ISSN: 2321-2152

IJMECE

International Journal of modern electronics and communication engineering

E-Mail
editor.ijmece@gmail.com
editor@ijmece.com

www.ijmece.com

ISSN2321-2152

www.ijmece .com

Vol 12, Issue 1, 2024

IOT BASED HOME APPLIANCES CONTROL

Ms. G.Sravanthi, Assistant Professor,Department Of ECE, SICET, Hyderabad
Millaga Premsai, Patel Vennela, Shaik Akbar, Arroju Sai Charan
Department Of ECE, SICET, Hyderabad

ABSTRACT

With the advancement of automation technology, life has become easier in every aspect. In to day's world, automatic machines are preferred instead of manual machines. With the rapid inc rease of Internet users in the past decade, the Internet has become a part of life, and the Intern et of Things is a new and emerging network technology. The Internet of Things is a growing network of everyday devices, from business machines to consumer electronics, that share info rmation and complete tasks while you're busy doing other things. Using the Internet of Thing s, Wireless Home Automation System (WHAS) is a system that controls home functions and features from anywhere in the world via the Business Internet using a computer or mobile ph one. Its purpose is to save energy and workers. Home automation systems differ from other s ystems in that they allow users to operate the system from anywhere in the world thanks to an internet connection.In this article, we propose a Home Automation System (HAS) using Intel Galileo, which uses an integrated cloud network and wireless communications to provide use rs with a variety of control lamps, fans and home appliances. Manage and store data in the clo ud. The system will change based on sensor data. The system is designed to be low-cost and flexible, allowing management of many devices.

Keywords: Home Automation System (HAS), Internet of Things (IoT), Cloud Network, Wi-Fi Network, Intel Galileo Controller.

I. Introduction:

A. Overview:

In contrast, wireless systems are a great help for automation systems. In recent years, wit h the development of wireless technologies such as WFi and cloud connections, wireless systems have become ubiquitous.

B. Advantages of Home Automation Systems:

Wireless systems such as WFi have become more common in home networks in recent y ears. In addition, the use of wireless technology in home and building automation system s has many advantages that cannot be achieved using a telephone connection alone.

1) Reduce installation costs: First of all, installation costs are reduced because there is no cabling required. Solutions require cabling and equipment including professional cabling (such as in the wall) is expensive.
2) System scalability and ease of expansion: It is especially good to deploy wireless netw orks due to new or changing requirements and network extension is necessary. Unlike wi red installation, wired installation is quite laborious. This makes wireless installation a m ajor investment.
3) Beauty benefits: In addition to covering a larger area, this device also helps with the n

eed for beautification. Examples include representative families with fully glazed structur es and historic buildings that do not allow power lines for design or greenhouse reasons. 4) Integration of Mobile Devices: Mobile devices such as PDAs and smartphones can be integrated into automation systems at any time via wireless networks, and the connection is easy since the body of the device is not important. (As long as the device is in the net work area).

For all these reasons, wireless technology is an attractive option not only for renovations and renovations, but also for new installations.Most of the existing, wellestablished home automation systems are based on communication. This is not a problem as long as the sy stem is not planned in advance and installed during the construction of the building. How ever, the costs of existing buildings are very high.

II. Related works

[1] Sirsath N. S, Dhole P. S, Mohire N. P, Naik S. C and Ratnaparkhi N.S

This paper presents a home automation system that uses the integration of multiple mobil e devices and the cloud.Networking, wireless communication and cable connection provi de users with remote control of various lights and home appliances. The system uses a co mbination of mobile applications, handheld wireless remote control and PC-based programs to provide a user interface to customers.

[2] Basil Hamed

Main purpose The purpose of this article is to design and implement smart home manage ment and monitoring. There are many systems in smart home systems, in this article Lab VIEW software is used as the main controller. Additionally, the smart home also support s remote control as a control system. The system also connects to the internet to monitor and control the equipment in the room from anywhere in the world using LabVIEW.

[3] Deepali Javale, Mohd. Mohsin, Shreerang Nandanwar

The main purpose of this article is to help disabled/elderly people. It offers a simple conc ept and ensures security to control various home devices using Android phone/tablet. The builder has a phone connected to the home automation application Arduino Mega ADK. Users can interact with Android phones and send control signals to Arduino ADK to cont rol other devices/sensors.This research is designed to design and implement a home auto mation system that can control and activate most home appliances via web control using IoT. The proposed system is quite flexible by connecting its output to home automation s ervers using WiFi technology. This will reduce deployment costs and increase the ability to optimize and optimize the system.

B. Effective systems

The proposed system is a distributed home automation system consisting of servers and s ensors. The server controls and monitors a variety of sensors and can be easily configure

ISSN2321-2152

www.ijmece .com

Vol 12, Issue 1, 2024

d to control additional hardware interface modules (sensors). The Intel Galileo developm ent board has a builtin WiFi card port that needs to be plugged in and can be used as a we b server. The automation process can be accessed from a web browser on a local comput er on the same LAN using the IP server, or from a computer connected to the Internet usi ng the appropriate web server real IP (Internet IP). Away from PC or mobile handset. Wi Fi technology was chosen as the network infrastructure to connect servers and sensors. WiFi was chosen to ensure security (using a secure WiFi connection) and enable physical mobility and scalability.

SYSTEM DESIGN AND IMPLEMENTATION

Proposed Home Automation System:

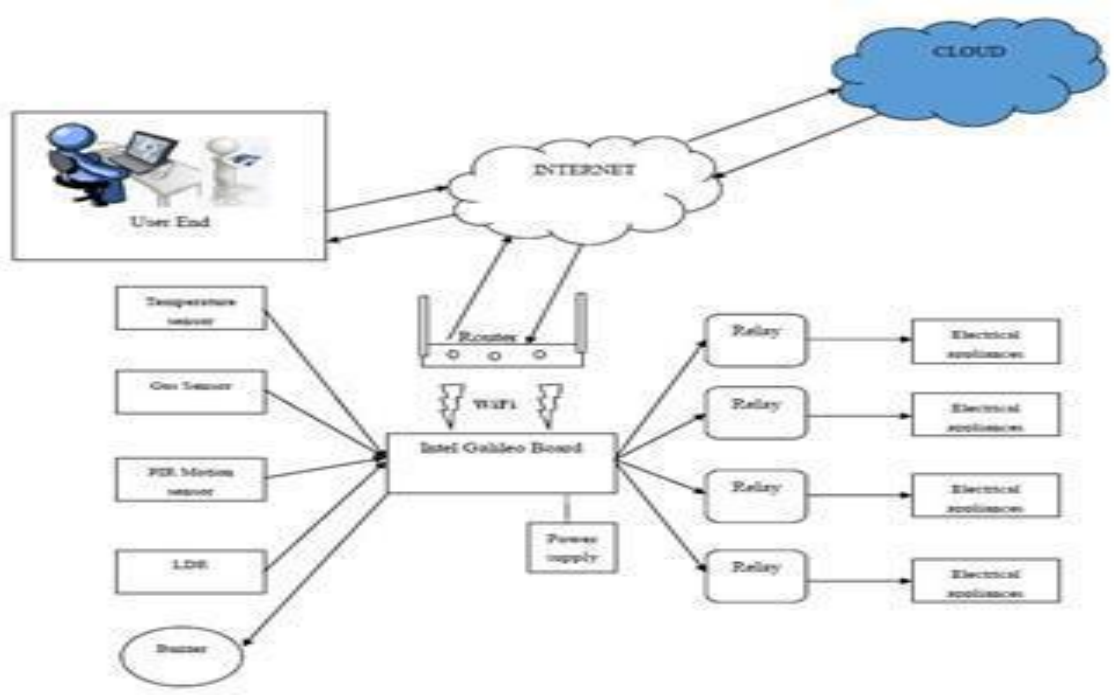


Figure 1: Proposed model of Home automation system

The conceptual model of the home automation system is shown in Figure 1. The model has di fferent indicators such as temperature, gas, movement and LDR. Initially, Intel Galileo conne cts to the network via WiFi. When the connection is established, the sensor's p1, p2, p3 etc. It will start reading the parameters. Required sensor threshold t1, t2, t3 etc. is set to . Sensor dat a is sent to a web server and stored in the cloud. Data can be analyzed anytime and anywhere. If the measured value is higher than the measured value, the corresponding alarm a1, a2, a3 e tc. In the proposed model, temperature, gas leakage and movement in the building are monito red. Temperature and motion measurements are stored in the cloud for analysis. If the temper ature is higher than the threshold, the cooler will automatically turn on and when the temperat ure reaches the control, the cooler will turn off. Likewise, when there is a gas leak in the hous e, the alarm goes off. Automatically turn on/off the desired light by detecting external light. U sers can also monitor electronic devices over the Internet through a web server. If a light or d

ISSN2321-2152
www.ijmece .com
Vol 12, Issue 1, 2024

evice turns on quickly, simply enter the IP address of the web server and turn it off remotely.

B. Home Automation System Features
The recommended home automation system can control the following things in the user's ho me and monitor the following alarms:
temperature and humidity
Ginger
Smoking and temperature measurement
light level

Home automation app can control the following devices:
Light on/off/dim
Fan on/off
Implementation Setup

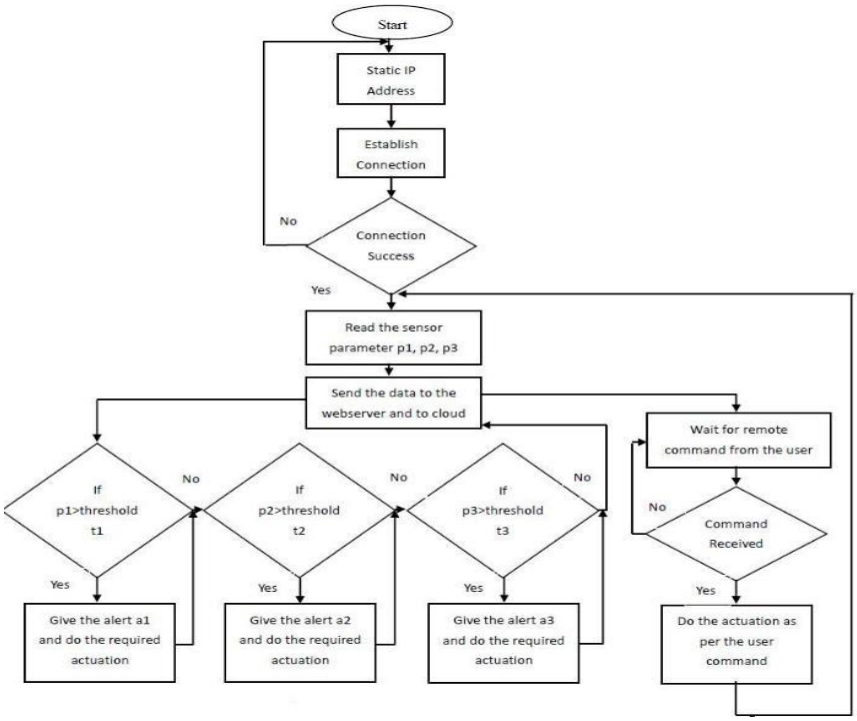


Figure. 2 sequence of activities in WHAS
Figure 2 shows the action sequence of WHAS. When the connection is established, the sensor 's p1, p2, p3 etc. It will start reading the parameters. Required sensor threshold t1, t2, t3 etc. is set to . Sensor data is sent to a web server and stored in the cloud. Data can be analyzed anyti me and anywhere. If the measured value is higher than the measured value, the corresponding alarm a1, a2, a3 etc.

ISSN2321-2152

www.ijmece .com

Vol 12, Issue 1, 2024

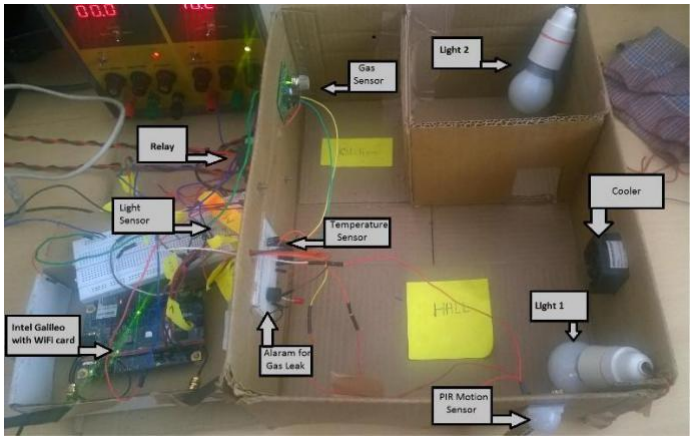


Figure 3: Experimental setup of HAS

Building prototype for a home automation system shown in Figure 3. A sound sensor is installed on the door of the building to detect any movement near the door. Light 1 will aut omatically turn on when the light sensor detects darkness. When the room temperature is high er than the threshold, the cooler/fan will be activated and thus the temperature of the room wi ll decrease. An MQ-
6 generator was installed in the kitchen to detect gas leaks. Relays are used to turn electronic devices such as lights and fans on and off. Place Intel Galileo in a warehouse or garage. Intel Galileo connects to the network via a WiFi card with an attached antenna.

RESULTS

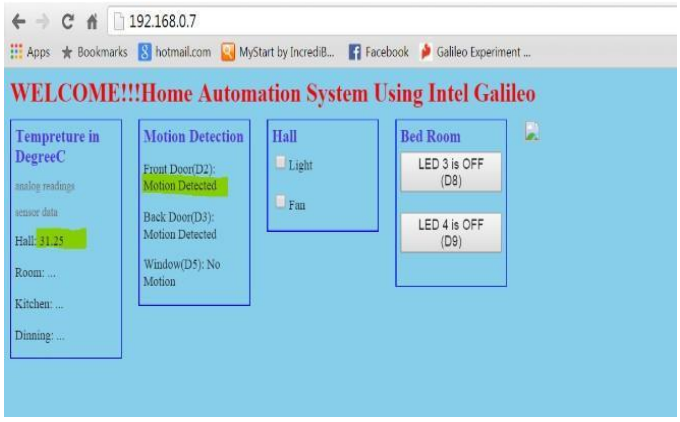


Figure 4: Web server page

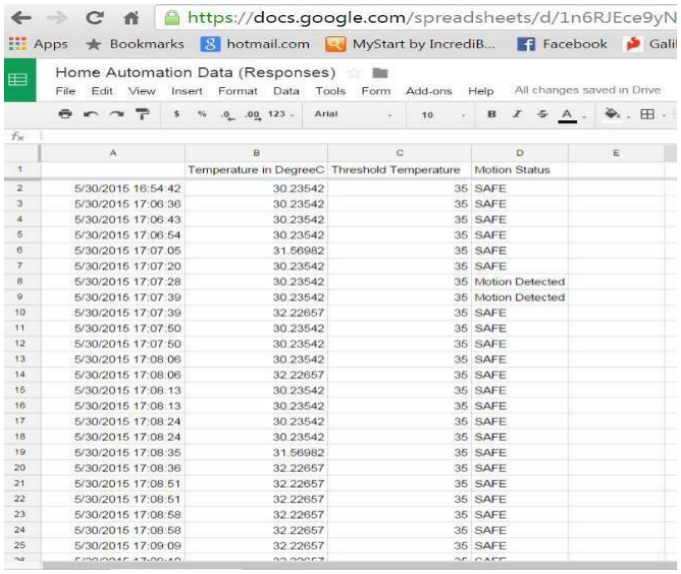
After successfully connecting to the server, sensor data is sent to the web server for monitorin g. Figure 4 shows the web server pages that allow us to monitor and manage the system. This web server page will appear when you enter the IP address into the web browser. The web ser ver provides information about the temperature in different parts of the house and the activity

ISSN2321-2152

www.ijmece .com

Vol 12, Issue 1, 2024

in the house. There are also lights, fans, etc. that we can control through the controls. It also provides the status of various electronic devices.



	A	B	C	D	E
1		Temperature in DegreeC	Threshold Temperature	Motion Status	
2	5/30/2015 16:54:42	30.23542	35	SAFE	
3	5/30/2015 17:06:36	30.23542	35	SAFE	
4	5/30/2015 17:06:43	30.23542	35	SAFE	
5	5/30/2015 17:06:54	30.23542	35	SAFE	
6	5/30/2015 17:07:05	31.56982	35	SAFE	
7	5/30/2015 17:07:20	30.23542	35	SAFE	
8	5/30/2015 17:07:28	30.23542	35	Motion Detected	
9	5/30/2015 17:07:39	30.23542	35	Motion Detected	
10	5/30/2015 17:07:39	32.22657	35	SAFE	
11	5/30/2015 17:07:50	30.23542	35	SAFE	
12	5/30/2015 17:07:50	30.23542	35	SAFE	
13	5/30/2015 17:08:06	30.23542	35	SAFE	
14	5/30/2015 17:08:06	32.22657	35	SAFE	
15	5/30/2015 17:08:13	30.23542	35	SAFE	
16	5/30/2015 17:08:13	30.23542	35	SAFE	
17	5/30/2015 17:08:24	30.23542	35	SAFE	
18	5/30/2015 17:08:24	30.23542	35	SAFE	
19	5/30/2015 17:08:35	31.56982	35	SAFE	
20	5/30/2015 17:08:36	32.22657	35	SAFE	
21	5/30/2015 17:08:51	32.22657	35	SAFE	
22	5/30/2015 17:08:51	32.22657	35	SAFE	
23	5/30/2015 17:08:58	32.22657	35	SAFE	
24	5/30/2015 17:08:58	32.22657	35	SAFE	
25	5/30/2015 17:09:09	32.22657	35	SAFE	

Figure 5: Data base of the sensors data stored in the cloud

All necessary information is stored in the cloud (Gmail). Stored data can be analyzed anytime and anywhere. Figure 5 shows the temperature in Celsius at different times. It also shows the nature of motion captured over time

. It also provides information about the time and number of detections. All this information is stored in the cloud and can be viewed at any time when users log in and out.

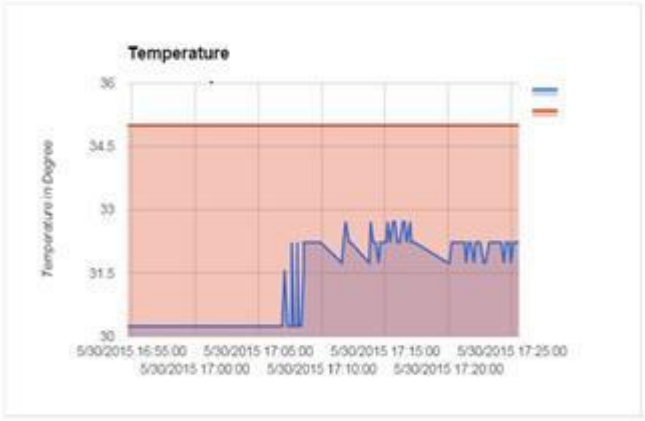


Figure 6: Graph showing the different temperature value along with the threshold

The graph in Figure 6 provides analysis of temperature and temperature over time. We can un derstand the change in temperature by looking at the picture. And when the temperature is lo w/high. We can also find out if the temperature is higher than the threshold and, if so, when.

. Summary and future work:

A. Conclusion:

Home automation using IoT has been tested to prove that it works satisfactorily by connectin g simple devices and that these devices can be effectively controlled remotely via the Internet . The system is designed not only to monitor sensor data such as temperature, gas, light and s ound sensors, but also to perform demand operations such as turning on the light when it gets dark. It also keeps the counter in the cloud (Gmail) in real time. This will help users check the status of various parameters in their home anytime and anywhere.

B. Future Work:

Using this system as a foundation, the system can be expanded to include more options that may include home security, such as images of people moving around the house. and stored in the cloud. This will reduce data storage compared to the use of CCTV cameras, which record and store all events. The system can be extended to energy monitoring or weather stations. W hen adapted, such systems can be used in hospitals for the disabled or in workplaces where it would be impossible or dangerous for people to do this, and they can also be used to protect t he environment.

Acknowledgement:

We are grateful for the efforts and hard work of the experts who contributed to the developme nt of different home automation systems. . We would also like to recognize the efforts of Dr. K Natarajan, HoD, TCE, MSRIT and Dr. B.P. We thank Vijay Kumar, HoD, ISE for their co ntinuous support, suggestions and editing to improve the quality of our article and help in pre paring photocopies.