IJFEAT

INTERNATIONAL JOURNAL FOR ENGINEERING APPLICATION AND TECHNOLOGY

TITLE: Home Automation System : A Review

Mr. A . N. Shire[1] , Mr. Vaibhav Yenpreddiwar [2] , Mr. Gajedra Choudary [3] , Mr. Jay Dubbewar [4]

[1]Professor guide ,Department Of Information and technology,JDIET Yaavatmal, Maharashtra,India,**atul.shire@gmail.com**

[2]BE 2nd year student,Department Of Information and technology,JDIET Yaavatmal, Maharashtra,India,**vaibhavyenpreddiwar@gmail.com**

[3] BE 2nd year student,Department Of Information and technology,JDIET Yaavatmal, Maharashtra, India,**gnc9552048485@gmail.com**

[4]BE 2nd year student,Department Of Information *and technology*,JDIET Yaavatmal, Maharashtra, India,**jaydubbewar9922@gmail.com**

Abstract

In today's world use of Home automation machine is increasing due to its severa advantages,easiness etc. Home automation system is that in which the various appliances within the domestic are remotely controlled.There are distinctive technologies exist which are used for Home Automation.By the usage of Bluetooth or ZigBee we can remotely control all home equipment inside home however both of them having location restriction or within some particular distance we can function that devices remotely however by using using Internet of Things (IoT) we can control our domestic appliances from anywhere round the world.The work deals with discussion about a variety of exceptional domestic automation structures and technologies.In home automation the monitoring and manipulate operations are aid via smart units installed in residential buildings. Different home automation structures and strategies regarded in evaluation with central controller based (Arduino or Raspberry pi), Bluetooth-based, ZigBee based, email based, web based, SMS based, mobile-based ,cloud-based, Dual Tone Multi Frequency- based, and the Internet(Wi-Fi) based..

Keyword: *Sensor system ,Bluetooth ,Home-Automation ,Micro-controller(Rasberry pi or Arduino,ZigBee) ,IOT and User-friendly Interface.*

1.INTRODUCTION

The essential motive of Home automation is to save the electricity.In every day activities lifestyles adequate use of electrical energy is very important.Anyone can remotely manipulate the domestic office appliances automatically. Various applied sciences are reviewed in the course of this paper. Introduction of unique wireless conversation such as GSM, BLUETOOTH WIFI, and ZIGBEE are discussing here. Home automation machine saves manpower,time,currency and even electricity. Secured, reliable, flexible, consumer pleasant and cheaper this are the specification of home automation system.Home automation is a gadget of operating or controlling a technique by using electronic units with reduction in human engagement.In day-by-day lifestyles the use of automation machine for house,hotels,office etc. is continuously increasing. Automation makes now not solely an low-budget however additionally an environment friendly use of the electrical energy and water and reduces a lot of the wastage.Due to IoT humans and matters to be related any-time, anyplace, with anyone, ideally the use of any community and any service. Automation is an vital utility of IoT technologies. It is the monitoring of the electricity consumption and the Controlling the environment in buildings,hospitals, schools, museums and places of work through using extraordinary types of sensors and actuators that manage lights, temperature,and humidity.

2.Home Automation

The Smart homes are known as Home automation, with the use of new technology, to make the housing activities greater easy, accessible, secured and efficient. The important components of home automation structures are as follow:

Important Controller:- It is hardware interface that communicates with user interface with the aid of controlling domestic services.

Mode of communication:- wired connections (example Ethernet) or Wireless (radio waves, infrared, Bluetooth,etc.

Electronic Devices:- A bulb, an AC or a heater, which is compatible with the transmission mode, and connected to the Central control system. User interface: Give orders to manipulate System for example as a monitor, computer, or Phone.

2.1 Features of Home Automation System

Now a days, wireless structures such as Wi-Fi have end up more common in domestic networking. Also in domestic and city(smart) automation systems, the use of wireless network offers us various blessings over wired network.

1) Installation value is reduced : In this machine no cabling is quintessential so set up expenses are extensively reduced. Wired structures require cabling, however the cloth used for wires and the professional laying of cables (e.g. into walls,under ground) is expensive.

2) System is easy to scalable and extent: Due to the use of wi-fi network,It is effortless to extent our community according to changing requirement of the system, alternatively of wired installations, in which cabling extension is tedious.

3) Home automation is very flexible: All the operations are mixed at a time like switching on the bulb(lights) and they even manipulate the music system. All these operations can be carried out on a single go. It is notably efficient. It is becoming less difficult to minimize the electrical energy bill by way of the use of the pro-active based home-automated appliances.

4) It is less time consuming. Home automation makes the work less difficult in a way that the work will be finished with the less time.

5) It is also known as Assistive Domestics: It focuses more often than not on making it possible for the elderly and disabled to stay at home, protected and comfortable.

2.2 Challenges of Home Automation System

Home automation systems face some important challenges, these are high cost of ownership, inflexibility,difficulty in attaining protection and bad manageability. The fundamental intention of this research is to plan and put in force a domestic automation machine the use of IoT that is capable to controlling and automating most of the house appliances via an convenient possible net interface. By the use of Wi-Fi technological know-how to interconnect its distributed sensors to tdomestic automation server the proposed machine has a top notch flexibility. This will minimize the deployment price and will

expand the capability of upgrading, and gadget reconfiguration.

3. LITERATURE REVIEW

In this section, we are discussing a number Home Automation System with their technology with features, gain and limitations they have.

3.1 Bluetooth Remote Home Automation System by Using Android Application

This paper affords the total format of Home Automation System (HAS) with wireless faraway control and low cost . This device is designed to assist and give support in order to fulfill the needs of aged and handicapped peoples in house The clever domestic idea in the device will increase the fashionable of living. The predominant manipulate gadget use wireless Bluetooth technological know-how to supply far off get admission to from PC/laptop or smart phone. The diagram stays the existing electrical switches and provides extra security control on the electrical switches with low voltage activating method. The popularity of switches is synchronized in all the control device whereas each and every consumer interface suggests the real time present repute of switches. The device supposed to manage electrical appliances and devices in residence with relatively low price design, effortless interface and simplicity of installation.

3.2 Bluetooth Based Home Automation and Security System by Using ARM9

The major cause of this paper is to put forwards the sketch of home automation and safety device the use of ARM7 LPC2148 board. The fundamental plan issue is a standalone embedded system board ARM7 LPC2148 at house. Home devices are related to the ARM7and connection is commenced between the ARM7 and ARM9 with Bluetooth device. Appliances in the residence are connected to the IN/OUT ports of the embedded gadget board and their fame is surpassed to the ARM7. For licensed character to get admission to home appliances we have to strengthen an authentication to the device.The machine with low price and scalable to less exchange to the core is much important.

3.3 GSM Based Home Automation System by Using App-Inventor for Android Mobile Phone

This paper explains GSM based totally Device Control System cell application developed the usage of the App Inventor for Android phones. As a document from the International Data Corporation (IDC) Worldwide Quarterly Mobile Phone Tracker, in world market share Android has maintained its management role on easiest .The Global System for Mobile Communication (GSM) community is current almost everywhere.The preface of the Global System for Mobile Communication (GSM) and on the whole the use of cellular telephones acquired the modernity of distance communication at faraway location. Paper makes use of this ability for faraway manipulate of gadget and appliances; think about this example, a character on a force inside his auto all of a unexpected remembering that he left the Refrigerator, ON genuinely it should be OFF. The typical circumstance is to power lower back and swap OFF the Refrigerator. But with the Android mobile telephone in the hand outfitted with GHAS (GSM Home Automation System) Application, he is capable to OFF his Refrigerator from his Car.This indicates that one can manage any equipment at any point, somewhere and at any time without worrying geographical locations.

3.4 Wireless Home Automation System Using Zigbee

This paper offers the universal details of layout of a wireless

home automation gadget (WHAS) which has been built and implemented. The high science facilities on cognizance of voice commands and makes use of low-power RF ZigBee wireless conversation modules which are particularly of low cost. The home automation system is supposed to manage all lights and electrical appliances in a residence or office the usage of voice commands. The system has been examined and verified. The verification exams included voice identification response test, indoor ZigBee verbal exchange test. The assessments involved a mix of eleven male and girl topics with a variety of Indian languages. 7 specific voice commands had been sent by using every person. Thus the test involved sending a complete of 77 instructions and 80.05% of these commands have been identified correctly.

3.5 Micro controller Based Home Security System with GSM Technology

The main motive of this paper is to format and implement a clever domestic safety machine primarily based on micro-controller alongside with GSM for consumer friendly application. The system is notable enough to reveal the invulnerable environment. In addition, the user is knowledgeable about the safety failure thru GSM community that presents a one of a kind chance each time the user are away from house. However, Android application is the most attractive function in order to control the machine through a Bluetooth device. Furthermore, the device offers the reliable operation within real looking value and gets rid of the system complexity. In this activity, traditional burglar alarm mode, LED lights and LCD are the likely features used to test reliability. The complete device is carried out on a sensible home protection device which requires substantial try to installation it. Therefore the system is also applicable for industrial functions due to versatile approaches of protection and controlling.

COMPARATIVE ANALYSIS

By overlooking above surveyed papers, all the domestic manipulate automation gadget makes use of wireless technology. Smart cellphone plays a very essential position in all these systems. GSM science is used in systems. Micro Controller, ARM7(ARM7 LPC2148 board, PIC16F877 (40 pin IC),ARM9,etc. acts as a controller in above domestic automation system. For driving the relays ULN2003 is used in nearly all system. In programming App inventor, embedded C, Keil Compiler, VB.NET etc. this all software's are used and Bluetooth modules LM400 having distance 100 meters, frequencies 2400Hz, velocity 3 Mbps.

CONCLUSION

We have studied extraordinary methods for domestic automation system. Various creator gives a number of strategies with flowchart, block graph and their rationalization with acceptable diagram of profitable execution with ample strengths and imperfection. All systems are planned in this surveyed papers are designed and examined practically. Main cause of this approach of implementation is that all structures are in unsure condition, henceforth it is beneficial for old aged and handicapped persons and keep electricity, time and money etc.

REFERENCES

[1] Hafedha Abid and Hafedha Lamine , "Remote controlling domestic equipments using an Android application based totally on Raspberry pi card", IEEE transaction fifteenth international conference on Sciences and Techniques of Automation control using computer engineering - STA'2014, Hammamet, Tunisia December.

[2] Jain Sarthak,Vaibhav Anant and Goyal Lovely,"Raspberry Pi based Interactive Home Automation System thru E-mail.",IEEE transaction,2014 International Conference on Reliability, Optimization and Information Technology ICROI.

[3] Ahmed ElShafee, Karim Alaa Hamed," Design and Implementation of a WiFi Based Home Automation System",

International Journal of Computer, Electrical, Automation, Control and Information Engineering Vol: 6.

[4] Shih-Pang Tseng, Bo-Rong Li, Jun-Long Pan ,"An Application of IOT with Motion Sensing on Smart House.