

An IoT Based Smart Home Security and Home Automation System

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ABSTRACT

By development of automation and technology, life is getting simpler and easier in every scenario. When it comes to our house this concept can be apply incorporated to make it smarter, safer and automated. Internet of thing is a developing network of everyday object from mechanical to consumer goods that can share information and complete the tasks, though we are busy with other activities. Wireless home automation system uses computer or mobile devices to controlling the features and function accordingly, which mean to save the human energy and electric power. This challenges make smart homes extremely vulnerable to different types of security attacks, resulting in IoT-based smart homes being insecure. In this project by using Internet of Things (IoT) we will control the home appliances.

KEYWORDS: *IoT, Wireless, Internet. Security attacks*

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1. INTRODUCTION

The theory of home automation has been around since 1970's. As much as IoT helping in automating tasks, the benefits of IoT can be extended for build up the current safety standards. The modern homes are automated through the internet and the home appliances are controlled. For an example with smart locking control, you can remotely secure equipped doors and windows from anywhere in the world whether you're in bed, at work or on vacation. Integrated Automation: your smart security system can be more than just alarms, cameras, sensors and locks. The home automation segments also includes smart lighting, smart TVs other appliances. wearable's (smart watch, fitness bands, smart headphones, smart clothing) are expected to witness the growth in the future generation. today in India, nearly 22.5 per cent of the consumers were familiar with the concepts of IoT, with maximum awareness seen in the 36-55 age group. A smart home focuses on the automation and control of environmental services such as day lighting, heating, ventilation and air conditioning systems, monitoring and control, security and safety, and energy savings. The alerts and the status of the IoT system can be accessed by the user from anywhere even where Internet connectivity may not be readily available (since it is not necessary for the mobile phone to be connected to internet only board is required to have an access to Wi-Fi). Home security made a drastic changes in the past few decades and continue to advance much more in the coming years.

The IoT application domains are very important and will increase over time, as they offer powerful means to help and support the special needs of the elderly and people with disabilities, enabling users to monitor and control the environment. A smart home focuses on the automation and control of environmental services such as day lighting, heating, ventilation and air conditioning systems. The main purpose of this project is to monitor temperature, liquid petroleum gas (LPG) leakage and fire detection.

2. LITERATURE:

Home automation is becoming popular due to its numerous benefits. The future is Internet of Things (IoT), which will transform the real world objects into intelligent virtual objects in the near future. Some experts also argue that only relying on a fingerprint sensor is not wise as it is relatively easy to lift someone's fingerprints and replicate them, which is why it is always advised to use fingerprint scanners in a two factor authentication systems where an additional layer of security is available in the form of PIN, passcode, voice recognition, etc. The main aim of this project is to control and monitor over smart home. The entire system is connected to internet to direct and regulate the house equipment's from anywhere in the world.

3. ADVANTAGES:

It is necessary to protect smart homes against attacks, at both the backbone level and the control level, originating from both the outside and the inside of a smart home.

The minimum requirements takes care of both home security as well as home automation at low cost system.

- Accessing information is easy, we can control a device that is miles apart in real time.
- Automation is the need of the hour; IoT reduces human intervention and increases efficiency of services.
- Easy of installation and the system is designed in user-friendly interface.
- Better scalability and flexibility.
- It can also improve safety and remove risk of human error.
- The main advantages is to help for physically challenged and disabled people.
- Easy management of large data.

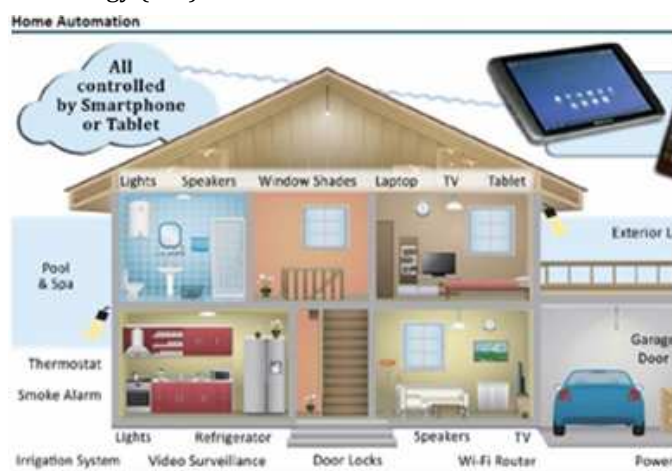
4. DISADVANTAGES:

- Lack of implementation.
- System crashes due to any damage in the inter connection.
- Automated systems can show lack of empathy with events.
- Hindering from governments.
- Equipment and installation cost.
- There is a huge risk of leakage of confidential data, when sent over a network.

5. APPLICATION OF IOT:

- Environmental monitoring
- Wearables
- Medical and healthcare system
- Connected car
- Smart farming
- Smart shopping
- Media
- Connected homes and buildings
- Transportation
- Camera

The Internet of Things (IoT) is an emerging paradigm due to extensive developments in information and communication technology (ICT).



6. TECHNOLOGIES:

6.1. Home robots and security:

Due to technology development, robotic vacuum cleaners and floor washing robots that clean floors with sweeping and wet mopping functions.

6.2. DIY home security system:

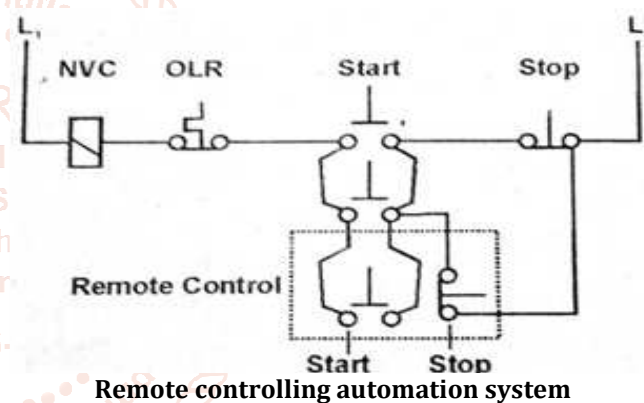
Do-it-yourself security system setups are ideal for budget shoppers, this can save bundle on installation charges.

6.3. Smart lock:

Models to choose from, including keyless no-touch locks, touch-screen locks, touchpad locks and locks that you can open using a biometric fingerprint reader. There are plenty of It can be opened and closed using a mobile app and will send notification when someone unlocks and locks a doors. Features to looks for include geofencing, which uses your phone's location services to lock and unlock the doors, voice activation using Google assistant, Amazon Alexa voice commands, supports for IFTTT, and also integration with some smart home devices such as outdoors cameras, smoke alarms video doorbells, connected lighting etc.,

6.4. Home automation systems can be split into two main categories:

Locally controlled or remotely controlled system. Locally controlled systems utilize an in-premises controller to carry out an automation process. Remotely controlled automation systems use an Internet connection to offer users a full control from their personal computer or mobile device (from MCC/MCR/PCR).



7. RISK AND MITIGATION APPROACHES IN ACTION:

A typical IoT-based smart home environment includes a wide variety of devices, services, and vendors. IoT based smart home architecture is divided into three layers; device or perception layer, network layer, and applications layer. Smart home devices and their suppliers can be divided into six categories, namely, electrical power distributions, smart home controllers, building applications, home appliances, communication devices, and IT and telecom providers. This section maps some of the identified risks and mitigation approaches to a typical smart home environment.

8. FUTURE SCOPE:

This project can be further developed by integrating it with the internet to monitor your home while sitting in a remote area. By doing this, one can keep an eye on her or his home through an internet connected to user's PC or mobile phone or laptop. It receive the system status and information via SMS. Further the system may be made more synchronised by integrating the voice call feature within the same smart phone application through which the user can even control his home appliances without any voice call being triggered to his phone. The developed system can also be used to in industrial and commercial applications such as offices, warehouses and other areas where some areas are reserved for authorized personnel only or other places where safety

and precautions are of primary concerns such as internet server room of a big MNC from where corporate data can be stolen. The system can also be easily upgraded to add extra safety.

9. CONCLUSION:

The home automation system has been experimentally proved to work satisfactorily by connecting sample appliances to it and the appliances were successfully controlled from a wireless mobile device. Home security is rapidly growing field and there are news and improved burglar alarms popping up every day. People can control their electrical devices through set up controlling actions through mobile. Finally we come to a conclusion that before making the decision of installing home security system we must gather complete knowledge about the security system.

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