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24 × 7 Smart IoT Based Integrated Home Security System

Ramaraju Sriya Swetha[1], Suraksha[2], Swapna T[3], Priyanka M[4], Dr. Rashmi Amardeep[5]
[1, 2, 3, 4]*Student,* [5]*Guide, Dept. of CSE, Sir MVIT, Bengaluru.*

Abstract: ***24/7 smart iot based home security system is developed using different sensors and modules to safeguard the user properties or things under all the situations This system will work for 24/7 whether the user is inside or outside the home This system identifies if there is any gas leakage, fire breakout or for any unknown person entering the house if so our system gets alert and sends messages (sms) to user accordingly system uses raspberry pie camera to record all the events that occur inside the house and these recordings are stored in cloud neither in local because to keep our system cost effective. All the recordings can be seen and downloaded by user whenever he wants to. So we have developed a 24/7 smart iot based home security system.***

Keywords: security, raspberry pie, fingerprint sensor (r307), motion sensor, temperature sensor(dth-11),gas leakage sensor(mq-135)

I. INTRODUCTION

As we have been noticing in the recent times that the illegal activities are increased in a huge extent especially robbery and everyone wants to safeguard their goods from all these illegal crime rates hence we made up our mind to develop this system which safeguards the goods and property of the user whether he/she is inside or outside the house. Since the present living situations is very tough for all of us ,we all are forced to get into the high expensive markets for buying security instruments to safeguard the house such as fire or gas alarms. However it simply triggers an alarm and for recordings, videos and pictures we need to separatly buy all the instruments from markets with subject to monthly subscriptions because these are all handled by the security service companies. previous systems implemented either only gas or fire but our system is an all in one approach with fire, gas and intruder detections.

II. LITERATURE SURVEY

Md Saifudaullah Bin Bahrudin et al. [1] The proposed Fire alarm system is a real-time monitoring system that detects the presence of smoke in the air due to fire and captures images via a camera installed inside a room when a fire occurs. The embedded systems used to develop this fire alarm system are Raspberry Pi and Arduino Uno. The key feature of the system is the ability to remotely send an alert when a fire is detected. When the presence of smoke is detected, the system will display an image of the room state in a web page. The system will need the user confirmation to report the event to the Firefighter using Short Message Service (SMS). The advantage of using this system is it will reduce the possibility of false alert reported to the Firefighter. The camera will only capture an image, so this system will consume a little storage and power.

Ashish Shrivastava et al. [2] Gas leakage is a major problem with industrial sector, residential premises and gas powered vehicles like CNG (compressed natural gas) buses, cars. One of the preventive methods to stop accident associated with the gas leakage is to install gas leakage detection kit at vulnerable places. The aim of this paper is to present such a design that can automatically detect and stop gas leakage in vulnerable premises. In particular gas sensor has been used which has high sensitivity for propane (C3H8) and butane(C4H10). Gas leakage system consists of GSM (Global System for mobile communications) module, which warns by sending SMS. However, the former gas leakage system cannot react in time. This paper provides the design approach on both software and hardware.

A.Mahalingam et al. [3] Gas leakage is a major concern with residential, commercial premises and gas powered transportation vehicles. One of the preventive measures to avoid the danger associated with gas leakage is to install a gas leakage detector at vulnerable locations. The objective of this work is to present the design of a cost effective automatic alarming system, which can detect liquefied petroleum gas leakage in various premises. In particular, the alarming system designed has a high sensitivity for primarily butane, which is also individually sold bottled as a fuel for cooking and camping. The proposed system is designed to meet UK occupational health and safety standards. Test results are demonstrated for an USB powered gas leakage detection system and it gives early warning signals under less severe conditions and activates a high pitched alarm in case of emergency situations to safeguard the users.

Sajid M. Sheikh et al. [4] Fire alarms and building security systems are currently separate systems and are liable to monthly fees. Video recording for closed-circuit television (CCTV) is done locally subsequently requiring high storage space. Whenever there is a break-in, the footage records can be stolen consequently losing data.

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To address high data storage space, monthly premium subscriptions, cost of separate systems and data loss issues of the aforementioned systems, we design and implement a Raspberry-pi based fire and intrusion detection systems in this work. The system sends an SMS in the case of an intrusion or fire detection, and then records and uploads the surveillance videos. The system used a GSM modem for sending SMSs, a video, a PIR sensor to detect motion and a smoke or heat sensor to detect fire. The system is a low cost combined home security and fire detection Raspberry- pi system intended for home and small offices use.

Rakesh V et al. [5] Real-time surveillance is an important aspect of an intelligent building with modern security demands. The proposed system implements an embedded system for monitoring wireless sensor nodes and camera installed inside a building for security surveillance. A number of surveillance devices in a Zigbee protocol (IEEE 802.15.4) based wireless network are connected to a BeagleBoard Single Board Computer (SBC) based surveillance management system. Remote alerting on fire and intruder detection are the key features of the system. When smoke or intruder movement is detected, the system sends warning messages through Short Message Service (SMS) to cell phones, starts capturing real-time video for fixed duration and makes the alarm on. The captured video clip is immediately uploaded to an FTP (File Transfer Protocol) webserver so that it can be retrieved later from anywhere around the world. The advantages of the system are that it guarantees reliability by integrating various components of a security system (sensors, alarm, camera, wireless connectivity etc.) and utilizes an FTP server for camera feeds. Index Terms—Security, Surveillance, Zigbee, BeagleBoard, SBC, Webcam, FTP webserver, PIC microcontroller.

Cao Shunxia et al. [6] This paper presents a secure and reliable wireless intelligent home alarm systems.It consists of anti-theft feature,anti-fire feature and anti harmfull gas leak feature and can achive automatic detection and automatic telephone dialup alarm cells. The system will send out alarm signals when disaster monitored by intelligent detector occurs.It can send the message to alarm host by wireless transmission,control telephone interface circuits,realize analogue hook,automatically dial the alarm call of the relevant departments,and send a voice message for police.

Jun Hou et al. [7] Nowadays, Wireless Monitoring for home security is among the cutting-edge researches in the field of International Intelligent Building. To implement real-time surveillance of the home security, the intelligent remote monitoring system was developed for home security based on ZigBee technology and GSM / GPRS network. The system can send abnormal images and warning messages through MMS and SMS, receive remote instruction, and remote monitor household appliances. Meanwhile, the introduction of a variety of sensors and the enhancement of system's reliability guaranteed that the intelligent remote monitoring system can be responsible for home security.The hardware and software design and system performance are expounded in details. A number of surveillance devices in wireless network were connected. The experimental result shows that the system can attain remote surveillance of intelligent home safety with high availability and reliability.

Yu Qiongfang ,Zheng Dezhong et al. [8] Fire is a kind of disaster threatening the social wealth and humanity's safety. The fire detection is the special type signal's detection, system must have the ability of automatic adjust the operational parameters to adapt to the environment change. Traditional fire detection systems' intellectualized degree are low, the error alarm and the leakage take place frequently. In order to reduce the rates of alarm error and leakage of the fire alarm system, a fire detection system model and calculating model of fuzzy neural network for processing fire signal are proposed based on the characteristic of fire detection signal and the requirements of fire detection system. Use fuzzy neural network to process the data detected by sensors intelligently. The design of this fuzzy neural network and its structure are described in detail. At last, this method is proved to be feasible by the result of Matlab simulation.

Lian Chun-yuan et al. [9] In order to solve the problem of complex cabling, misdeclaration and missing alarm of traditional fire alarm system, an intelligent fire alarm system based on GSM network is designed. MSP430F149 is adopted as main control chip, and the remote alarming and data exchanging are achieved by using GSM module TC35I. By adopting smoke detector and temperature detector and using a variable threshold alert algorithm with temperature compensation, the accuracy of fire alarm is improved. The result of test shows this design has characters of real-time and good reliability, and will be widely used

Kumar, R. Praveen, and S. Smys et al. [10] This paper provides an overview of the Internet of Things (IoT) with emphasis on enabling Architecture, protocols, and application issues. The IoT is enabled by the latest developments in RFID, smart sensors, communication technologies, and Internet protocols. The basic premise is to have smart sensors collaborate directly without human involvement to deliver a new class of applications. The current revolution in Internet, mobile, and machine-to-machine (M2M) technologies can be seen as the first phase of the IoT. In the coming years, the IoT is expected to bridge diverse technologies to enable new applications by connecting physical objects together in support of intelligent decision making. This paper starts by providing a horizontal overview of the IoT. Then, we give an overview of some technical details that pertain to the IoT enabling protocols, and applications.

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III. SUMMARY OF LITERATURE SURVEY

From the above literature survey found that the methods used by different researches for home security system are as follows:

A. Development of Fire Alarm System using Raspberry Pi and Arduino Uno by Md Saifudaullah Bin Bahrudin
B. GSM based gas leakage detection system by Ashish Shrivastava
C. Design and Implementation of an Economic Gas Leakage Detector by A. Mahalingam
D. Design and implementation of a raspberrypi based home security and fire safety system by Sajid M. Sheikh
E. An Improved Real-Time Surveillance System for Home Security System using BeagleBoard SBC, Zigbee and FTP Webserver by Rakesh V
F. Design of wireless intelligent home alarm system by Cao Shunxia
G. Research of Intelligent Home Security Surveillance System Based on ZigBee by Jun Hou
H. Intelligent Fire Alarm System Based on Fuzzy Neural Network by Yu Qiongfang ,Zheng Dezhong
I. Design of Intelligent Fire Alarm System Based on GSM Network by Lian Chun-yuan
J. A novel report on architecture, protocols and applications in the Internet of Things (IoT) by Kumar, R. Praveen, and S. Smys

IV. CONCLUSION

24/7 smart iot based integrated home security system is an all in one approach which safeguard the user goods and properties by detecting fire ,gas and intruder whether he/she is inside or outside the house and by implementing this system we found that this system can also be improved by using image processing,otp based entry,speech recognision and home automation.

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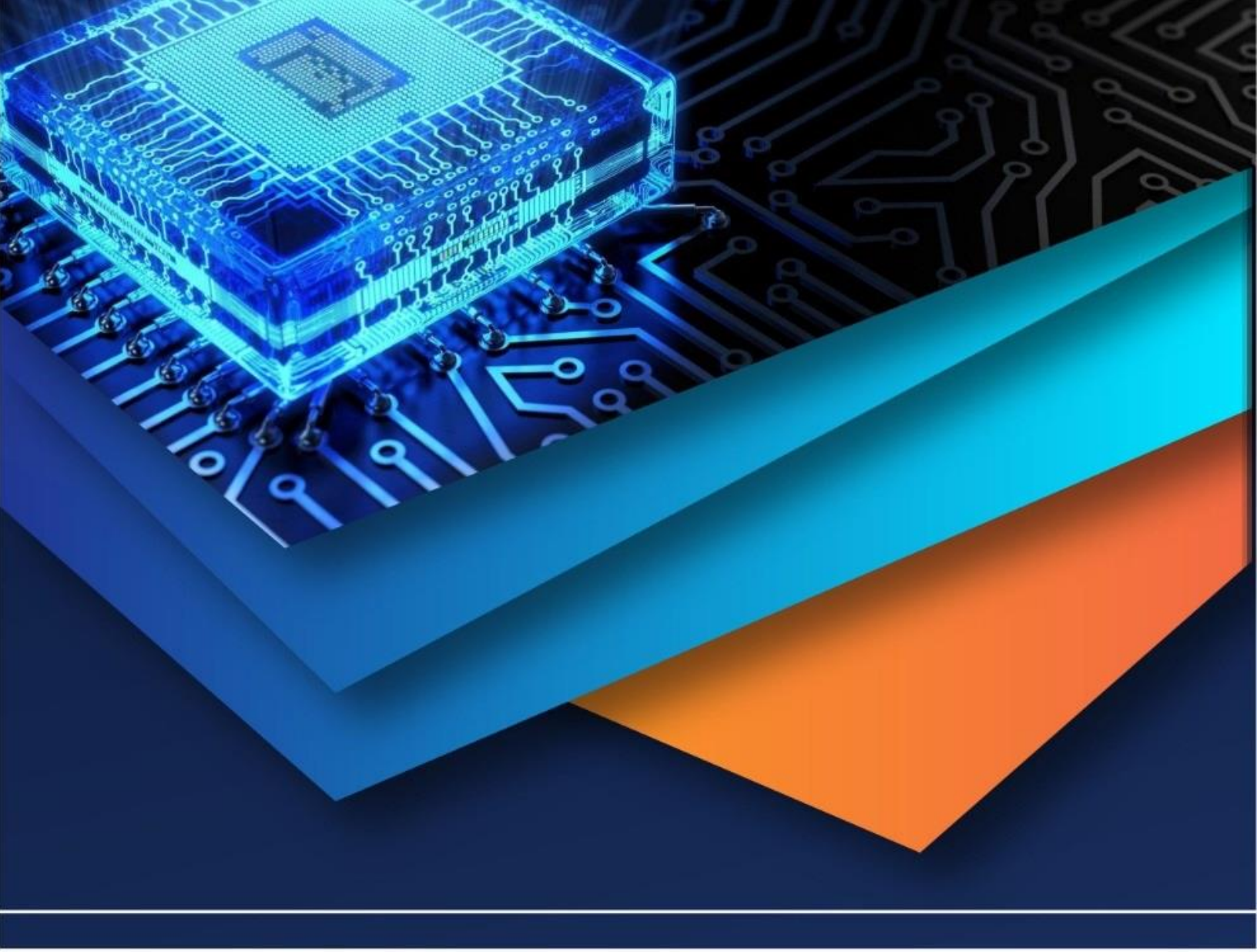

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