AN INTEGRATED CLOUD BASED SMART HOME MANAGEMENT SYSTEM WITH RFID READER

S.Sandhya Rani[1] , K.Sunitha[2]
[1.] Associate Professor, Jayamukhi Institute of Technogical Sciences , Narsampet, India
[2.]Department of ECE, Jayamukhi Institute of Technological Sciences, Narsampet, India

ABSTRACT: This project presents a smart street management system in integrating community services, thereby reducing the workload of community management staff, providing electronic information services, and deepening the community's integration with the surrounding environment which will also save the energy. The community was connected with full of sensors that will play crucial role in Smart system. The community sensor information and status of persons available on the roads, Devices that are to be operated can be connected to PC using ZIGBEE through the other end. In the existing design, Home automation is a method of controlling home appliances automatically for the convenience of users. Controlling of electrical devices in the home that can be programmed using a main controller in association with sensors that can reduce the Energy consumption. However it is low-cost, flexible, and robust system to continuously monitor and control based on consumer requirements.

1. INTRODUCTION

The design and development of the Smart home technologies have developed rapidly from home networks and in to various home automation systems. Particularly, these technologies are used extensively in home energy management, although their applications are mainly limited to individual households [1]–[3]. Smart home technologies have begun to integrate various smart devices, ranging from conventional sensors and remote controllers to smart home appliances and robot systems. Consequently, many innovative applications have been developed. Recently, smart home technologies have been integrated with various services to provide value-added services, operations, and management like sending the information to Nodal center through ZIGBEE. Energy management system (EMS)-related devices are installed outside of the residences (i.e., spaces accessible to the public); for example, RFID readers are installed at the entrances and various places to recognize the persons. In a condominium, the residential community is responsible for maintaining the environment, security services, should have to provide uninterrupted power supply and Water management services. The integrative function of community systems was an essential feature of this study. Moreover, to achieve multiple in-home displays, standard interface devices can be employed to separate the logic and user interfaces (UIs).

Introduces the common existed problems in community with nobody, analyzes several traditional solutions and their deficiencies, and then puts forward the energy-saving system for community based on RFID card. The project is based on various sensors, RFID card System and corresponding output systems which is mature and has been widely used to control and display the data on LCD, as well as the PC software for database management and other operations. This system is characterized by simple-use and low-cost renovation.

2 Literature survey:

Most of communities there is a ubiquitous phenomenon that the community roads is brightly lit during the day although the daylight is good, meanwhile there is another similar situation that people leave the place then also the lights still on. These lamps lit uselessly until the duty to turn off when the building should be closed according to the regulations, which consequently leads to a great waste of energy.

Community management is never a new topic; there are many similar researches at home and in abroad. According to the information from the current perspective. This "Lit waste" problem solving, daytime lighting problem solving, is relatively simple, the current domestic and international research bottleneck is how to detect accurately whether there is someone in the classroom with the lowest cost.

In first paper literature designs a light control system, which is mainly detects by the intensity of the outdoor light, without the consideration of the human indoor.

In the second paper literature introduces the system which is judges whether there are persons available or not to control the switch on or off.

According to the situation represented, the **"daytime light"** issue has many simple and effective solutions, but there have remained two problem, one is that how to detect whether there are someone on the roads of community, another is the human-position preparing detection.

In this retrieval of literatures, human detection methods mainly RFID based. A large community should be arranged more than a dozen or even dozens of sensors to cover, which causes high cost, complex wire Placement, low detection accuracy and other issues.

Integrated data consulted, the current lighting control system has the problems including complicate switching operation between automatic control and the manual control, and to some extent, the plan itself cannot solve the problem of "lighting waste" well.

With the development of technology, all variety of campus basically are equipped with community card system; the community card system is greatly convenient.

Based on this platform, it can be easily extended for other functions, such as security, monitoring, energy saving etc. This combines with community card system and network technology, and applies in lighting control to design an intelligent energy-saving system.

Community lighting control power supply is controlled by whether there is a card or not, and realizes the function that when there are people as well as the card available, the light will be on if light intensity calculated by LDR is low, the light will be off. Through this kind of means, the present "lighting waste" problem can be effectively solved. In addition, it can reduce energy waste, improve all the electricity saving awareness, and reduce the energy consumption. We also defining the water management system through the water level sensors. If the level of water tank will be empty then Motors will be turn on. If Tank full then motor will be in the off state.

3 SYSTEM FRAME WORK:

System consists of information center, base station along with sub control nodes. The Information Center is responsible for manage the information about cards, Sensed parameter values. Information center and sub base station information interaction methods as shown in figure 1.

Wireless sensor networks (WSNs) have grown to be more and more important because of remarkable ability to watch and manage situational information for various intelligent services. It was predicted that the service and private care wireless mechatronic systems will end up increasingly more ubiquitous at home soon and will also be very helpful in assistive in control the devices automatically. Wireless mechatronic systems contain numerous spatially distributed sensors with limited data collection and processing capability to monitor the ecological situation.

A sensor network is composed of a large number of sensor nodes, which are densely deployed either inside the phenomenon or very close to it. The position of sensor nodes need not be engineered or pre-determined. This allows random deployment in inaccessible terrains or disaster relief operations. On the other hand, this also means that sensor network protocols and algorithms must possess self-organizing capabilities. Another unique feature of sensor networks is the cooperative effort of sensor nodes. Sensor nodes are fitted with an on-board processor. Instead of sending the raw data to the nodes responsible for the fusion, sensor nodes use their processing abilities to locally carry out simple computations and transmit only the required and partially processed data.

The above described features ensure a wide range of applications for sensor networks. Some of the application areas are health, military, and security. In essence, sensor networks will provide the end user with intelligence and a better understanding of the environment. We envision that, in future, wireless sensor networks will be an integral part of our lives, more so than the present-day personal computers.

Realization of these and other sensor network applications require wireless ad hoc networking techniques. Although many protocols and algorithms have been proposed for traditional wireless ad hoc networks, they are not well suited for the unique features and application requirements of sensor networks. To illustrate this point, the differences between sensor networks and ad hoc networks are outlined.

4 CURRENT WORK

Within this section, we briefly discuss the present works about smart home systems in line with the wireless communication technology. This project suggested an Energy Management System (EMS) while using Zigbee technology to lessen the Standy power. The recommended system includes an automatic standby power cutoff outlet, a Zigbee hub along with a server. The central hub collects information from the ability channels and controls these power channels through the Zigbee module. The central hub transmits the present state information to some server along with user can monitor or control the current energy usage while using EMS interface. This facility may create some uneasiness for those customers. Gill et al. forecasted a Zigbee -based home automation system. The main area of the development may be the interoperability of different systems in your home atmosphere. Less importance is provided to the house automation in this project, wireless sensors have the effect of calculating Current illuminations and also the lighting is controlled by applying the type of user's actions and profiles. Song et al. recommended a house monitoring system using hybrid sensor systems.

The fundamental idea of this project is a roaming sensor that moves the right location and participates within the network once the network is disconnected. A smart home control system based on wireless sensor/actuator network having a link quality indicator based routing protocol to boost network reliability. The above mentioned pointed out home monitoring and controlling systems have restrictions regarding true home automation for example:

i) Energy consumption control mechanism is restricted to simply certain products like light illuminations, whereas several household appliances could be controlled.

ii) Energy control relies on fixed threshold power consumption, which might not be applicable to different consumers

iii) Manipulating the home appliances through network management functions, used inhabitant requirements can vary based on their behavior although not with network qualities. Not really a single system has had into consideration of variable valuation on electricity that is consumed throughout night and day. Within this project, a minimal-cost, flexible, and real-time wise power management system, which could easily integrate and operate with the house monitoring systems.

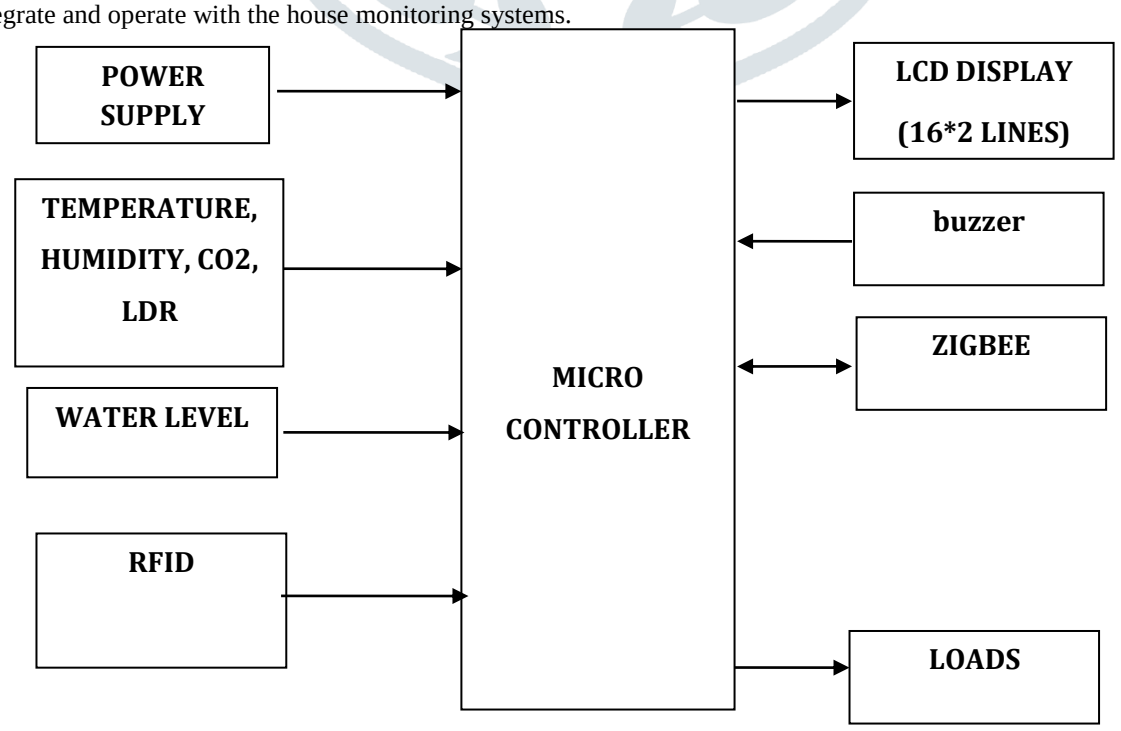

Fig1 Block diagram of the Project

5. WORKING MODEL

In this paper 2X16 characters LCD, ARM LPC2148 Processor, MAX232, sensors, RFID, ZIGBEE and output devices are the fundamental components required for working of this project.

The proposed method using this system principally monitors sensors and information about tags. As our project is designed to reduce the power consumption by reducing unwanted use and providing common facilities like water service and other security issues. Here in my project when the person will be detected on the road through RFID then if the light intensity will be less then switch on the lights else will be in the off state. When the gas levels exceeded then switch on extinguishers. If the water level empty then switch on the motor. My project will also work sensors like temperature and humidity. If the values of these sensors exceeds with the threshold level then corresponding devices will switch on. However it is low-cost, flexible, and robust system to continuously monitor and control based on consumer requirements, Zigbee technology for networking and communication, because it has low-power characteristics, which enable it to be widely used in home and building environments.

The required operating voltage for Microcontroller LPC2148 is 5V. Hence the 5V D.C. power supply is needed. This regulated 5V is generated by stepping down the voltage from 230V to 12V using step down transformer. Now the step downed AC voltage is being rectified by the Bridge Rectifier using 1N4007 diodes. The rectified AC voltage is now filtered using a 'Capacitor' filter. Now the rectified, filtered DC voltage is fed to the Voltage Regulator. This voltage regulator provides/allows us to have a Regulated constant Voltage which is of +5V. The rectified; filtered and regulated voltage is again filtered for ripples using an electrolytic capacitor 100μF.

6. APPLICATIONS

- This project will be used for gated communities which are to be operate smart and can reduce the energy requirement
- Used in Industrial Applications can control the devices based on sensor values
- Sensors can be deployed anywhere can be produce exact information.

7. ADVANTAGES

- Reduce Human Interaction
- Dynamic control of industry and daily life
- Improve the resource utilization ratio
- Integrating human society and physical systems.
- Flexible configuration.

8. CONCLUSION

This study first proposed a hierarchical, smart home-service architecture, which employed standard interface devices at the home end to separate the logic and user interfaces, and achieving multiple in-home displays. Moreover, this study applied a community broker role to integrate smart home services such as managing environment deployment operations, reducing the manual labor required of community management personnel, providing electronic information services, supporting diverse services, and extending the community's integration with the surrounding environment. Therefore, a complete and integrated smart home system can be achieved. In addition, integrating cloud-based services with community services provided location-based services.

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