SMART HOME SECURITY AND AUTOMATION USING IOT

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Abstract

IoT is an emerging technology in present digitalized world. It describes us that howthephysicalobjectsconnectedtotheinternetandhowcanwemanipulate those objects through internet. IoT transfers the objects such as pervasive computing, communication capabilities, Internet protocols and applications to smarter ones by exploiting its understanding technologies. It reduces the human time and stress to manipulate those objects via internet which comes under automation technology. This IoT security feature uses in various places such as for home, hospitals, banks. The IoT with every house will be safer smarter and automated. This work mainly focuses on building a smart wireless home security system which sends alerts to the owner through Internet. Data exchange operations can be provided by connection from "Home Area Network". In this paper we have provided the Integration of cloud networking, wireless communication, to provide user with various detection messages which may be the alert messages. If any introvert is identified by the motion detectors immediately alerts the owner by call or message through the internet connected to the home irrespective of his mobile connected to internet or not. These are controlled by the micro controller which is TI-CC3200 launch pad board consists of on board Wi-Fi shield. This work mainly focuses on the motions of a person through the motion sensors and the detectors. The designed system not only monitors the sensor data like gas, smoke, window, door, lock but also alerts the owner and also stores the sensor parameters in the cloud.

I. Introduction

Smart home environment integrates multiple IoT devices and services that collect, process and exchange data. Wireless Home automation and

Home security are the dual aspects in this survey. In recent years wireless sensors and actuator networks have enlarged momentum receiving from Industries and standard development organizations. Smart home devices and services exchange data with internal and external actors. These actors to develop adapted security measure stop revent security threats. [1] This system enables to access monitor the applications and control the applications for the home user and he can also control these appliances whether he will present in the home or not. This enables the user to interact with the se appliances in a smarter way at anyplace at anywhere through his mobile phone. Wireless systems can be great help for [2] automation with the technologies of Wi-Fi, cloud networks, wireless systems are used every day and everywhere. The provision for sending alert messages or calls to concerned security personnel in case of critical situations is also built into the system. In simple way we can say it as a security for home i.e., Home Security. If there will be an intruder immediately alerts the owner through the motion detected by the PIR sensor connected to the board over the Wi-Fi in the home to his phone and the number will represented in the program and then by taking necessary steps he may trigger security alarm through his phone and warns him. On the other hand if the owner identifies the person wants to enter into his house is not an intruder but an unexpected guest. Then instead of triggering security alarm the owner can make arrangements such as opening the door, switching on lights, fans and even A. C whether it is required. These actions can also be controlled by the micro controller in the system to welcomes his guest. This will be a one of the automation. We are using TI CC3200 launch pad which is a popular open source single board micro-controller and is designed to make multidisciplinary actions and controls them. This hardware is programmed using [9] C language in a specified software called Energia. Every action is performed and is mentioned in the program itself. We have described our survey in different sections and the section II provides the work which were done by the authors was helpful for my survey. Section III provides the existing system issues and the Section IV describes the implementation setup and description of various components used in it. The Section V provides flow charter presentation of working of this setup and finally conclusion and the future scope will be provided in Section VII.

II. Literature Survey

M. N. N. A. A. Asghar had studied about the technologies which were used in the automation through this technology he describes about how the communication between the IoT devices and serves through the Internet. The communication process uses several protocols for the interaction between the more IoT devices. B. R. Pavitra had studied about the technology which is based on both Automation and Security purposes. Her studies brings about various security related information about IoT devices and their automations. She titled her studies as IoT based monitoring and control system for home automation. Yellamma Pachipala, Tummasriniv as Rao, G. Siva Nageswara Rao, D. Baburao had mainly studied about the technology related to networking which the backbone for communication is through online. This networking technology facilitates the communication and transformation of data among the devices. Signal processing is the necessary work for the networking and communication processes. Signal processing is the major for to process any request through the signals and receives the command or message as a signal to the board. Konde Bala Yaswanth, Leela Manasa, Bojja. Venkata Chetan, G. Siva Nageswara Rao had studied on IoT based home automation system which makes use of a micro-controller and a java based android application. They also made use of GSM module which helps the system to be use dremotely. A. Anusha, A. Guptha, G. Sivanageswar Rao, Ravi Kumar Tenali had presented alow cost and flexible home control and monitoring system using an embedded micro-webserver, with IP connectivity for accessing and controlling devices and appliances remotely using android based smart phone app. G. Siva Nageswara Rao, B. Manoj Kumar, R. Jaya Raj, A. Sharma studied on design and prototype implementation of new home automation system that uses Wi-Fi technology as a network infrastructure. They described that system consists of two parts mainly server and hardware interfacing modules which provides appropriate interface to sensors and actuators of home automation system.

III. Existing System Issues

1. Problems with integration

2. Electrical issues

3. Physical damage

4. Home network

5. Performance

6. Energy efficiency

7. Extensibility

8. When Phone is offline user cannot identifies what happens at his house.

9. Picturization feature is not available.

10. Alert signals through messages only

IV. Implementation Setup

A. Components Required

1. TI CC3200Launchpad

2. Accessible Wi-Fi

3. PIR motion detector Sensor

4. Alarm

5. Relays for connecting home appliances, electromechanically controlled doors or windows

6. Mobile phone to receive Voice call

7. Energia (Software)

B. s Works as a Smart Security System

The PIR motion sensors are placed at all the entrances of the home. These sensors can detect the motion of a Human Being was explained earlier. The input trigger for the microcontroller will be the signal by these sensors. Then the owner of the house will be alerted through the voice call (Number is predefined in the program) on his Mobile Phone. The alert message will be the "There will be an intruder identified at your home". The owner of the house can instructs the devices through his mobile phone only like he may

trigger an alarm and switches on the lights by opting an option from his phone that was prede finely instructed in the program. If the intruder keep on trying to enter into the house after the warning was given by the owner and then he identifies as his home was not safe. Then the owner will easily contact to the nearby police station and describes his position that some intruder wants to enter into his house and provide security to his house by catching the intruder at his house. If the owner raises the alarm by his smart phone has a certain duration and then it will OFF. He can alert the neighbors also by the warn alarm will repeatedly rising and then he may secure his house through the neighbors also it is also a one of the security measures. [3] [4]. The call will be triggered again as the motion will be detected.
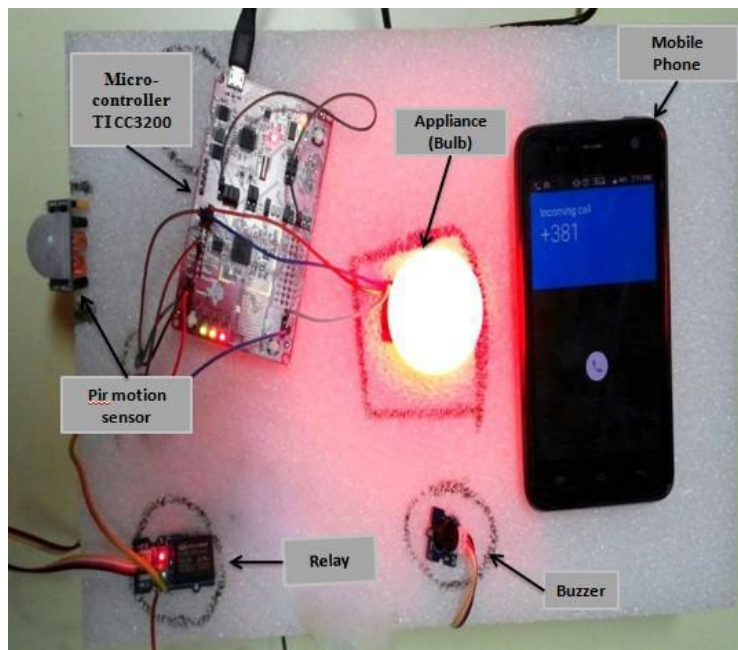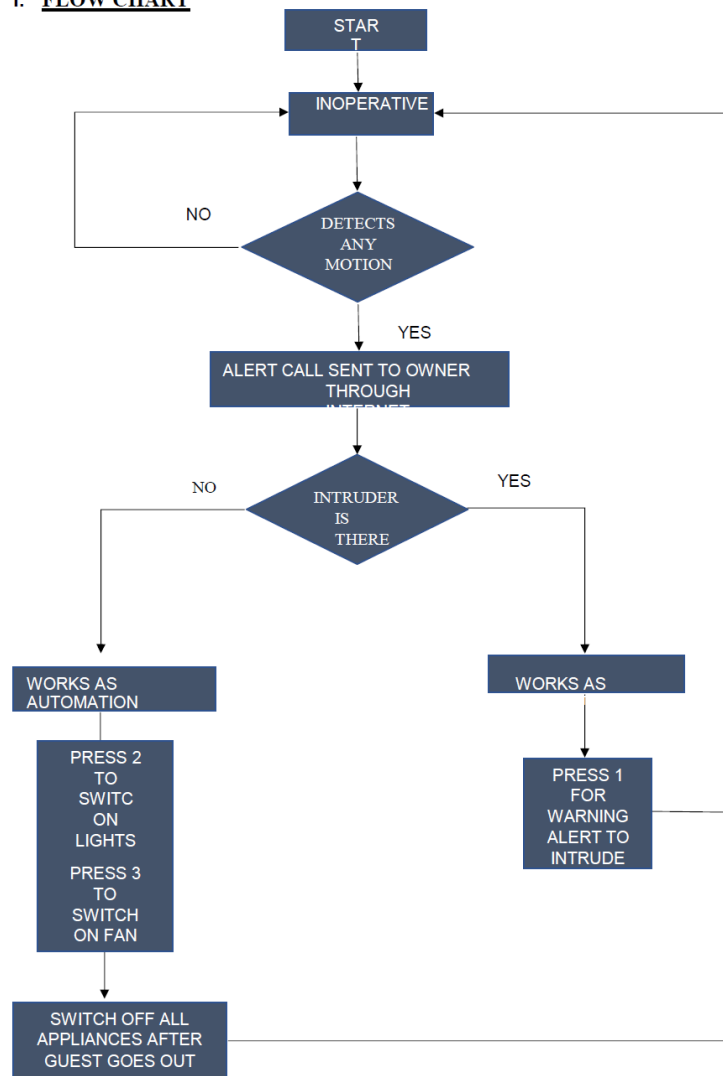

Figure 1. Set up.

I. **FLOW CHART**

II. Conclusion and Future Scope

This system is dependent on user's decision whether to choose automation or security system. Face detection feature will be available to detect the face and will be mailed to the user. If the user wants to take any action he may contact nearby police station by sending the picture of intruder. If the user's mobile phone is in trouble or damaged or not in

working or may be switched off then he user may not receive any alerts then the devices may not be instructed to do any action. So an intruder will easily enters into his house intruders face will detected and the photage will be stored in the cloud here this is not the problem. Further the made be more synchronized in a way that the system will be independent of the user's decision when the instructions will not be received from the user. [6] [7] In further work the some of the features will be like raising the alarm whenever the continuous motion will be detected without users direction or not instructed by the user in case of phone failure. If the user's phone will lost or theft by any person then the theft may operate the user's house whenever any alert call will be received to user's phone [8] in this case our future work will be proper authentication will be set before attempting the alert call or any security feature will be added to attempt that call. This may be the secure interaction with the devices at his house. In future work whenever the user's phone is not in working and there will be a continuous motion will be detected or the person wants to break the door then the action will be taken to alert the nearby police station through voice call feature and the number will be predefined in the program. [8] These are the actions will be the future scope for our survey.

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