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IOT based automated home security system for elderly people using old mobile phone

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Abstract:

This paper aims to provide the complete home security system for elderly people who are forced to live in this modern era. The inkling behind this work is to provide its user a simple, cheap, fast and reliable way of getting help during their emergency conditions. To create an inexpensive security system for home the Internet On Things(IOT) concept is applied. The security system consists of Arduino Uno microcontroller to interface between sensors to monitor the status, a buzzer for alarming, a Wi-Fi module ESP8266 and associated components to connect and communicate using the Internet. The system also consists of old mobile phone converted into web camera for recording the movement of unknown persons and to send the picture and video of them to the house owner and police person. The main advantage of this system is a provision of complete security system for the users at low cost and low maintenance.

Key words:

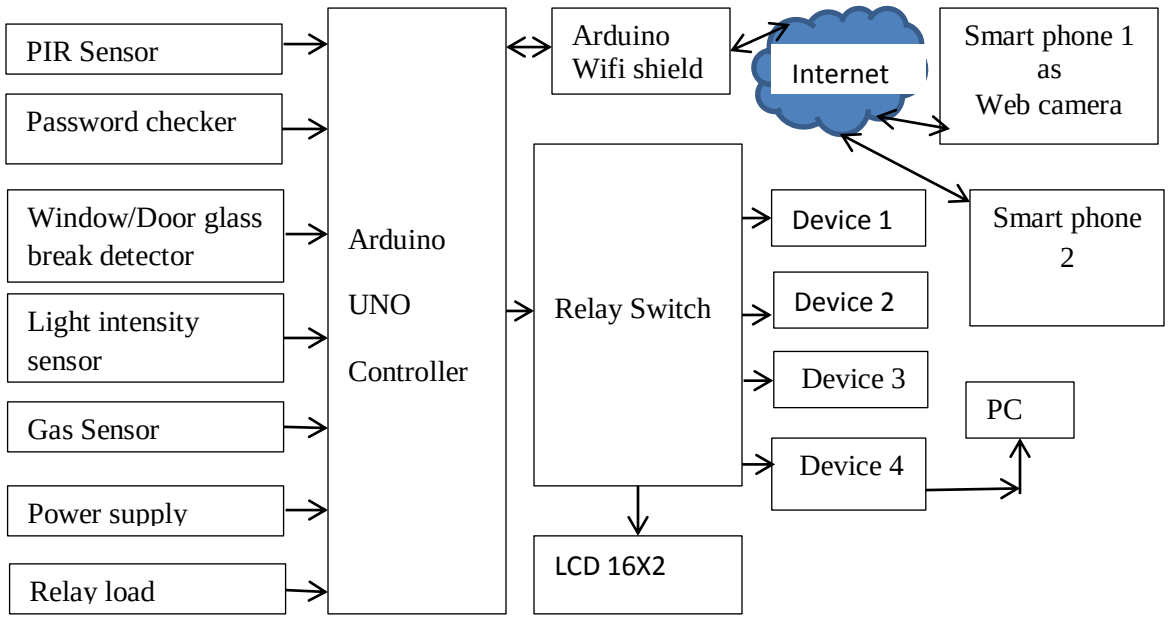
Home security system, IOT, web camera, Arduino Uno controller, mobile phone

1. Introduction:

Automated home security system using IOT is an inventive application of internet of things developed to control the security devices used remotely over the cloud. This can be achieved by the incorporation of various subsystems into the security system with a single control unit such as surveillance, intruder control, access control, fire detection, etc [1]. The Smart Home security system based on GSM technology was conversed by Govinda et al.

(2014)[2] . That paper provides a method using web camera such that every time there is any motion noticed by the camera, it notifies it by the sound of an alarm and directs a mail to the owner. This method of identifying interference is reasonably good, but for some extends this method expensive due to the cost of the cameras involved. GSM based SMS system for home security was proposed by Karri and Daniel (2005) [3].Jayashri and Arvind (2013) have implemented a fingerprint based authentication system to unlock a door [4]. The system is coupled with a few more home protection features such as gas leakage and fire accidents. Although a good system, fingerprint sensors are expensive and complex (as they need increased sensor resolution) to integrate into an IoT setup.[5] By concerning both the advantages and dis advantages of all the above systems ,in this work the security system is designed by using old mobile phone as Web Camera to reduce the cost of cameras, incorporating gas sensor & window/door breakage detector to provide additional security for user and pass word checker is designed instead of finger print sensor.

2. Proposed method:



The PIR sensor is used to check the motion of intruder and if there is an intruder it sends the notification message to the house owner (smart phone 2) so that he can view the online recordings of web camera (smart phone 1).Here the old mobile phone is converted into web

camera using IP webcam application. From the recordings the house owns could warn the old people who live alone in the house. The pass word checker is used to open the door automatically using the servo motor connected operation. If the password is entered three times wrong a notification message is sent to the owner who works apart from there. The vibration sensor is used to give input to Arduino if there is an attempt to break the window or door. The Arduino Uno sends the output to relay circuits which alarms the buzzer to alert the neighbor , sends the information to the nearby police station and sends the notification message to the house owner. In addition to that light intensity sensor based automatic lighting system is used in the rest room to prevent the accidental fall of old people due to less intensity of light during night time. Due to the reduction of memory power of elderly, the may forget to switch off the LPG cylinder which would lead to fatal accident. To avoid that MQ6 sensor is used. The sensor detects the presence of LPG in the surroundings and sends the signal to Arduino. The controller on receiving this signal activates the internal alarm circuit and notifies the message to the house owner also. Thus this system provides a complete security at low cost to the users.

3. IP Webcam home security monitor:

It is one of the preeminent Wi-Fi surveillance applications for the mobile phone. It renovates the old android mobile or iPhone into IP based web camera. With this application the camera live stream can be viewed on several devices such as Android/iPhone or web browser inside Wi-Fi network without Internet access. This application makes an end to spend large amount on expensive Wi-Fi IP cameras. It is a multipurpose application that can be used as Home security camera, surveillance camera, baby monitor and Spy cam. To use this application it is installed on two smart phones and one phone is launched in camera mode and the other in viewer mode. By getting the IP address from camera mode and entering it in any web browser could also make the viewer's able to see the live stream of camera. To increase the range of cover a lens can be used in front of the camera lens if needed.

4. Results and Discussion

The proposed module project accomplishes what the objective of the project. The planned system eradicates all the possible threats to the elderly people who live alone in the home and integrates the complete home safety and security system. It also connects these systems though

IOT module thus can also alert the owner online, who can then take the desired action and also the manual operation of the security system is eliminated. On the time of any unknown person intrusion, wrong pass word entry, Door/window breakage attempt and gas leakage, it immediately informs the status to the house owner and he also can view the live stream through the smart phone which acts as a web camera. So that the owner can immediately respond to the untoward situation and he can instantly take the action to save the wealth of the home.

5. Conclusion:

This project now aims at the complete security of belongings of elderly people who live alone and satisfies the user by providing the automated security system at low cost. In near future, IoT platform will be applied for different applications such as medical monitoring and emergency healthcare of elderly people. Additionally the energy management based home automation system can also be developed to provide the complete health and wealth secure of elderly people.

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