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IOT Based Smart Home Security System

[1] Durgashree K, [2] Dr.B. Sreepathi
[1] MTech, 4th Sem, Dept of Computer Science and Engineering, RYMEC, BALLARI
[2] Professor, Dept of Computer Science and Engineering, RYMEC, BALLARI

Abstract: **- A people usually spend a lot of quality time in the home. There is always endless efforts of human race, trying to achieve comfortable life. That's the reason why we are using the concept of smart home. In this paper we are using IoT based smart home automation and security system. Internet of things conceptualizes the idea of remotely connecting and monitoring real world objects through the internet. The quality of a daily life, reduction of cost and increasing security are the main important issues when we design a smart home. Arduino microcontroller is a central processing unit has been used. So that the all proposed system will be processed. The ESP8266 is a wireless communication devices, used by the system which gives a wireless access to smart phone by using low power. In this paper we use two sensors like PIR sensor and Gas sensor are used for security purpose of the house. According to the sensors signals received sensing signals by microcontroller, it will send a message to the mobile station through the GSM modem and then it alerts the owner that there is presence of trespasser in the house.**

Keywords **:- PIR sensor, gas sensor, GSM module,UNO Arduino, ESP8266(wireless module).**

I. INTRODUCTION

Now a days Internet of Things is basically a fast growing technology. Internet of things is the interface of physical devices nested with software, electronics, actuator, sensors and network connectivity that enables the devices to transfer the data. The main aim of this paper is to develop a IoT based home automation and security system. Home security refers to providing security in absence of the person for a comfortable and secured home. Home automation has become important issue now a days. Many types of solution were developed and implemented. The wireless communication in mobile network has proved to be the best solution among all and has become a fast growing business. In our project we have a tendency to use both Wi-Fi and GSM to manage the system. Through GSM, the user will effectively manage and monitors the home from far away. Here we also use different types of sensors and methods so that the system can be flexible. The main objective of this paper is to help the people that will enable them to control their privacy and to alert them in some situations if any things happen. There are two sensors like PIR and gas sensors. The PIR sensor is used in the system which will be used to sense the motion of the human when they pass through the sensors and once the motion is detected a message will be sent to the registered mobile. Gas sensor is used to detect any gas leakage like LGP, Propane, Butane in the home and message will be sent to the owner. Arduino microcontroller is a central processing unit and it is used to convert from analog to digital signals. Transmission medium are Wi-Fi module and GSM module. The ESP8266 Wi-Fi module has been used in which it supports the wireless communication between the devices. The GSM module is used to communicate home with the owner through message. The LCD display is used to view the message in short.

II. LITERATURE SURVEY

[1] "Jayashri Bangali and Arvind Shaligram Kaveri": In this paper the security system is based on SMS and it uses GSM technology because to send a message to the owner of the house. The main aim of the proposed system is the security of the home against trespasser or intruders and gas leakage or fire. In any of the above cases happens while the absence of owner in their home then the device immediately sends a message to the emergency number which is provided to the system. There are three components made by system like sensors, GSM module and Arduino microcontroller, relay to control the device and buzzer to give security alert signal in term of beep sounds.

[2] "Mahesh N. Jivani":
This document describes global system messaging (GSM) based on smart home security system by using android mobile phones. The android mobile phone platform becomes very more popular for software developers due to its open architecture and its powerful capabilities. App inventor has been used for android mobile phones. App inventor is a latest visual

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programming platform for developing mobile applications for android based on smart phone. The main aim of the app inventor is to make programming enjoyable and accessible. Write a programming code is not necessary or not needed to develop app in the app inventor, instead of it provides visual design interface.

[3] "Vinay sagar KN and Kusuma SM":
This paper describes the home automation using internet of things that employees home automation system using Intel gelileo that uses cloud networking and wireless communication. So that it helps to provide a people to control the various lights and fans and any appliances in the home and the data are stored in the cloud. By using a sensors data the system automatically changes. It is designed as a low cost and expandable that allows various devices to be controlled.

[4] "Ganesh Prabhu.S , K. Vinotha, M. Shanthala, S.R. Subhashini, S. Vishnu":
In this paper implementing in the IOT based home automation and security system. This framework is featured to be handled but secured. In this system we use wireless technology instead of non-wireless technology because it makes the installation and maintenance easier and reduces the system cost.

III. SYSTEM ANALYSIS

A) EXISTING SYSTEM:

Most of the people cannot spend their lot of time in a home. Because of their business demands the people had to move from one place to another. In that suitations people cannot monitor and control their household appliances. When some devices are left plugged into a power sockets and where as other are supposed to be plugged into and out of power sockets. So we need to monitor and control that can be done without nessarily bring around or inside the home. If it is not controlled any devices properly then it consumes a lots of energy which will leads to more expenditure on electricity and also there will be some emergency events which needs to be controlled while the absences of people in the home. So, we propose to design an IoT based home automation system. which will be able to manage the appliance from anywhere and anytime by using internet and also there will be a security for home against intruder and gas leakage or fire.

B) ARDUINO MICROCONTROLLER:

Arduino module is a main module through which all input and output processing is going to happen. A variety of microprocessor and controllers are used in the design of the arduino analog and digital input/output pins are equipped to many other circuits and boards. The microcontrollers are programmed using features from the programming language C and C++.

Figure 1: Arduino UNO

C) SENSORS WORKING:

1. PIR SENSOR:

PIR sensor are used in front of buildings so that it can sense the motion of the human and it is also called as an motion sensor. When a people pass through that sensors it will automatically sense the motion of the human and it will send message to the mobile station through GSM modem and it warns the owner that there is a unauthorized user in the home and IR radiations are used in this motion sensor to sense the motion.

Figure 2:PIR SENSOR

2. GAS SENSOR

The gas sensor module consists of steel exoskeleton and This module is used to detect any gas leakage in the home. It can detect the gases like LPG/butane/propane etc. Due to its high sensitivity and fast response time, measurement can be taken as soon as possible.

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Figure 3: Gas Sensor.

D) TRANSMISSION MEDIUM:

1. Wi-Fi module:
ESP8266 Wi-Fi module has been used in which it supports the wireless communication between the devices. The ESP8266 is an almost limitless fountain of information available in which it has been provided by excellent support. Internet of things which provides a instruction based on that it gives a solution.

Figure 4 :Wi-Fi module

2. GSM Module:
GSM is an new technology and it also a transmission medium which uses mobile network to send and receive the message. This module is used to communicate home with the owner through messages or it is used to send a message to the owner or user through mobile phones. If there is any notification about any suspicious activity in the home.

Figure 5: GSM Module

E) WORKING OF PROPOSED SYSTEM:
In this paper, a smart home automation and security is used to controlled and monitoring the home appliances by using mobile phones and also for providing a security when the people are not present in the home. Mobile is one of the important component used in this system. An application is developed and installed in the mobile. The application of our system comes into handy when people forget to do simple things such as turn ON/OFF devices at their home that can be done without their presence of the owner just by transmission of a simple text message from their mobile phones. By this development, we believe that it will save a lots of time and energy especially when people don't have to come back for simple regions such as to turn ON/OFF switches at their home.

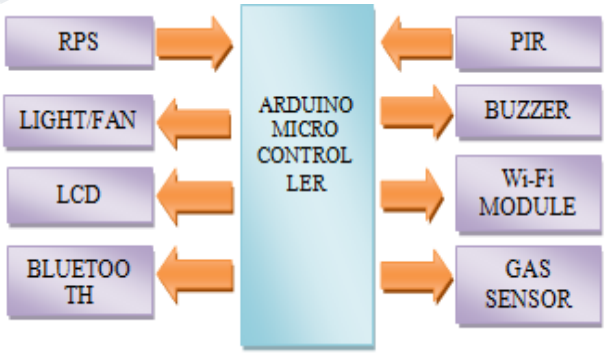

Figure 6: BLOCK DIAGRAM.

ESP8266 is a Wi-Fi module has been used in which it provides a communication between the devices. There are two sensors like PIR and gas sensors. The PIR sensor is used in the system which will be used to sense the motion of the human when they pass through the sensor and once the motion is detected a message will be sent to

the registered mobile and buzzer is used because it will be activated in the security mode when some trespasser is detected by the PIR sensor. Similarly gas sensor is used to detect any gas leakage (like LPG/butane/propane) in the home and a message will be sent to the user. Buzzer also has been used because when there is any gas leakage in the home the sensor sensing a gas then sends the value to arduino UNO and this will send the signal to the buzzer. Incoming the signal of buzzer that outputs the sound of the buzzer. LCD are used to display the message.

IV. CONCLUSION

In this paper, that presents the design and implementation of wireless smart home. The smart home automation and security system is based on IoT it can be future bright thing in the field of technology and it will minimize the human effort. There are two manner in this system. Firstly, by which owner can be monitored and controlled all the home appliances through their mobile phones from anywhere of the world by using internet. Secondly, it can be self automatic that controls and monitors the appliances in the home when the automatically signals are received from the related sensors. A sensors with wireless technologies may be future improvement are used to the proposed system. The proposed system is used to detect the motion of the human and gas leakage in the house which is done by using the sensors like PIR and gas sensors.

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