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Literature Review: Internet of Things (IoT) Based System for Smart House

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ABSTRACT: IoT is a network of physical devices. The Internet has become not just a computer network, but a network of devices of all types and sizes. These are cars, smartphones, appliances, toys, cameras, medical equipment and machinery, animals, people, and buildings. When we think of IoT systems, the most important and useful application that always stands out is the smart home, which is the most advanced IoT application overall. The number of people looking for a smart home is increasing every month. The smart home or "home automation" describes connectivity in our home. It includes electronics, appliances, entertainment, windows, door locks and more. In this paper, we present a literature review on various IoT-based smart homes.

Keywords: Network IoT, Automation, Smart Home, device, Sensor, objects, gadgets.

I. INTRODUCTION

The Internet of Things is a technology and analytics that uses communication, information, big data and artificial intelligence to provide complete systems for products or services. These systems provide greater transparency, control and efficiency when applied to any business or system. The Internet of Things will create more connected devices and devices into the fabric of our lives and jobs. Equipment placed in public and private spaces will be recognized and adapted to our needs for comfort, safety, work, entertainment, education, resource conservation, work quality and personal health. IoT systems have applications in many industries due to their simplicity and ability to adapt to the environment [8]. They improve data collection, automation, operations and more with smart tools and powerful technologies. Living arrangements are transforming into a smart home, including smart meters and inevitable changes. In addition, smart devices, smart pumps and smart devices are emerging on the market to support the energy measurement and control of personal motor vehicles. The IoT-based smart home includes temperature, smoke detectors, lighting, appliances, entertainment, windows, door locks, and more, as shown in Fig. 1.

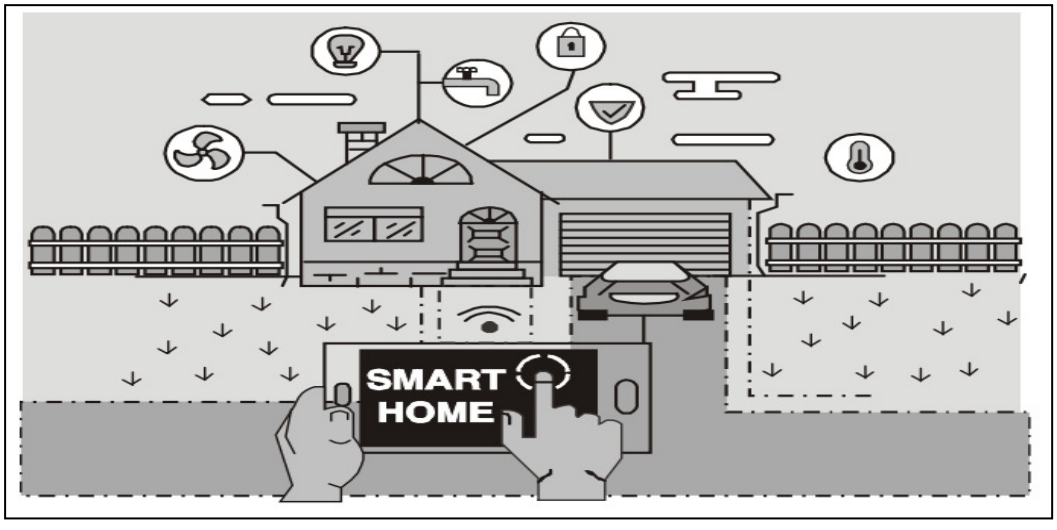

Fig. 1. IoT for Smart Home.

From improving security to reducing energy and mainte nance costs, many companies offer a variety of advance d IoT technologies to manage and monitor smart homes and smart buildings [3]. Some smart home IoT applicati ons include:

(a) access control
(b) Light and temperature control
(c) Energy optimization
(d) Predictive maintenance
(e) Connected devices.

II. LITERATURE REVIEW

In this research, previous literature review will be discussed. Research is a tool to form some ideas of how this research will work based on processing relevant information. In this research, we will talk about some of them. The purpose of this research is to identify the importance of the research question by presenting previous work in the field, to improve my own understanding of the field, to update my readers, to find gaps in the data and the need for this research.

In this research, we try to explore the privacy and security issues of IoT in the smart home.

We discussed the various security and privacy issues that exist in the Internet of Things, considering the state of the smart home, including management processes, operations, impact, deployment and mobility [8].

This document presents a home automation system (HAS) using Intel Galileo, using cloud networking, wireless communication integration, allowing users to remote control various lights. Fans and home appliances and store data in the cloud. The system will change according to the sensor data. Designed to be low cost and flexible, the system allows the management of many devices. The system is designed not only to monitor sensor data such as temperature, gas, light, sound sensors, but also to initiate the demand process, such as turning on the light at night.

It also stores metrics in the cloud (Gmail) in real time. This will help users to determine the status of various parameters in the house anytime, anywhere [11].

While the Internet of Things (IoT) is a continuation of Internet services, the smart home has evolved with a special emphasis on environmental stewardship and environmental stewardship. IoT applications are on the rise. The use of new technologies in the IoT environment is increasing rapidly. It has been developed in industrial wireless sensor networks (WSN). Smart home is also one of the IoT applications. With the rapid development of technology and the development of architecture, how to control and manage all processes, server security, smart home security, etc. has brought with it many problems.

This research describes the architecture of the Internet of Things. Smart home refers to a home that can monitor home appliances/devices. When these home appliances in the smart home are connected to the internet using the appropriate network architecture and standards, the entire system in the IoT environment can be called a smart home or IoT based smart home. Smart homes easily run home automation. This research not only explains the problems and problems faced by IoT and smart home using IoT, but also suggests some solutions that can help overcome some problems and problems.

This research introduces IoT architecture and smart home architecture using IoT. There are some problems with IoT and smart home. New technology could help alleviate some of that. This research describes issues and potential issues. This research discusses new technologies and methods used to develop IoT applications [1].

CPLD controllers, ZigBee modules, RF modules are currently used in IoT.

2017 Timothy Malche With the rapid development of internet and communication technology, today's family has also had the ability to calculate and communicate. IoT-based smart buildings have become an important part of smart and smart cities planned and built worldwide [1]. In this study, they present an overview of IoT in the context of smart cities and discuss how cities can improve their intelligence. We also identified the weaknesses and risks associated with IoT deployment and adoption in a smart city environment.

As part of our future work, we plan to explore different solutions and proposals to solve many of the IoT and smart city issues discussed in this document, especially security issues and issues.

Home automation has always been able to create the home environment. People can control their electrical appliances through home electronics and can adjust their controls via computer. We believe that these products have high market potential in the future.

Currently, the materials used to manufacture these devices at an interesting cost are relatively high [6]. The Internet of Things will support networks that collect and analyze data from various sensors and actuators and send data via wireless connections to mobile phones or PCs. The creation of the Internet of Things has made progress over the past few years as it ushered in a new era in the information and communications industry. Security is an important issue today because access opportunities are increasing day by day. Anti-theft, anti-theft, fire prevention and electricity leakage prevention are the most important things people have for home security.

This research presents a design that can be used as a basis for the design of low energy household appliances. By using inexpensive products such as Elegoo and Raspberry Pi microcontrollers and RF signals as communication devices, it is possible to create an IoT system that allows home users to see when the desk is open. Diagrams are provided to connect the different components and diagrams to illustrate them. The data flow of each of these devices is explained and possible problems are discussed. Finally, future work in this area and possible use of this architecture are also discussed [10].

Work also talks about the work instructions that must be done in order to work effectively and respectfully. This project focuses on the efficient design and necessary services required by the smart home. In this study, we only consider the importance and necessity of the smart home [4]. Additionally, this document describes the working scenario for smart buildings using IoT.

This work instruction is a set of instructions/commands to do a job needed in the process. The teaching methods discussed in this study are limited to smart room, smart kitchen, smart bathroom, smart door, smart refrigerator

and child/elderly support. This study will help build smart homes well. The theme of
2020 is clear: the use of the Internet of Things (IoT) will affect people's lives. IoT application will move from beautiful family towards serving people and promoting innovation [5].
IoT applications are important and deserve attention. More and more sensitive data is collected, transmitted and used by IoT devices, especially smart home and healthcare devices, which raises privacy issues. New IoT devices and systems may have the potential for vulnerabilities and require additional effort to address them. As mentioned above, insufficient security settings and the main reason for the disadvantages of cloud services and web services is the lack of security awareness. Also, while less research has been done in the past few years on the security of IoT operations and mobile applications, many attackers will discover and use the technology in the future due to the "constraints" and "outages" of IoT application vulnerabilities.
These findings support several recommendations for device manufacturers, researchers, and business models to better provide privacy devices for smart home owners' needs and preferences.
The project covered in this research is designed to create a security automation system for the building. Smart home services are new tools in the Internet of Things that demonstrate the transformation of home appliances from monotony to intelligence, remote control and connectivity [1]. However, with this development, the complexity and cost of using the system has increased, as have security issues [7]. The project is a smart home using the Internet of Things (IoT), its main purpose is to connect and monitor devices on the Internet, keep the system in offline mode and provide indoor access with facial recognition.

III. RESEARCH GAP

There is arrange of approaches to enter a Smart Home. As a few or numerous gadgets are associated with the web, a guilty party could assault the most fragile of them and utilize this gadget to invade the entire framework. Another chance is the disease of as of now assaulted PCs or cell phones with malware and resulting utilization of them as a jumping board for additional examination and penetration in the system. Gadget has distinctive degree of hazard to be the objective of an assault.
Some devices, especially complex sensors, high memory and planning limits make them ugly. Depending on the intent of the invaders, various combinations of smart home devices will be of interest. Major attacks will be like family managed products because they are often similar to existing targets and are associated with almost every other product in the smart home.
A few gadgets, particularly crude sensors, the high restriction of memory and preparing power, make them ugly. Contingent upon the aims of the aggressor various gatherings of Smart Home gadgets will be of intrigue. The main wide spread assaults will in all likelihood target Products of the Controlling Systems gathering, since they are generally like existing targets and moreover they are associated with pretty much every other Smart Home gadget.

IV. PROPOSED SYSTEM

The proposed studies will be relevant to investigate information security in IoT based smart homes. This test explores the data security risk of connecting smart devices to each other and to the internet while building a smart home to attract customers to security risks that can be abused, increases security, and ensure compliance [7]. The basic concept of the smart home is shown in Fig. 2.

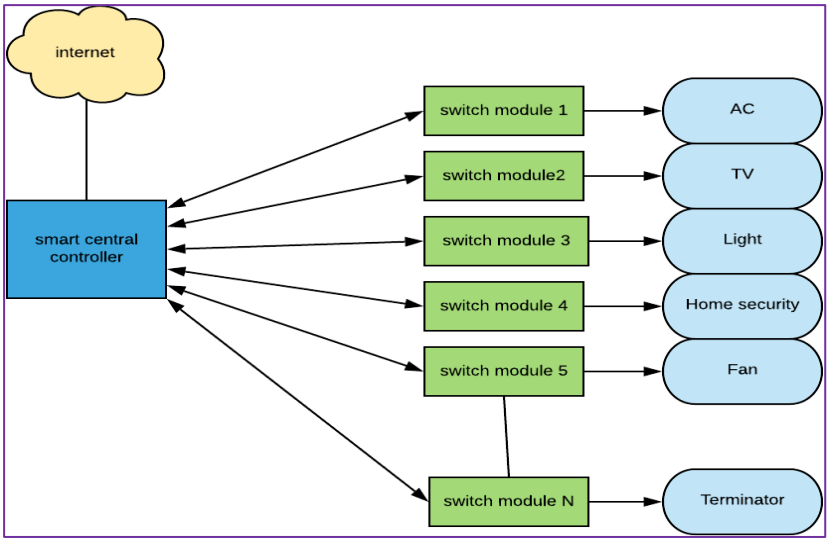

Fig. 2. Basic ideas for smart home.

Current developments in information and communication are recognized by personal computer systems; implanted systems and artificial intelligence make the smart home vision possible. Therefore, by enhancing the traditional home automation system with new intelligence, the smart home environment can use different types of intelligence [2]. Smart home innovation is a combination of innovation and control from home management for a better life. It includes IoT, radio frequency identification, internet protocol, electronic devices, barcodes, wireless fidelity,

Bluetooth, ZigBee, proximity communication, actuators, wireless sensor networks, and smart wisdom.
This method examines data used by clients or processes. To make it easy to print/save the model and model used in the home automation system, the creation steps are explained here: Different parts, cameras and servo motors are connected to the Raspberry Pi. It is programmed to collect and report the data that these devices bring to PubNub in the form of JSON strings. Broadcast data to the Raspberry Pi by providing a "release key" and a channel name. The data is sent to the channel provided by the PubNub server and sent by PubNub to the users of that channel. In this case, the client that the user will use the data to be read from the sensors and monitoring devices is the web/mobile application.
"Subscription Key" and "Channel Name" are embedded in the code of the web/mobile application. Allow it to receive messages from PubNub. On the other hand, if the user wants to send commands to and control home appliances, led lights such as web/mobile applications are those given by the "main notification" and "channel name". Suggestions are sent to the PubNub server as JSON strings, while the "subscription key" and "channel name" are embedded in the Raspberry Pi. This allows the Raspberry Pi to receive broadcast messages on channels it subscribes to.
When the Raspberry Pi receives a JSON string, it uses the action on that string.

V. CONCLUSION

IoT provides a flexible and scalable platform that can support many different applications. Its popularity has led to many applications including smart home and more. The main applications of home automation systems are ambient lighting/daylight and heating, ventilation and air conditioning systems, monitoring and control, safety and security, healthcare, fire protection Electricity, environmental management and data entry with traditional services. Home applications include smart home security, aged care smart home, smart hospital, smart nursing home, energy efficient smart home and better life smart home.

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