Women Safety Night Patrolling Robot

Dr.Manjula SD, Rakshita Neelappagol, Seeganahalli Shambhavi, Bindushree G, Jeevan K

Associate Professor, Proudhadevaraya Institute of Technology, Tungabhadra Dam, Hosapete, Karnataka, India

Student, Proudhadevaraya Institute of Technology, Tungabhadra Dam, Hosapete, Karnataka, India

[3]Student, Proudhadevaraya Institute of Technology, Tungabhadra Dam, Hosapete, Karnataka, India

[4]Student, Proudhadevaraya Institute of Technology, Tungabhadra Dam, Hosapete, Karnataka, India

[5]Student, Proudhadevaraya Institute of Technology, Tungabhadra Dam, Hosapete, Karnataka, India

ABSTRACT: Nowadays women's safety is a worry in many parts of the world, our system is an autonomous smart way for night vision patrolling. The system's importance is in providing real-time security for both men and women, however women confront several challenges that can be overcome with the aid of this system. It uses sound sensors to detect sound, and fire sensor is used to detect fire attacks. Once the fire and sound is sensed the buzzer beeps and it sends an alert message to the pre-registered police stations with soft copy of images with location. A night vision camera is used to monitor the predefined region, IR Sensor is used to detect the presence of people or objects in the robot's path and move towards the sound produced by using DC Motor, DC Motor is responsible for driving the wheels or tracks of the robot, allowing it to move and patrol the designated area. An automatic system that detects sound sends a robot down a specific path to a specific location to take pictures and upload them via telegram app using Wi-Fi module. This robot can prove to be a useful aid as it reduces the human effort. Instead of the police, it does the patrolling which can be a helper and a good smart in terms of the system's potential application and the safety of ladies.

KEYWORDS: Sound Sensor, IR Sensor, Fire sensor, Camera, Night Patrolling, Women Safety, Telegram.

I. INTRODUCTION

For many businesses and homeowners, security is a crucial asset. Also, it prevents harm to people and the loss or destruction of personal property. Businesses and homeowners set aside a sizable money each year just for security measures. The typical annual wage for a security guard is about $25,000. The more alarm systems, cameras, and security guards you hire, the more expensive it gets. Around $20.64 billion was spent by homes on US security systems in 2011. These figures demonstrate how important safety is to both businesses and homeowners.

A number of technologies serve to ensure security in addition to security officers. One of the most popular forms of surveillance is the use of security cameras. While not a crime-prevention measure, this security measure aids in identifying perpetrators to law authorities in the event that a crime is committed. There are security systems as well, where a security alert may sound once it is activated to deter burglars from trying to break in again. These devices can be set off within a specific range by sound or movement and often alert law enforcement or a security station. There is also a rover-shaped robot that can be operated remotely. It just functions as another group of ground-level cameras and an alarm; it is not remotely controlled. The security patrolling autonomous robot described in this paper will integrate a number of technologies and include a robot with detection and authentication capabilities. Also, it will serve as a preliminary alarm system, a surveillance camera, and operate in both indoor and outdoor settings. It can be found in bigger homes as well as commercial buildings and shopping malls. The Raspberry Pi is a card-sized computer. It functions almost exactly like a computer. There are numerous types of surveillance systems, including monitor, CCTV, etc. The individual who is immobile and placed in that region can only view what is happening in that area using these kinds of surveillance systems. And here, even though the user moves from one place to another, he or she can always be aware of what is happening at any given time in that specific spot. Another benefit is that it guarantees anonymity on both sides. The operating system in use here is Raspbian OS.

II. SIGNIFICANCE OF THE SYSTEM

The system's importance is in providing real-time security for both men and women, however women confront several challenges that can be overcome with the aid of this system. It uses sound sensors to detect sound, and fire sense is used to detect fire attacks. If anybody tries to accuse women or other individuals, it sends an alert warning as a text message to the nearby police stations with accompanying images.

III. LITERATURE SURVEY

Women's safety during huge events is a serious concern. Security system using unmanned aerial vehicles to stop harassment of women [2017 IEEE International Conference on Intelligent Computing, (ICICICT)].The use of an unmanned aerial vehicle (UAV) to prevent physical harassment in public spaces is a novel application that this study suggests. The current surveillance systems are adequate for keeping an eye on crowded regions, but they are inadequate for keeping an eye on remote locations. Crime rates gradually rise as a result of the likelihood that crimes will take place where there is less traffic and surveillance is more difficult. This study addresses the creation of a UAV-based security system that reacts to a user's request from a wearable device when she perceives a potential threat. The suggested strategy is centred on night time operations, when the majority of physical assaults would take place. A primary wearable device will be sent to the target site, where the person facing a potential threat can ask for help while a secondary wearable device recognizes and follows their movements. Also, a less expensive and computationally intensive motion tracking approach is suggested in this paper.

IV. METHODOLOGY

A. Fire Detection

Here Fire Sensor is used to detect the fire attacks, it is placed at the front of the model. If fire attack is detected the buzzer beeps and an alert message "FIRE DETECTED" is sent to pre-registered authority with the location.

B. Noise Detection & Image Capturing

In our model, to detect the noise we have used only one Sound Sensor at the Left side of the model, in real time we can place the many sensors in each direction so that our robot can move in any direction of sound produced. The robot moves to the particular direction and stops when a person is detected using IR Sensor, then a message "UNUSUAL NOISE DETECTED…NEED HELP!!! is sent to the pre-registered police station along with the location and image captured by the pi-camera which is installed on the robot.

C. Dataset Description

The dataset includes a range of inputs that the robot will use to navigate and operate efficiently. These inputs include:
1. GPS data: The robot will use GPS data to navigate to specific locations and patrol certain areas with high foot traffic. This data will also help the robot to identify areas that are at risk for crime and adjust its route accordingly.

2. Image feeds: The robot will be equipped with cameras that will provide a live feed of the surrounding area. These feeds will be used to detect any suspicious activity or individuals, and alert authorities if necessary.

3. Audio Sensors: The robot will also be equipped with audio sensors that will detect any unusual sounds or disturbances in the area. This will enable the robot to quickly respond to any potential threats and notify authorities if necessary.
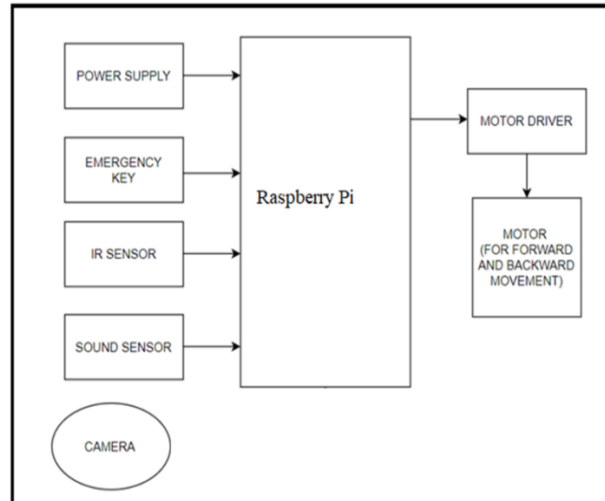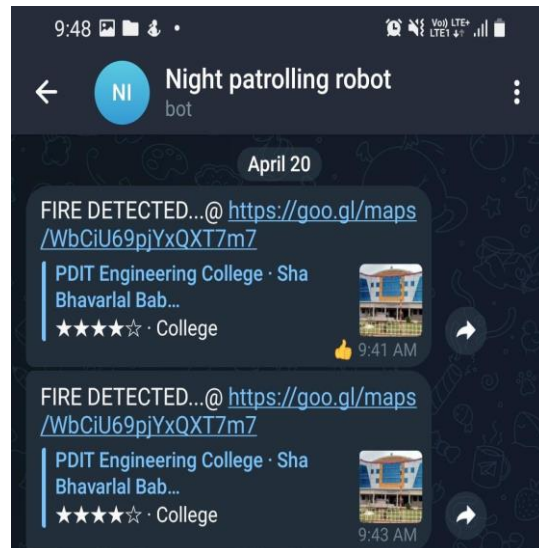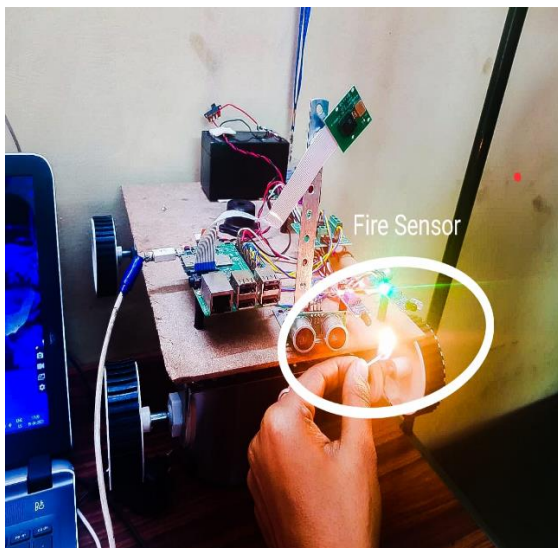
D) System Design

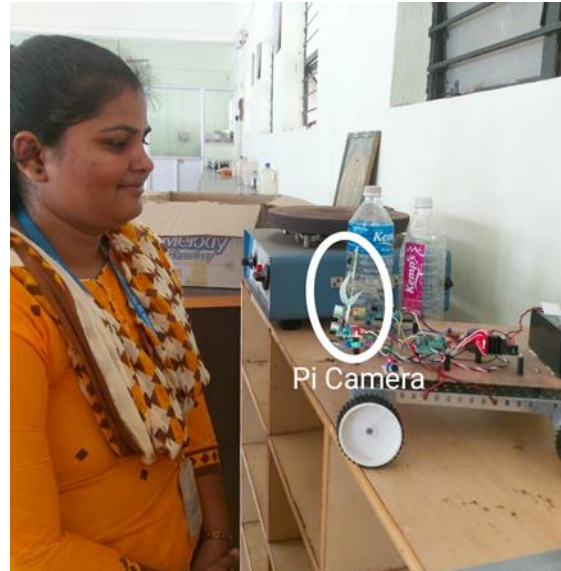**Fig 1. System Design**

V. EXPERIMENTAL RESULTS

A. DETECTION OF FIRE ATTACK

Detecting Fire Attack

At the front side of the robot, Fire sensor is positioned. To find the fire attack. As soon as the fire is detected, it send a message "FIRE DETECTED" with beep sound to the fire station with location.

B. NOISE DETECTION

Detecting Noise and Image Capturing

Sound sensor is positioned to detect the trained noise. As soon as the noise is detected which is trained it moves towards the region where the trained noise is produced it stops and captures the picture by pi camera and send a message "UNUSUAL NOISE DETECTED...NEED HELP!!!" with captured image and location.

VI. CONCLUSION

According to this system, a night vision camera is used to monitor the designated region, and an automatic system that detects sound sends a robot down a specific path to a specific location to take pictures and upload them via IOT. Since

women's safety is a worry in many parts of the world, this system is an autonomous smart way for night vision patrolling. This robot can prove to be a useful aid. This robot can be a helper and a good smart in terms of the system's potential application and the safety of ladies.

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AUTHOR'S BIOGRAPHY

NAME: Dr. MANJULA S D
DESIGNATION: ASSOCIATE PROFESSOR
BRANCH: COMPUTER SCIENCE & ENGINEERING

NAME: RAKSHITA NEELAPPAGOL
USN: 3PG20CS402
BRANCH: COMPUTER SCIENCE & ENGINEERING
SEM: 8th SEM

NAME: BINDUSHREE G
USN: 3PG19CS012
BRANCH: COMPUTER SCIENCE & ENGINEERING
SEM: 8th SEM

NAME: SEEGANAHALLI SHAMBHAVI
USN: 3PG19CS049
BRANCH: COMPUTER SCIENCE & ENGINEERING
SEM: 8th SEM

NAME: JEEVAN K
USN: 3PG19CS024
BRANCH: COMPUTER SCIENCE & ENGINEERING
SEM: 8th SEM