iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** VIII **Month of publication:** August 2020

DOI: https://doi.org/10.22214/ijraset.2020.30807

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue VIII Aug 2020- Available at www.ijraset.com

Shop Security System using RadioFrequency Wave

Shikhar Bharadwaj[1], Ravindra Kushwaha[2], Nishesh Singh[3], Ritul Rajput[4], Dr. Amit Kumar Sharma
[1, 2, 3, 4]*Student,* [5]*Professor, Department of Electrical Engineering, Galgotias College of Engineering And Technology* Knowledge Park-2, Greater Noida (201306), Uttar Pradesh (INDIA)

Abstract: ***IR devices can detect a person moving into or through a detection zone with high reliability. The radiation of a small or negative light that differs in contrast to the background, focused on appropriate Optics, causes a sensory object. There is no interference between neighboring units due to the status of the acquisition process. The use of dual-sensory or dual sensor technology and digital advanced process performance reduces false alarms caused by chaos. Similarly, precision optics accurately defines the field of view, allowing consistent and long-range coverage. Utilizing IR sensors, we are going to present our final year project "IR based shop security system".***
Keywords: IR sensors, Optics, Trigger

I. INTRODUCTION

Utilizing IR sensor, we are going to present our final year project "IR based shop security system". We consider specific area around which no one is allowed to enter. When any one enter in this specific area, the exit gate automatically gets closed, voice warning (Our recording) starts playing and also our system delivers a voice massage to the police station for further operation. We use IR sensor to sense motion around the secured region, processing is done using PIC microcontroller. It is usually installed internally as part of a complete device including computer components and hardware components.

II. OBJECTIVE AND GOAL

The system is mainly divided in two process. The first process includes tracing any kind of movement across the shop, when the shop is closed. This is done with the help of IR sensors. Now after this when any kind of movement is
catches across any IR sensors. This information is transmitted to nearest police station through radio frequency wave, Signal are transmitted by the help of RF transmitter and RF receivers and the location of the shop will be displayed on the LCD screen which is present in the nearby police station.

III. BLOCK DIAGRAM

Block diagram of Shop Security System given below-

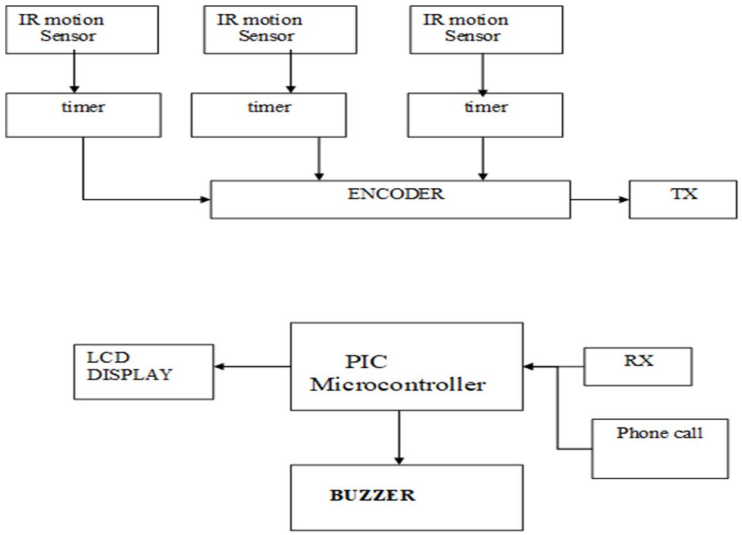


Fig.1- Block Diagram of Shop Security System Using Radio Frequency Wave

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue VIII Aug 2020- Available at www.ijraset.com

IV. DEVELOPMENT OF PROJECT

A. The main idea of Project is to protect shops and bank for which we are using IR sensors which are not easily traceable. The IR sensors we have used is IC-555.
B. IR sensors are basically signal generators and signal receivers which detects and sends signals when one intrudes. This is done by infrared LED which sends signal and is received by receiver infrared LED.
C. The infrared LED's are arranged at the entrance and both are fixed parallel to each other and distance between them are depends on the power of the transmitter.
D. When someone crosses or interrupt the path of the beam of LED, the controller gets high and signal fed to the AVR Microcontroller which will activates the relay.
E. There will be two relays. The first relay will be active for 20 seconds which energize the alarm and the second relay will be active for 70 seconds which is used to energize the recorded information produced by tape head amplifier. This information is recorded in the Audio Cassette.
F. Audio is recorded using MIC Controller and the information is passed through the input of carrier generator.
G. It is connected to Microcontroller and which basically receives the uninterrupted signals. Both the Relays start in decreasing mode.
H. When it comes to fully zero, through receiving module which can be placed both at security team or police, which generally and will let them know about theft. The Received signals is decoded by audio amplifiers.

V. HARDWARE REQUIRED

This system consists of following components-

A. IR Sensors (IC555)

IR devices can detect a person moving into or through a detection zone with high reliability. The slightest positive or negative thermal radiation change in contrast to a background, focused by the appropriate optics, triggers the sensor element. There is no interference between neighbouring units due to the status of the acquisition process. The use of differential or dual-channel sensor technology and advanced digital signal processing reduce false alarms caused by turbulence.

B. Radio Waves

Radio Communication is the process of sending information from one place and receiving it in another place without using any connecting wires. It is also called "wireless" communication. Radio waves are produced by rapidly changing currents flowing through a conductor.
When these fast-moving radio waves hit other conductors placed in their path in the desert, they produced a second cycle of weak natural radio stations similar to the original ones that produced these radio waves. Thus, a communication called radio communication is established between two distant points

C. LCD

The back light on the liquid crystal screen provides a light source behind the screen. This light is polarized, meaning that only part of the light illuminates the liquid crystal part. They block comparative light when turned off, but also show red, green or blue light when activated.
Most LCD modules are compatible with the standard deviation specification. Available 14-pin access with eight data lines, three control lines and three power cables. The connection is set to one of two configurations, either two rows of seven pins, or one row of 14 pins. One of these pins is numbered on the LCD's printed circuit board (PCB).

D. Microcontroller (AVR)

AVR stands for Advanced Virtual Risc. It has Inbuilt features (like ADC, communication protocols etc..). and Instruction set capability which makes it unique. Power consumption is low and has a availability of software tools (compiler, assembler, tool-chain) and very easy to use.

©IJRASET: All Rights are Reserved

E. Crystal Oscillator

Crystal oscillator basically is an electronic circuit that uses the mechanical resonance of a vibrating crystal of piezoelectric material to create an electrical signal with a very precise frequency. This frequency is commonly used to keep track of time (as in quartz wristwatches), to provide a stable clock signal for digital integrated circuits, and to stabilize frequencies for radio transmitters and receivers. .A miniature 4 MHz quartz crystal enclosed in a hermetically sealed HC-49/US package, used as the resonator in a crystal oscillator.

F. Relay

Relay uses an electromagnet made from an iron rod wound with hundreds of fine copper wire. When electricity is connected to a wire, the rod has a magnetic field. The affected arm, which does not move over the rod, is pulled to the wall until it touches the victim. When the power is off, a small spring pulls the contract arm away from the rod until it closes the second contact. In the reverse sense, the current cycle can be broken or closed in one region due to the time available in another circuit. The transmission requires a coil through their coils, where a voltage is applied. This voltage for a relay can be D.C. low voltages upto 24V or could be 240V a.c.

G. Adruino

Arduino board designs use various microprocessors and controllers. Boards mounted on a set of digital pins and analog input / output (i / O) interfaces with various expansion boards ('shoes') or bread boards (for prototyping) and other circles. Those boards have a serial connection, including Universal Seri Bus (USB) in some models, which are also used to download programs from your computers. The microcontrollers can be programmed using C and C++ programming languages. We generally use ATMEGA 8 to equip with microcontrollers and we are ready to go.

VI. SOFTWARE REQUIREMENTS

Arduino doesn't run either C or C++. Uses machine code compiled from C, C ++ or another compiler language in the Arduino command set. IC being a low-level set of C ++, if Arduino can "run" C ++ then it can "run" C. To write code in C, we need software, you can use AVR studio & any other installation software codes. Here we will use code blocks, light weight, easy to use and has built-in software to load code directly into your Arduino.

VII. RESULT

We have successfully implemented the system and the output that has been gained. This system brings a sense of security among the shopkeepers even at the odd hours as they feel safe.

VIII. FUTURE SCOPE

In future, connecting the module to a GSM network where a person using a GSM mobile would receive a text message regarding the address of the location where there was a theft. Connection with a telephone network is also possible where a call can be made to nearby police station to inform regarding the theft.

IX. APPLICATIONS

A. It can be used by shopkeepers for the safety of the stores.
B. It can be used by police for detection of exact location of theft.
C. We can get to know more information regarding theft.
D. This system can replace conventional manual security

X. CONCLUSIONS

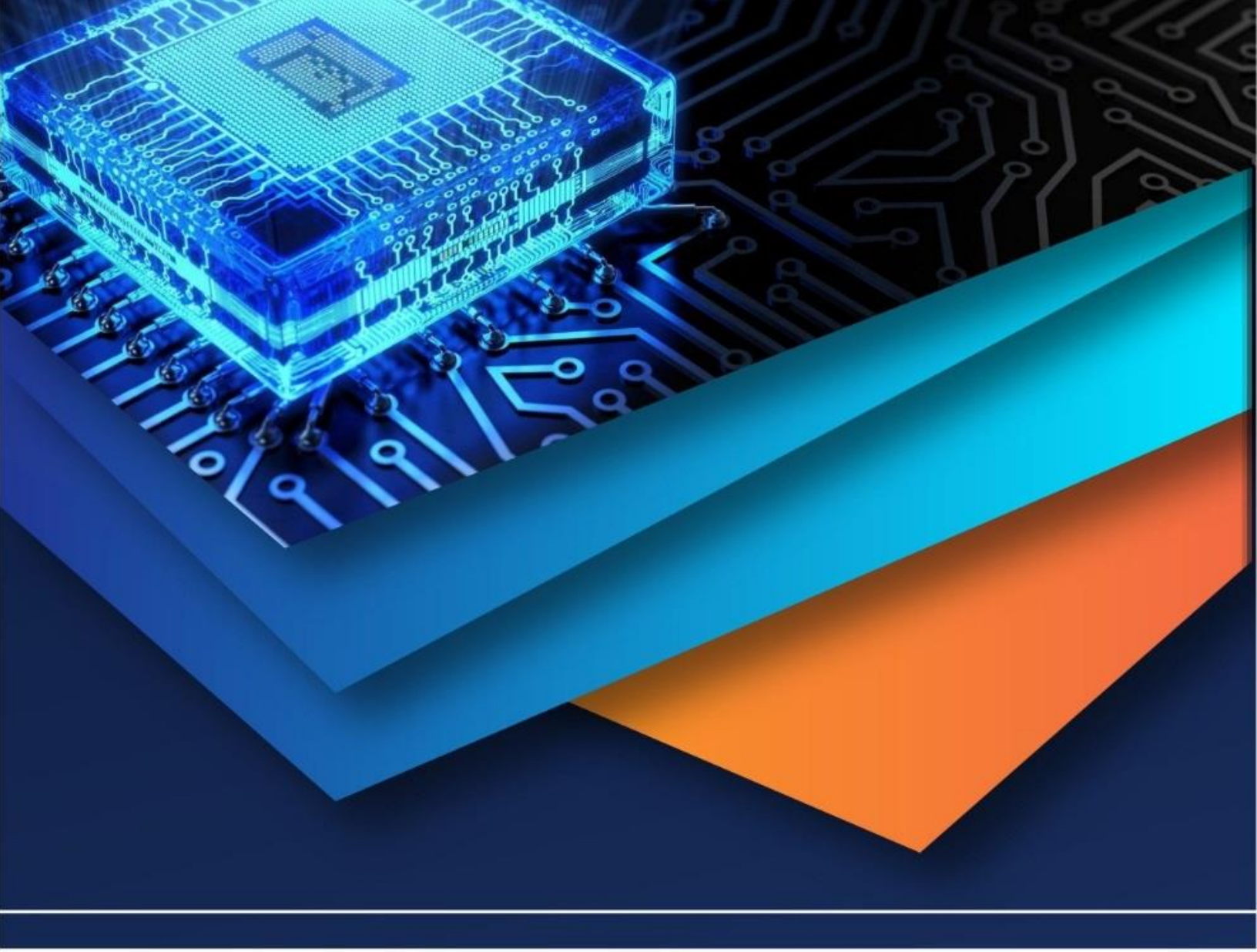
In this disastrous time of modern world, the crimes are on a significant rise in shops, banks and stores. The system not only uses Modern Methods but also give assurance to shopkeeper and store keepers. This will assume that at any clock of time, the valuable of the store are preserved and kept safe. With the use of Radio Interference and Vicinity Sensors, It will go noticed if any forceful entry happens. With transistors and integrated circuits. We have made a easy, cost-efficient system that is reliable to shops for 24X7. This is the most general and most efficient methods ever involved in protection of shops.

©IJRASET: All Rights are Reserved

REFRENCES

[1] https://pdfs.semanticscholar.org/86e1/9b11cb810655108280def3e5938c6d146277.pdf(wireless motion detector)
[2] https://makingcircuits.com/blog/simple-microphone-mic-amplifier-circuits-using-transistors/
[3] https://physicswirelessconnection.wordpress.com/guide-card/a-concept-of-wireless-communications/1-3-elements-of-radio-communication-system/
[4] https://www.ripublication.com/awmc18/awmcv11n1_01.pdf(IOT For GSM connections)
[5] https://www.projectsof8051.com/sms-based-bank-locker-security-system-using-gsm-technology/
[6] https://aticleworld.com/interfacing-of-relay-with-microcontroller-and-concept-of-relay/
[7] Bhargava, S., & Agrawal, D. P. (2001, October). SECURITY ENHANCEMENTS IN AODV PROTOCOL FOR WIRELESS ADHOC NEWORKS Proceedings of the IEEE Vehicular Technology Conference (pp. 2143–2147).
[8] S.S. Jeng, G. Xu, H.P. Lin, W.J. Vogel Experimental study of ANTENNA ARRAYS IN INDOOR WIRELESS APPLICATIONSIEEE 29th Asilomar Conference on Signal System and Computer, 2 (1995).
[9] Ikeda et al., 2008 Ikeda, S., Tsuji, H. & Ohtsuki, T., (2008). INDOOR EVENT DETECTION WITH EIGENVECTOR SPANNING SIGNAL UBSPACE FOR OFFICE SECURITY IEEE 68th Vehicular Technology Conference.
[10] Terasaka et al., 2007Terasaka, K., Higashikaturagi, K., Matsunami, I. & Kajiwara, A., (2007). HUMAN BODY DETECTION USING UWB-IR INDOOR CHANNEL. Indoor and Mobile Radio Communications.
[11] Jeng et al., 1995 S.S. Jeng, G. Xu, H.P. Lin, W.J. Vogel Experimental study of ANTENNA ARRAYS IN INDOOR WIRELESS APPLICATIONS IEEE 29th Asilomar Conference on Signal System and Computer, 2 (1995).

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)