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An investigative Approach for Modern IOT based Home Security Surveillance System

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Abstract:

Internet of Things (IoT) conceptualizes the consideration of remotely connecting and monitoring live world objects (things) through the web. Home security is a very useful application of IoT and we are using it to create an inexpensive security system for homes as well as industrial use. IoT or Internet Things refers to the network of connected physical objects that can communicate and exchange data among themselves without the need of any human intervention. It has been formally defined as an "Infrastructure of Information Society",because IoT allows us to collect information from all kind of mediums such as humans,animals, vehicles, kitchen appliances. Keeping that though in mind we have proposed the sensor based home security application we proposed the use of three sensor that are PIR , Smoke and ultrasonic sensor which protects your area , determine any fire alarm and detection of any trespassing near to your house respectively. Whenever any signal generated from any of this sensor further with the help of IoT device it will immediately inform and notify the owner of the house about its change and with due respect the owner of the house can inform to nearby police station about the theft. Since sensors are work independently so the fault triggered in one sensor can be rectified by another two and that's the benefit of this system.

Index Terms **- IOT, PIR Sensor, Smoke Sensor, Ultrasonic Sensor, GSM Module.**

I. INTRODUCTION

Nowadays, technology develops and evolves rapidly. With current technology keeps on developing, some of the system has to be constantly evolving in order not to be obsolete. Many years ago, home monitoring system cannot be managed without human operation but with current technology discovery especially on Internet of Things (IoT), it had given a new face for monitoring and security system of home. By understanding the basic concept of home security using Internet of Things, the concept and its application can be explored. Once this happen, development using the technology concept is possible. Various home security system has been developed where the communication link is using Bluetooth, RFID, Android application and short message services (SMS).All of this have different approach of home security system but serve the same purpose which is to monitor the security and safety of homes.

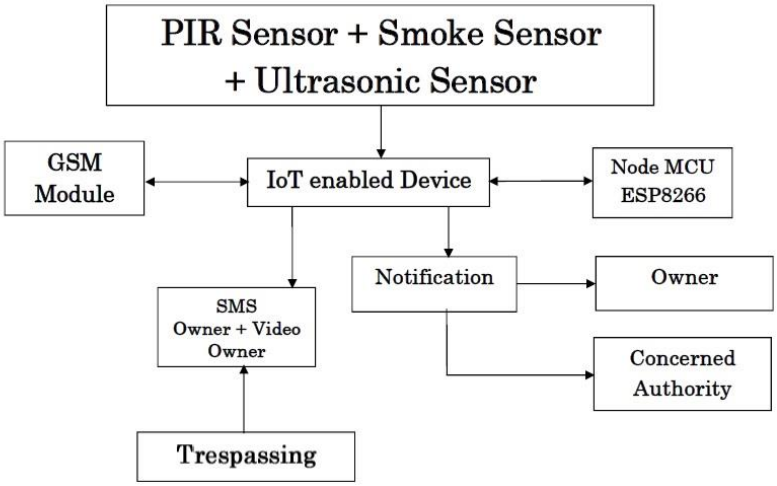
An efficient, low power consumption and low cost embedded access control system for Smart home security and remote monitoring based on motion detection is very important for wide range of commercial and security application. Many countries are gradually adopting smart home security control system. Today most of the home and office appliances that we interact with contain microprocessors. All of these appliances have some user interface, but many users become frustrated with the difficulty of using the complex functions of their appliances. We are developing a framework that allows users to interact with appliances through a separate user interface device that they are already carrying. Smart phones are good candidates for providing interfaces because they are common, have communication capabilities to allow connection to appliances, and are already being used for a wide range of different applications.we have praopsed the framework and secured the home or industy in three different aspect by implementing the smoke detector sensor, PIR Sensor and Ultrasonic sensor.

II. OBJECTIVE OF PRAPOSED SYSTEM

1. To develop programming and software using any available software to program the security system for the room door with auto-lock feature.
2. To demonstrate and apply the idea of computer port programming and PC-based control system.
3. To develop Graphical User Interface (GUI) which will be used by the user to manage and control the system.
4. To integrate the door system with personal computer using any available Communication port.
5. To design and integrate hardware with electronic and electrical elements which will be used to simulate electromagnetic door system.

III. PRAPOSED SYSTEM ARCHITECTURE

Figure 1: Block Diagram of system



The proposed system consist of GSM module IOT device, PIR Sensor and Ilytasonic sensor and smoke sensor.Here in our praposed system we are going to used the Embeded IOT system, once the theif or any threat enters the home the sensor traces the threat and it will forward the sensation to Iot device also to verify the presence of threat we have install onther 2 sensor. Once sensors confim the presence of threat it will forward the sms to the owner, Owner once got the text can take necessery action.

IV. SYSTEM COMPONENT

4.1 PIR Sensor

The passive infrared sensor does not radiate energy to space. It receives the infrared radiation from the human body to make an alarm. Any object with temperature is constantly radiating infrared rays to the outside world. The surface temperature of the human body is between 36° C - 27 ° C and most of its radiant energy concentrated in the wavelength range of 8 um-12 um. Passive infrared alarms classified into infrared detectors (infrared probes) and alarm control sections. The most widely used infrared detector is a pyroelectric detector. It uses as a sensor for converting human infrared radiation into electricity. If the human infrared radiation is directly irradiated on the detector, it will, of course, cause a temperature change to output a signal. But in doing all this, the detection distance will not be more. In order to lengthen the detection distance of the detector, an optical system must be added to collect the infrared radiation. Usually, plastic optical reflection system or plastic Fresnel lens used as a focusing system for infrared radiation.

Figure 2: PIR sensor

4.2 Node MCU

NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. The term "NodeMCU" by default refers to the firmware rather than the development kits. The firmware uses the Luascripting language. It is based on the eLua project, and built on the Espressif Non-OS SDK for ESP8266. It uses many open-source projects, such as lua-cjson and SPIFFS.

4.3GSM 800L

SIM800L is a miniature cellular module which allows for GPRS transmission, sending and receiving SMS and making and receiving voice calls. Low cost and small footprint and quad band frequency support make this module perfect solution for any project that require long range connectivity. After connecting power module boots up, searches for cellular network and login automatically. On board LED displays connection state (no network coverage - fast blinking, logged in - slow blinking).

V. ADVANTAGES

- Improved efficiency.
- Decrease the power consumption
- Durable
- Less Maintenance cost.
- No extra manpower required

VI. APPLICATIONS

- Medical Sector
- Miltery Apllications
- Home Security Application
- Industry

VII. CONCLUSION

Home automation system has grown rapidly, which provide us with convenience, comfort and mainly quality of life and focus on security for all the residents. people are habitual of automated devices, which are commonly known as smart devices, with the rapid development in the field of technology everyday new devices are created, the IOT has also emerge as boost up to make smart device even smarter. In today's era most homes consist of electrical devices which are controlled manually but with evolution of IOT these devices made the working simpler and controllable by automation. Today the main concern is security. With the use of these IOT based devices security can be achieved and full equipped home security measures can be taken.All the applications are now cloud based support and devices itself are cloud oriented and connected to all then ear by devices. internet of things is just interconnection of all the connected devices with each other to share data and tomake things easier. These types of devices are now well equipped with performing actions which are not possible earlier. The main point here is now devices are more capable of doing thing in protecting our home and surveillance. Security at living species has become necessary for current life styles, as monitoring and surveillance 24x7 is difficult to maintain manually by a person. The latest technology of IoT applications is one of the best solution. By using IoT we can have access to information about security threats, damage alerts, danger alerts and additional controls over home appliance for convenience and in automation and home surveillance.

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