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Research Paper On Home Security System

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Abstract--- *With the development of social economy, more and more applications have been presented in a house thus decreasing security and privacy. It comes out a task that the way to manage and control these increasing numerous appliances efficiently and conveniently so as to achieve more comfortable, security and healthy space at home. The project proposes an efficient implementation for IoT (Internet of Things) used for observance and controlling the home appliances via World Wide Web. This IoT project focuses on building a smart wireless home security system which sends alerts to the owner by using Internet in case of any trespass and raises an alarm optionally. The leverage obtained by preferring this system over the similar sort of existing systems is that the alerts and the status sent by the Wi-Fi connected microcontroller managed system will be received by the user on his phone from any distance irrespective of whether his mobile phone is connected to the internet. The microcontroller used in the current prototype is the TI-CC3200 Launch pad board which comes with an embedded micro-controller and an onboard Wi-Fi shield making use of which all the electrical appliances inside the home can be controlled and managed.*

Index Terms--- *IOT, TI-CC3200 Launchpad board, security, home automation, security system, internet***.**

I. INTRODUCTION

Now a days, technology has become most important part of people's lives. It has, and continues to influence several aspects of way of life and has allowed better social interaction, simple transportation, the power to indulge in entertainment and media and has helped within the development in medicine. The creation of many devices like mobile phones and computers have caused many people to rely on technology to communicate with their friends, store data such as pictures, movies, documents, and music. The internet has become a common interface that a lot of devices use in order to simplify the daily life of many people. Internet helps us to usher in with immediate solution for many problems and also able to connect from any of the overseas that contributes to overall cost reduction and energy consumption.

This project can act as both Wireless Home security and Home automation. If any Human movement is sensed near the entrance/exit of the house, currently built prototype of the system sends alerts to the owner over voice calls using the Internet and raises an alarm optionally upon the user's discretion and also sends an alert messages to concerned security personnel in case of critical situation is also built into the system. On the other hand if the owner identifies that the person entering his house is not an intruder but an unexpected guest of his then instead of triggering the security alarm, the user/owner can make arrangements such as opening the door, switching on/off various appliances inside the house, which are also connected and controlled by the micro-controller in the system to welcome his guest. The same can be done when the user himself enters the room and by virtue of the system he can make arrangements from his doorstep

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such that as soon as he enters his house he can turn off/on the fans and lights without manually having to switch on the electrical appliances. Thus using the same set of sensors both the problems of home security and home automation can be solved.

II. LITERATURE REVIEW

After reading this literature I got the knowledge that main objective of this paper, they have introduced the event of a home management and security system exploitation using Raspberry pi and Internet of Things technology. A set of 3 sensors namely IR sensor which is used to turn on and off the light, PIR sensor used to turn on/off the fan and fire detection sensor which detects presence of fire. All the 3 sensors sends send the signals to Raspberry pie module which works as a control unit and IOT module. The system is suitable for real-time home safety monitoring and for remotely controlling the home appliances and protection from fire accidents .[1]. This paper proposed secured IoT-based home automation applications using WSNs. In this study a security algorithmic program, namely TBSA, based on a simple and efficient key generation procedure is developed. The proposed IoT integrates low power Wi-Fi and the proposed TBSA in WSNs with internet to provide additional benefits of increased coverage range and capability of supporting large number of sensor nodes due to usage of low power Wi-Fi module; it also consumes less processing time for data encryption because of the utilization of the proposed TBSA algorithm[2]. This paper proposes an IoT-based smart home system, and presents the system architecture according to the layered construct of the Internet of things. Moreover, the gateway of the system is designed in detail from hardware to software. The ZIGBEE module, 3G module, and video module interface circuits are shown with respect to S3C2440A microprocessor. In addition, the software based on embedded Linux operation system is described[3]. In this paper, a home control and security system is developed based on the use of FPGA and Internet web-based technology. The system is appropriate for real-time home security monitoring and remotely controlling the home appliances and others. The system is designed and implemented on a Nios cyclone II FPGA development board as a custom designed processor. The user interacts with the system to send control commands and receive feedback from different devices and peripherals over the Internet or through SMS messages[4]. In this research paper python coded algorithm has been fed into the raspberry Pi and is connected to the internet through MODEM interface to access and send e-mails to the consumer. The Devices to be controlled have been interfaced with raspberry Pi using relay driver circuit because raspberry Pi and devices has different power ratings. This system takes command via e-mails, when command is send in email the process of reading email starts ,this system reads the subject of received email, checks the conditions if conditions are not fulfilled sends an error message and if conditions are fulfilled it implements the function and fulfill the command. After reading this paper I got to know about the details of how IOT works, what IOT is, how devices are connected to each other [5] . In this paper, various concepts of Linux, Python, IoT, HTML and Raspberry Pi has been used in order for successfully implementing of the system. The system is suitable for real-time home safety monitoring and for remotely controlling the door locking system[6]. In this paper, An Advanced Internet of Thing based Security Alert System for Smart Home has been proposed, to detect an intruder or any unusual event at home, when nobody is available there. Here system starts once without user input and further it automatically send email to owner on any intrusion detection and owner take necessity action. It can be concluded that the proposed system present the basic level of home security and remote

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monitoring while the required objectives of home security system have been achieved [7]. . In this paper, we get to know and review the tool related to smart home security. Integrating the home systems permits them to communicate with one another through the home controller, thereby enabling single button and voice control of the various home systems at the same time, in preprogrammed scenarios or operating modes[8]. In this literature, the GSM based home security system is designed and tested with the mobile network. The user will get alerts anywhere through the GSM technology therefore making the system location independent. The communication of home is only through one of the possible technology that is SMS which has been tested with the mobile networks and is working on any mobile network. The web camera based security system is easy, user friendly and software has many features. This type of system is useful when the owner is not in the house and the home is locked. By installing the web camera at the door site, intruder can be detected and owner can receive mail telling the intruder entry in a home. If the nearby police station email id is also configured in the system, then the intrusion mail can be received by police conjointly also and necessary action can be taken [9].

III. METHODOLOGY

PIR motion sensors is installed at the entrances of a building. Passive Infrared Sensor (PIR) is an electronic device which is designed to detect this IR wavelength when a human being is in its proximity. These sensors detect the motion of human beings. A simple lens is also used to have wide range for detection. This signal which detects their presence becomes the input trigger for the micro-controller here microcontroller used is see fig. 1 consists of Applications Microcontroller, Wi-Fi Network Processor, and Power-Management subsystems. It uses ARM Cortex M4 Core Processor at 80 MHz. has embedded memory including RAM (256 KB). The dedicated ARM micro-controller also has a network processing subsystem in it.

The owner/user, who may or may not be present in that building, will be receiving a voice call on his mobile phone whose number is predefined in the program stating that 'There is an Intruder in the House'. The owner can press '1' from his mobile keypad, To turn ON lights and alarm of the house so that the intruder will be warned. Moreover if the owner finds that his building is not safe, he can send an SMS to the concerned authority in police department; explaining his situation. The module will turn OFF the alarm and lights after a fixed time delay. The call will be triggered again as soon as the module detects any unexpected motion and the owner will receive the call again and the process continues so on. (To ensure the safety from other entrances too, motion sensor should be installed at those places and will be controlled by a single micro-controller).

This application of the module can be explained by an example. Suppose the owner is expecting a guest at his house but he is not available there. Now, as the guests reach at his house the owner will receive a video call. But now the owner can press digits other than 1 or even can disable the security system. Similarly if the user or somebody leaves the house, the user will still receive a video call and this time he can switch Off the appliances or can enable the security system again by pressing proper digits known to him. Since the appliances are connected to mains supply through a relay they can be easily controlled using micro-controller.

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Fig.1Microcontroller (https://5.imimg.com/data5/DW/KO/MY-43948449/esp8266-serial-wireless-module-nodemcu-v3-lua-wifi-internet-500x500.jpg:)

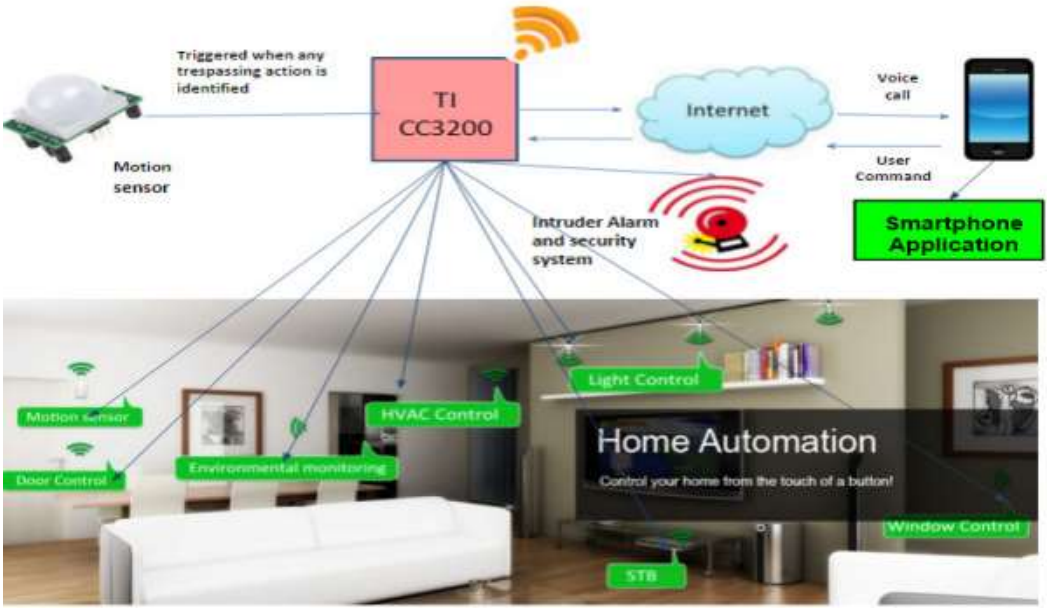

Fig.2 Security and Home Automation (https://lh3.googleusercontent.com/MZbMjwtt0KCyZDOJ9qP2RqP5kCYYswD3tkMWVmb_WPI_pPtLuYXeZrpCP6kGrLZ2U3M8=s159)

IV. RESULT

As the system is dependent on the user's discretion and judge ability of the situation this system can be used in many ways alternatively. Initially the system is ideal and will detect any kind of motion if the motion is detected it will send a voice call to the preregistered phone now the user has to decide whether it's a intruder or guest, if intruder on upon pressing 1 alarm will raise, on upon pressing 2 light will switch on, on upon pressing 3 fan will be switched on, on upon pressing 4 AC will be switched on. From here we can see that this system can be used in different ways. The use of a camera connected to the microcontroller might help the user in taking decisions whether to activate the security system or welcome the guest

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V. CONCLUSION

Smart homes provide comfort, leisure, safety and healthcare for residents, so it is an important way to improve people's living standard. This paper proposes an IoT-based smart home system, and presents the system architecture according to the layered construct of the Internet of things. The system is suitable for real-time home safety monitoring and for remotely controlling the home appliance and can be used both as smart security system and smart home system.

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