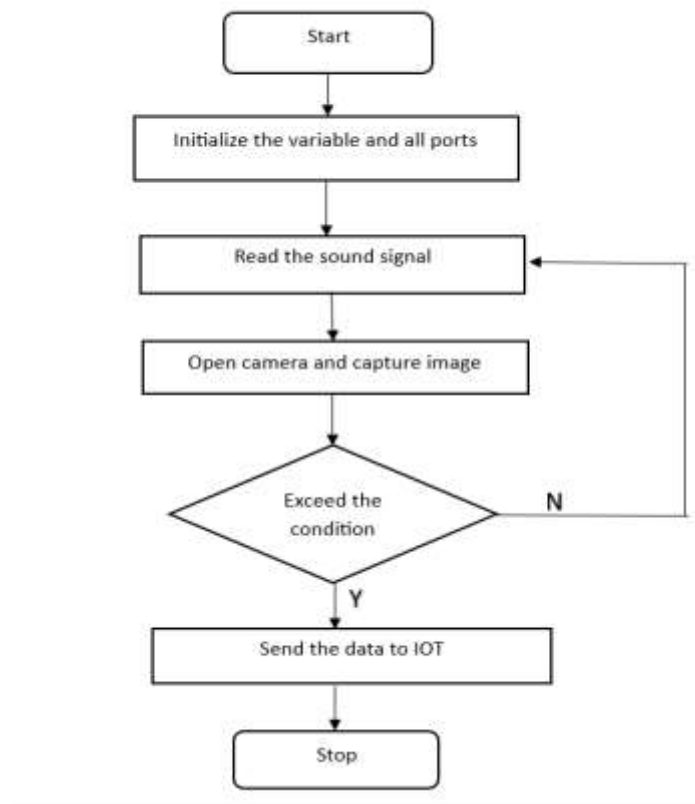
The robot comprises of Raspberry pi, Night vision camera and sensors. The live objects are detected by PIR sensor. The pi camera captures the moving objects which is posted inside webpage. The moment of robot is controlled automatically avoiding the collision. Such type of surveillance robot can be customized for various fields like banks, households etc.

### 3.Methodology:



It shows a block diagram of a model. The raspberry pi itself has a wi-fi module and it is connected with the night vision camera to capture image at night and the image is transferred to distant location with real time monitoring. Raspberry pi is also connected to sound sensor. The working model of proposed system is expressed. When sound sensor detects sound, camera open its shutter and capture the image of surrounding. This captured image is sent to a server created on site. This site has database created on it were images captured by camera are sent. Person concerned for security can access images from this database. Raspberry PI is also connected to buzzer. Whenever server receives an image buzzer will ring. Buzzer is used to notify the person about activity taking place around robot. It helps person to be aware. Night Patrolling Robot makes monitoring security an easy task.

Raspberry PI 4 model B is been used in this model due to its more speed and memory than other Raspberry PI.

**Flowchart of Methodology****4.Components:**

## 1. Raspberry Pi:

The most recent model in the Raspberry Pi computer world is the Raspberry Pi 4 Model B. Compared to the previous models, it shows revolutionary improvements in memory, networking, multimedia capabilities, and CPU speed. The Raspberry Pi 4 Model offers desktop performance on par with x86 entry-level PC systems.

## 2. Pi Camera:

To enhance a video surveillance system's performance in low light, night vision cameras are employed. The essential characteristic that ties all of these cameras together is their infrared lighting, without which it is hard to even consider night time video surveillance.

**5.Conclusion:**

The spy robot that is being used for this safe purpose is capable of gathering the many kinds of information that users need. For example, the sound sensor detects sound in the surrounding. A sensor alerts the Raspberry Pi whenever a person enters the robot's environment. Consequently, the Pi prompts the camera module to take a picture and upload it to the website right away. Using the Internet of Things, the sound and proximity sensors are triggered by outside stimuli. This data is gathered by the control room for subsequent use. The Raspberry Pi minicomputer serves as the spy robot's brain. There are three ways to control the robot. First, just execute the code; after that, let the robot to roam around freely according to the status of the sensors. Second, use the laptop keyboard to control the movement in a particular direction. Thirdly, keep an eye on the data that is accessible on the website and adjust as necessary.

**6. References:**

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