

Night Patrol Robot

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Abstract: *The project deals with the use of Raspberry pi to survey Smart monitoring systems. These days' video surveillance is important in terms of security. High end cameras are needed in commercial spaces, schools and hospitals, warehouses and other demanding indoor and outdoor environments. Current technologies require expensive and hence the security domain becomes expensive in all, so work on this was needed. The project explains the use of Raspberry Pi, a low-cost single onboard computer. This new technology is less expensive, and is used as a standalone image processing platform in this project. It makes more use of mobile technology. Security systems currently need tons of costly components and a complicated installation process. The proposed system, Raspberry pi, is installed with the night vision camera that helps the system find the intruders and go for the automation. The robot covers a specific area and checks for any intruders when an intruder is detected, the owner is alerted by the email.*

I. INTRODUCTION

Robotics is a multidisciplinary discipline that combines computer science and engineering. Robotics is the study of the design, function and application of robots. Robotics aims to create robots capable of assisting humans and aid humans. Robotics is the study of creating robots that can replace humans and mimic the behavior there. Robots can be used in many situations and for many different purposes, but now many situations and for many different purposes, but now many robots are used in hazardous environments (such as finding dangerous products, detecting bombs and deactivating them), production processes or in situations where humans cannot exist. The word change faces serious problems related to human safety at night. Recently, robots have been used in various fields including security and defence. This will be a big step towards the rise of automation and security. Night patrol robot makes the best use of its features for smooth operation. It has obstacle detection and has IOT features to show off its senses. With the help of a camera, a GPS module and a Bluetooth module.

All its functionalities are correctly coordinated using a microcontroller. Safety is an important asset for many businesses, homeowners, and public places. It can prevent harm to people and prevent property from being stolen or damaged. Reliable protection of most places means that security personnel patrol safe places on foot. Patrols must be conducted on a regular basis and the longer a place is under surveillance, the more difficult it will be for anyone to commit illegal acts. The existence of security personnel who only write in specific areas not only "on duty" in the guardhouse, but also warns of illegal intruders. However, foot patrols are an expensive service that relies on the professionalism and commitment of the personnel involved; therefore, this means that long-term investments in salaries, benefits, a management work are more costly. With the advent of autonomous mobile robots designed to solve patrol and safety challenges, it is now possible to reduce costs and improve patrol quality in restricted areas.

II. LITERATURE SURVEY

ARM9 BASED REAL TIME EMBEDDED NETWORK VIDEO CAPTURE AND SMS ALERTING SYSTEM. Network video capture framework is introduced in this paper using the nice ARM9 board support package (BSP) S3C2440. This application device captures video, shares between networked devices, and also alerts the controller with a short message service warning, as the client needs. This system operates in an environment in real time, and is supported by RT Linux embedded. This system provides low cost and high efficiency intelligent monitoring systems with low power consumption, such as elevators, home security systems, etc. Power consumption is small. This real-time system provides a client video monitor with the help of friendly ARM9 BSP, unlike other embedded systems.

EMBEDDED REAL TIME VIDEO MONITORING SYSTEM USING ARM Multi-environment robot for surveillance and live streaming is designed to install a real-time surveillance system possible within a local network. The live streaming is accomplished using MJPG streamer and the server-client model is built using java as IP-based deployment offers access from image quality and is also advantageous in terms of scalability and versatility. But IP-based systems require some networking knowledge and these systems are too expensive than the analog ones. A server-client model incorporates this robot controlled with raspberry pi. This client-server model is built on Java, and can therefore work on any system like Windows, Mac, or Linux. This entire model is linked to a local network and can be managed from anywhere by anyone accessible in that specific local network. MJPG streamer conducts live streaming. We proposed a framework to create a live streaming and monitoring system in real time using this whole model linked to a local network so it can be operated from anywhere by anyone accessible in that specific local network. MJPG streamer conducts live streaming. Raspberry pi, with Wi-Fi connectivity installed. The pi will record the video of the location in real time during the monitoring process. Video capture is done via commands that are provided to the raspberry pi through the device.

SMART VIDEO SECURITY SURVEILLANCE WITH MOBILE REMOTE CONTROL. RaspberryPi connection with the motor driver is done using Raspberry Pi's General Purpose Input Output (GPIO) pins. The GPIO pins are connected to the motor-shield input pins. The motor shield's exit pins are connected to the motors. The motor shield and the raspberry pi are connected by a portable charger with 2-amp current. Upon proper attachment the raspberry pi is able to boot up. For controlling the motors, a Python program is written where the GPIO pins will deliver the output from the raspberry pi to the shield. The robot movement is controlled through the directions mentioned on the web page created using Hypertext Markup Language (HTML) code and webpage Universal Resource Locator (URL) address. The Raspberry Pi model B communicates this process through Wi-Fi. The camera module is installed in its port and is enabled in raspberry pi configurations. MJPG streamer is installed and configured for Live streaming of videos.

III. PROPOSED WORK

The idea behind this is often to secure the entire area. Any small sound results in the alert. The robot automatically goes to the particular area and captures the image of that area and sends it to the user. The proposed system, Raspberry pi, is installed with the night vision camera that helps the system find the intruders and go for the automation. The robot covers a specific area and checks for any intruders when an intruder is detected, the owner is alerted by the email. This system provides security to our property without a security guard. System uses yolo algorithm to detect obstacles. The robot covers a specific area and checks for any intruders .when an intruder is detected, the owner is alerted by email. The robot covers a specific area and checks for any intruders when an intruder is detected, the owner is alerted by email. YOLO algorithm is used to identify humans and obstacles. It monitors each area using a 360-degree rotating HD camera to detect any intrusion.

IV. METHODOLOGY

We propose a robot patrolling security which uses a night vision camera to secure any premises. The robotic vehicle moves at specific intervals, and is equipped with camera and sound sensors for night vision. In patrolling it uses a predefined line to follow its path. It stops at specific points and if sound is detected moves to next points. To patrol assigned area, the system uses IR-based path following system. It monitors each area using a 360-degree rotating HD camera to detect any intrusion. It is capable of tracking sound at the premises. Any sound after company is closed and its predefined path begins to move towards the sound. It then scans the area using its camera to detect any identified human faces It captures and begins to transmit images of the situation immediately upon detection of sound or human face. Here we use IOT Local Area Network (LAN) to get transmitted images and display them with warning sounds to the user. So, we're putting forward a fully autonomous security robot that runs tirelessly and patrols large areas alone to secure the facility.

V.CONCLUSION

This project presented an overview on night vision security patrolling robots using Raspberry Pi. The paper concludes with a design of a security robot for patrolling which uses a night vision camera to secure its premises. The robot moves with particular intervals in the same direction. It is also equipped with a 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 sends the images directly to the control monitor room, for further actions. This paper presented an overview on night vision security patrolling robot using Raspberry Pi.

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