SMART HOME TECHNOLOGY

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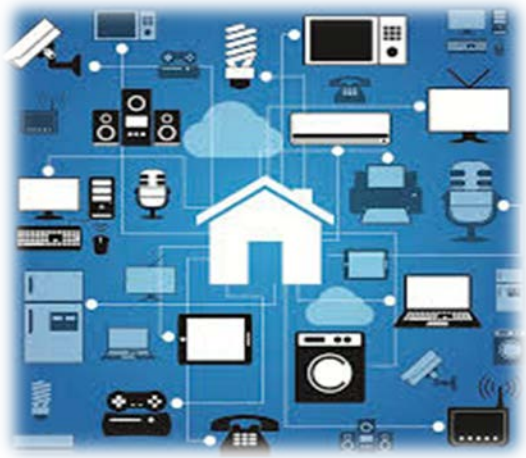
1 INTRODUCTION

Generally , when the electrical equipment is plugged in but it is not in use , there still has the flow of electricity .That means we will lose the electrical energy about five to ten percent of regular usage and moreover that may also be cause of many accident such as the conflagration from electrical short circuit. We can relate the circumstance to the advancement of smart home technology . A smart home is a space or a room which is provided with the ability to get accustomed by itself to certain situations to make the occupants feel comfortable . Smart home could be simple remote control of electrical appliances or more complex functionalities such as monitoring of the house interiors using speech recognition of human gesture . In this paper , we will emphasis on the design and implementation of a smart home and how it differs from the existing home automation systems. The smart home control system design is based on a wireless sensor network system which allows people to control their home devices by voice command at home.



2 COMPONENTS OF SMART HOME TECHNOLOGY

Smart home is the term commonly used to define a residence that uses a Home controller to integrate the residence various home automation system . The components of smart home system can be broken to several categories :-

2.1 Controller Devices:- A controller device is one whose operation is regulated by an external mechanism .It is capable of controlling which may include audio / video and lighting , devices , HVAC etc..

2.2 Sensing Device :- Sensing device or sensor gather vital information about a number of condition and send it to the controller to make minor adjustments for more quickly and accurately than any mechanical system .

2.3 Interface Devices :- The controller and controlled devices used to communicate logically , such a link is provided by the input / output interface devices in a automation system .

2.4 Controller :- Controller is an element of the system itself or external to the system which controls the process .In other words any intelligent device is capable of sending commands that are understood by the controlled devices can be termed as controller.

2.5 User Interface :- User Interface or UI is a the junction between the user and a programming computer .It is a set of command or codes through which communication takes place between a user and the controller .

2.6 System Network :- The system network of a smart home system includes all of

the controllers sensor , wires and cables , RF and IK links , connector , junction box , dimmers , ballasts and powe suppliers that connect various system components .

2.7 Programming Computer :- A programming computer or programmable logic controller is a electronic devices designed to be used in a home .

3 TECHNOLOGIES BEHIND SMART HOME

All the appliances and devices are receiver and the means of controlling the systems, such are remote controls or keypads , are transmitters . If you want to turn off a lamp in another room , the transmitter will issue a message in numerical code that inches that includes the following :

3.1 An alert to the system that its issuing a command .

3.2 An identifying unit number for the device that should receive the command and a code that contains the actual command such as “turn off”.

3.3 All of this is designed to happen is less than a second . The two most prominent radio networks in home automation and Zig Bee and Z- Wave .

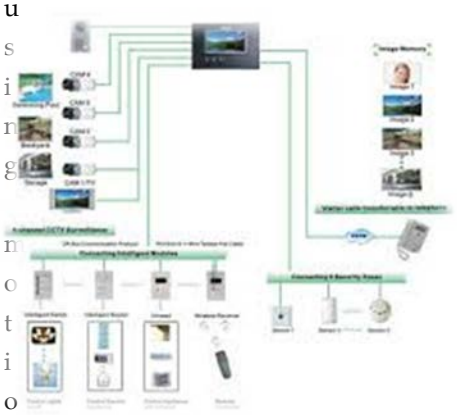
3.4 Z- Wave :- Z- wave uses a source Routing Algorithm to determine the fastest routs for message . Each Z-wave device is plugged into the system , the network controller recognizes the code , determines its location and adds it to the network .

3.5 Zig Bee :- Zig Bees name illustrates the mesh networking concept because messages from the transmitter zig zag like bees , looking for the best path to the receiver . While Z- Waves uses a proprietary technology for operating its system . Zig Bee’s platform is based on the standard set by the Institute for Electrical and Electronics Engineers (IEEE) for wireless personal networks .

4 Application

4.1 In kitchen : The smart home kitchen appliances include refridgerators , microwaves , coffee makers and dish washers. In case of refridgerators there is internet enabled and allows for users to communicate with it via internet . So it is able to download recipies and then display them on its LCD screen . Microwaves are also smart , they can communicate with refridgerators and suggest recipies based on the food items available .The microwave can even be set to start at certain times while users are away from home .

4.2 In living room : Smart devices like TV and stereos will utilize the smart home technology to improve the entertainment experiences . Furthermore , lighting control systems can be used to control household electric lights by u



n detectors to automatically turn off the lights in a room after people have left and turn on the lights if someone enters a room .

4.3 In bedroom : The room has smart temperature control and lighting profile by which one can choose a unique night

time temperature and can set the scene in bedroom with single touch. The bed is also equipped with sensor to monitor the movement of a person in bed for detecting health condition regarding sleeping in typical routine of a person.

5 Advantages

5.1 Wheather a user is at work or at vacation , a smart home system will send alerts as to what is going on and security systems can be specially can be specially designed for emergency situations .

5.2 Energy efficiency is one of the major advantages of the smart home systems.

5.3 Electricity bills can be brought down to a much lower level , switching off the lights when a person may leave a room or adjusting the temperature of based on the preference set by the person .

5.4 The smart home technology is of great benefit to eldery or disabled person living alone .

5.5 Systems can be programed to notify the resident to take medications on time , alert the hospital in case of an accident in the house in order to garuntee health and safety of the resident.

5.6 Smart home have the ability to make home life more convenient .

6 Conclusion

The paper is based on the meaning of smart home and the details of smart home elements. As the development of technology grows, many research projects have also been developed.Now smart home is more than just a home controlled by the central evaluation unit like computer.With smart home, the way people live will obviously become more efficient and comfortable. Smart home technology is a good choice for those who care about security and comfort but saving energy as well.

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