



ARTIFICIAL INTELLIGENCE BASED RADAR SYSTEM FOR NIGHT TIME SECURITY

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ABSTRACT

Technology have gifted many security system to society of which GSM based security system are more corpulent. In many security systems, Sensors are the backbone of the system which look no more than an alarming system detecting movement. This sort of technology has now become insignificant and inefficient as many times the alarm goes off unwarranted. In this paper we have proposed and implemented a theft control system for jewellery shop, providing a handshaking surveillance with CCTV footages, which in its own essence is a security system by itself, and is being currently used to control attempts to theft or robbery. The proposed security system is an advanced security system that makes use of an embedded system (comprises an open hardware microcontroller and a GSM modem) working on the principles of Global System for Mobile communication (GSM) technology, motion sensors, a specially designed floor mat consisting of series of push buttons, RF transmitter & receiver and high beam lights. It informs the owner as well as the nearest police station about the intruder through SMS or call and it turns on a high intensity halogen lamp that prevents the robber from absconding the crime scene.

I.INTRODUCTION

The title itself indicates that whenever someone wants to theft the jewel which is present in the shopping mall then the theft will be automatically arrested with the help of some human detecting sensors and make the chloroform motor will turn on automatically. That means the thief is arrested. This project consists of two sections. The transmitter section consists of an ultrasonic sensor, a stepper motor, an activation switch, a micro controller, a GSM module. One such thing is using ultrasonic sensor which is used to detecting the human intervention. Whenever someone tries to steal the jeweler at the jewelry corner in the shopping mall, there will be one ultrasonic sensor will start detecting the motion of human being. If the sensor detects then automatically the chloroform motor connected with the system will turned ON within few seconds and gives the intimation to the owner of that shopping mall through the SMS using GSM communication. The buzzer will be 'on' for indicating that someone is arrested and at the same time the display will also be shown at the receiver section as a form of text message.

A majority of jewellery shop owners have used CCTV cameras , burglar alarms and security guards for the security of their shop but the security is only alarming, especially in the background of recent burglary committed at the jewellery showrooms in different regions of India during night times. Another important problem to prevent burglary in jewellery shops is the lackluster attitude of the shop management in making adequate security arrangements. They engage in business with such valuables but do not pay attention to setting up burglar alarm. At several stores, the CCTV cameras are installed but they lack recording facility and energy backup. If no real time checks are made or if power cut takes place, the CCTVs are of no use. In recent days we have come across robbery during nights by digging tunnel in the jewellery shop, the robber easily enter the shop through the tunnel dug by him, he loots all the jewels in shop and destroy the CCTV camera or footage by taking the recorded data along with jewels. Therefore due to lack of evidence our law enforcing authorities could not catch the real culprit. The shop owner will have no information about it until the shop is open next morning, to overcome this issues we have worked in this paper the design and implementation of a theft control system for jewellery shop, providing a handshaking surveillance with CCTV cameras, which can be used to control and/or prevent any theft attempt during night times. We have proposed an innovative idea by developing the floor mat sensors using pushbuttons; this system is design for night time surveillance. Whenever a person steps into the shop, as soon as he keeps his leg on the floor mat, a call & SMS will be send to two different mobile phone numbers which are pre stored in security system by the owner based on his priority which will intern generate the

alarm about the intruder who is trying to enter the shop without the owner's knowledge

Surveillance is defined as monitoring of the behavior, other changing information, activities, observing or analyzing particular area for the purpose of influencing, directing, managing or protecting. Take the home security for example. A home security system should provide security and safety features for a home by alarming the residents from natural, accidental and human dangers. Most of home security systems can be classified into locally controlled systems and remotely controlled systems. Locally controlled systems use an in-home controller to achieve home security. This allows users complete use of their surveillance system from within their home via a stationary or wireless interface. Remotely controlled systems use an Internet connection or integration with an existing home security system to allow the user complete control of their system from their mobile device or personal computer.

II.LITERATURE REVIEW

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1.P.A. Dhulekar, S.T. Gandhe, Anjali Shewale, Sayali Sonawane, Varsha Yelame, "Motion estimation for human activity surveillance", IEEE International Conference on Emerging Trends & Innovation in ICT (ICEI), Pages 82-85, 2019. This paper represents the system is based on the identification of human body, object and suspicious activity detection. The survey of videos is important solution for people having priorities in market, buildings, train stations, courts, religious places and airport etc. Video provided as input then it converted into sequence of frames and these frames are used for the detection of object. The contributions for activity observation are proposed. It is challenging task for object tracking and

video surveillance and because of illumination changes, quick variations in object appearance, similar non target objects in background and obstacle. The algorithm includes of different steps having video compression, object detection, and object localization.

2. Jen-Kai Hsueh, Yi-Ching Huang, Bing-Ting Dong, and Ching-Min Lee An Embedded Cloud Surveillance System Design IEEE International Conference on Consumer Electronics-Taiwan (ICCE-TW) In this paper, an embedded cloud surveillance system for particular area security is designed, which consists of monitoring and control parts. The system uses an Arduino Yun board to be the platform, and uses two PIR sensors as well as a Webcam for a purpose of monitoring. Once PIR sensors detect someone close to the system, not only a buzzer will play alarm sounds, the camera will enable to monitor at the same time, but also the system will send the screenshots to a predefined cloud storage system which is set by Dropbox and will warn users via email simultaneously. Users are able to decide to live-stream or to process after receiving the message. In addition, users can remotely control some devices of the system via mobile phone APP to further monitor. According to practical execution results, the cloud surveillance system works well no matter in day or night. The requirement of real time is also guaranteed.

3.P. Satya Ravi Teja, A. Sai Srikar, V. Kushal, K. Srinivasan Photosensitive Security System for Theft Detection and Control using GSM technology International Conference on Signal Processing and Communication Engineering Systems 2015

This paper illustrates the design and development of a theft control system for security lockers, homes, bank lockers, jewelry outlets, etc. The proposed system consists of an LDR (Light Dependent Resistor) based sensor which acts as an electronic eye for detecting the theft or attempt, and a signaling procedure based on SMS using GSM (Global Systems for Mobile communications) technology. The GSM based communication helps the owner and concerned authorities to take necessary and timely action in order to prevent the theft. The LDR circuit is interfaced using a relay circuit with an Arduino microcontroller board. Efficacy of the proposed system can be seen in its immediate intimation regarding the incident. The proposed designed system is very effective and inexpensive

4. Sandeep Bhat, Dr. M. Meenakshi “Vision Based Robotic System for Military Applications – Design and Real Time Validation”, IEEE

International Conference Dr.Ambedkar I.T, Bangalore, Karnataka, INDIA, 2019.

This paper presents the design, development and validation of vision based autonomous robotic system for military applications. Sum of Absolute Difference (SAD) algorithm is used for the implementation of the proposed image processing algorithm. It works on the principle of image subtraction. The developed algorithm is validated in real time by change-based moving object detection method. The novelty of this work is the application of the developed autonomous robot for the detection of mines in the war field. Developed algorithm is validated both in offline using MATLAB simulation and in real time by conducting an experiment. Once the confidence of using the algorithm is increased, developed algorithm is coded into the Microcontroller based hardware and is validated in real time. Real time experimental results match well with those of the offline simulation results. However, there is only a small mismatch in distance and accuracy of the target detection, which is due to the limitations of the hardware used for the implementation.

5. V. Romashchenko, M. Brutscheck and I. Chmielewski, "Investigation and Implementation of Robust Wireless Zigbee Based Security System," 2018 29th Irish Signals and Systems Conference (ISSC), 2018, This paper describes a monitoring system based on the Raspberry Pi 3 (RPI 3) and the Zigbee wireless sensor network (WSN). The system uses an XBee XB24CAPIT-001 radio frequency chip in order to create a low powered and reliable Zigbee connection to monitor a voltage loss in the system and to inform a customer about a triggering of the alarm system when the RPI USV+ and GSM SIM800 modules has been connected into the RPI. In order to make a system more robust, a random AES encryption key can be generated and periodically changed after each enabling of the security system or timer. The system can monitor the battery voltage in all Zigbee End Devices (ZED) and inform a customer by GSM network if a battery is becoming discharged. The proposed security system has a night mode feature with partial protection which allows a customer to be inside at night-time with the system armed. In the case that someone entered the building illegally, the proposed system can inform a customer by using an alarm siren or by text message to a smartphone. The entire application works in the background by using an application called daemon, thus a customer has the possibility to observe a system status or other events in the log file.

6. Ashish U. Bokade and V. R. Ratnaparkhe "Video Surveillance Robot Control using Smartphone and Raspberry Pi", IEEE International conference, 2018. This paper proposes a method for controlling a wireless robot for surveillance using an application built on Android platform. The Android application will open a web-page which has video screen for surveillance and buttons to control robot and camera. Android Smartphone and Raspberry pi board is connected to Wi-Fi. An

Android Smartphone sends a wireless command which is received by Raspberry pi board and accordingly robot moves. The Video Streaming is done using MJPG streamer program that gets mjpeg data and sends it through a HTTP session. The Raspberry pi programming is done in python language. The experimental result shows that the video streamed up to 15 frames per second. 8. Swapnil Mishra “Night Vision Camera Technology Based Robot in War Field”, SENSE Department, Vellore Institute Of Technology University, India, 2017. With the purpose of the pleasant and meeting the converting needs of human from production unit to the household unit robotics and automation has been a wonderful key participant all through. This mission makes a specialty of constructing a RF primarily based spying robotic attached with wi-fi camera which can reduce the human sufferer. This robotic sends the sign to the base station the use of wireless camera. One of the predominant utility of this undertaking can be analyzed the use of android based totally smart cellphone which can be used to control the movement of the robotic. The robot sends the signal to the RF receiver established on the robot via RF transmitter at the base station. With this selection the robot can transmit real time motion pictures with night imaginative and prescient abilities and can not be identified by the enemies in conflict area.

PROPOSED SYSTEM

- Here we have designed RADAR system with help of ultrasonic module which is placed along with the existing CCTV camera.
- CCTV camera for normal video recording purpose, but ultrasonic RADAR will help to find out theft activity at night time of jewellery shop and bank lockers or any other secret places where this security needed.
- This ultrasonic RADAR sense the environment periodically, so at normal condition we will get constant echo signal from closed room environment, that echo signal read by micro controller and analyzed.
- When there is any abnormal echo signal apart from normal signal that will be treated as abnormal action happening in the environment, that may be thief or other moving object.
- This case taken as alert and SMS or Call for this alert will send to the user via GSM MODEM.
- By this method when thief enter in room, that instant we can get alert signal, not like existing CCTV footage rewind method by next day.

WORKING

RECEIVER SECTION

The benefits of radars are evident, radar is capable of detecting motion, measuring speed, distance and the angle of arrival as well as the direction of movement.



Fig 4.1: Block Diagram of Receiver Unit

Radar can work in adverse conditions like rain, fog and dust and is able to cover long range as well as close distance. It preserves anonymity due to the fact, that it is not able to deliver high-resolution pictures from faces or license plates, which ensures its acceptance.

TRANSMITTER SECTION

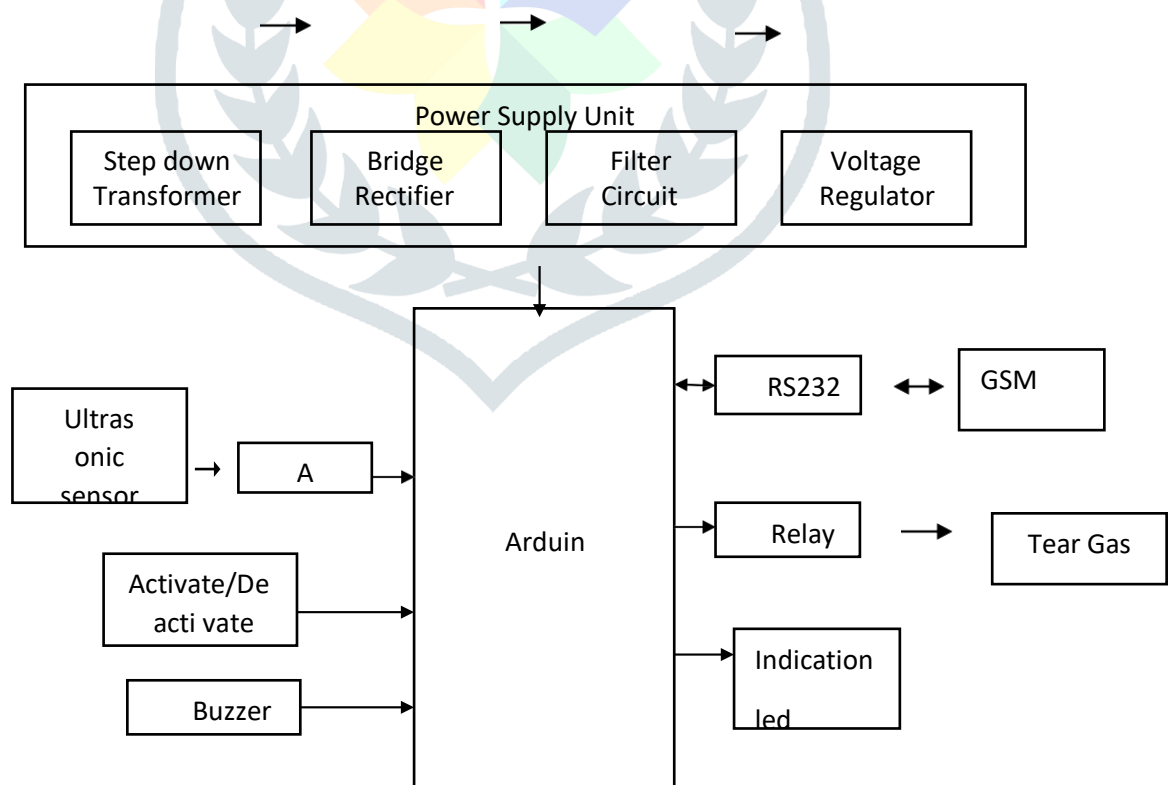


Fig 4.2: Block Diagram of Transmitter Unit

RESULT

By using of RADAR detection system, provide the better output and highly secure monitor system approach to that of other security system. RADAR, measure the distance, angle and velocity of object through radio waves. For protecting cash, jewels, or documents this RADAR system ensure the full security of these above properties. For mainly choose of ultrasonic sensor and RADAR system is to provide a surety of stealing not occur and incase of any robbery happen give the intimation to respective one via GSM. And the ultrasonic sensor determine the distance of the object or human movement and produce a sound when it meet the threshold value. And additionally with this system buzzer, led, motor are used to give information any theft takes place. In this RADAR security system not only give the intimation to the respective one and also trap the stealers by put a chloroform to that secure place. In this way of protection, provide a 100% assurance of robbery not takes place in banks, malls, jewellery shops. Incase of theft happened they are easily pull in by this RADAR detection security system. In this method of system need not to worry about of our cash, jewels and personal/office documents are in safe or not. This project fully based on high security purpose.

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