
Research on Intelligent Home System about the Construction of New Intelligent Community

Ru Zhang

Mechanical and Electrical Department, Jingdezhen Ceramic University, Jingdezhen
333000, China

Woweirenren@sina.com

Abstract

The main purpose of this paper is to design a smart home system based on the intelligent community. It can realize the system security and intelligence functions in three aspects of home monitoring, home alarm, home control. System adopts single-chip design, through the smoke sensor, infrared sensor and photosensitive resistance, temperature and humidity sensors and other environmental perception module. Combination of the most advanced wireless communication model is constructed by the home wireless network, video, audio, alarm and appliance control integration in a wireless management platform, which will be home furnishing security and home furnishing intelligence with the combination of the home Furnishing wireless music, fire prevention, anti-theft, toxic fumes and rainy windows automatically open, smoke concentration when the windows open automatically, infrared control windows and a regular switch closed and a series of practical function.

Keywords

Intelligent home, Single chip microcomputer, Wireless network, Home security.

1. Introduction

City is the product of the development of human civilization, the community is part of the city, the family is the basic unit of the community. This logic is applied to come over, smart city is the result of high technology and human interaction, the wisdom of the community is a smart city components, smart home is the basic unit of the wisdom of the community and wisdom of the city. Therefore, the design ideas of the wisdom of the community is: with the intelligent Home Furnishing as the basic unit, to achieve a comprehensive management and community service based on Internet. The wisdom of the community has the wisdom of life and intelligence services, has become an important part of innovative smart city [1, 2].

This paper hopes to comprehensive utilization of networking, cloud computing, mobile Internet and other new generation of information technology, for the residents to provide a safe, comfortable and convenient living environment, thus forming a new management model of information technology, intelligent community management and service based on the community. Design content mainly includes two aspects of content [3].

(1) Intellectual property management system, mainly refers to the intelligent community integration, such as parking lot management, closed-circuit monitoring management, access control systems, intelligent consumption, elevator management, security patrol, remote meter, intelligent management of automatic spraying and other related community property, realize the integration of the independent community application subsystem, centralized operation management.

(2) Intellectual home furnishing, is a residential platform, including building, network communications, information appliances, automation equipment, collection system, structure, service and management as one of the efficient, comfortable, safe, convenient, environmentally friendly living environment.

2. Design of home system in Intelligent Community

This system puts forward a kind of intelligence community integrated management system based on cloud computing (see Fig. 1), the cloud computing platform for the hub, will Home Furnishing intelligent management system, community service system, community system organically through the community portal to the community residents to provide comprehensive, convenient, open service project [4]. The intelligent Home Furnishing designed in this paper mainly realizes the intelligent lighting control system, intelligent control system, intelligent security monitoring system, intelligent home appliances control system, a key scene control, remote control, video intercom control, background music system control, intelligent video control system; each subsystem management through a unified platform, will intelligent control, security monitoring, energy saving and emission reduction into the perfect home.

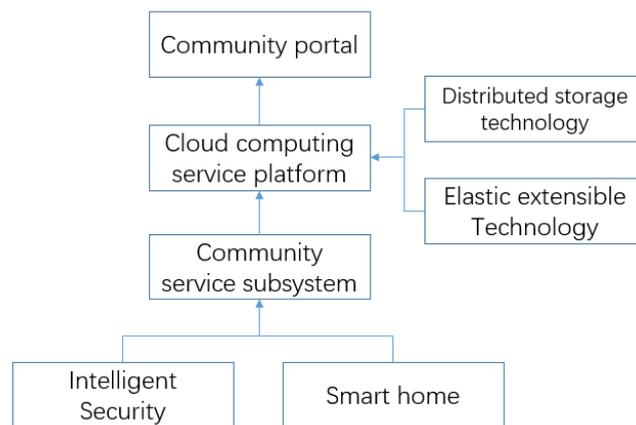


Fig. 1 Overall system architecture

2.1 Intelligent lighting control

The scheme adopts the high intelligent wireless remote control switch socket to control the lighting. All the lamps and lanterns in the house. To retain the original manual switch mode, no need to transform, fully meet the family of different ages, different habits of family members and visitors operating requirements[5]. Intelligent switch is compatible with standard single line of fire power supply, with the general weak decoration, and immediately upgrade. Support reception, theater and other scenes and dimming functions, but also can realize the intelligent timing, mobile phone remote control functions, see Fig. 2.



Fig. 2 Indoor intelligent lighting control system

2.2 Intelligent environmental home appliances monitoring

Smart home can be anywhere at any time to adjust the temperature and humidity of each region in the home temperature and humidity .Information detection, detection time of air quality and carbon dioxide concentration, whether you are at home or outside the home, and can adjust the temperature by

computer or mobile phone switch air conditioning, let your home keep a good condition. Using wireless infrared partner as the host control infrared equipment, it is compatible with all brands of air conditioning, and the realization of the intelligent network control of air conditioning, see Fig. 3.



Fig. 3 Intelligent environment control mode

2.3 Intelligent remote monitoring / scenario control

The system is highly integrated security technology, video technology, network technology and computer technology, a variety of ways to support local and remote control, support multi function remote control, scene control panel, Android/iphone mobile control, intelligent gateway control, touch remote control function etc.. To meet the user image screen view, historical view, video capture photos and PTZ control etc, see Fig. 4.



Fig. 4 Intelligent scene control mode

3. Conclusion

All around the home system and the host computer are used in wireless communications, without wiring, installation and debugging can be achieved within a few hours, not only for the new residential decoration, but also for the residential decoration.

3.1 Single chip microcomputer based control

Home Furnishing intelligent system to control the host for the management of the core, within the family is a closed network, foreign direct connect to the Internet. The system data transmitted over the network using the encryption algorithm to ensure the security of the data, to ensure that the user does not leak, the remote monitoring and control at the same time, to create intelligent Home Furnishing and lay a solid foundation of wisdom based on the community.

3.2 Comprehensive index(see Table1)

Table 1 Comprehensive performance design list

Numble	Scheme 1	Scheme 2
1	Video surveillance	1~8 network camera
2	Alarm zone	64 wireless zones
3	Capture images	4 pieces, interval two seconds
4	Lighting control	120 road lighting control
5	Curtain control	120 way curtain control
6	Electrical control	120 electrical control,mode
7	Scene control	12 sets of scene management
8	Timing control	7 days a week
9	Background music	1 way stereo output

3.3 Mobile platform

Smart home's first task is to protect the home security, network cameras on the residential entrance, balcony or living room and other public areas to implement monitoring and management. The use of mobile phones, tablet computers can achieve remote monitoring. Intelligent alarm system is equipped with Home Furnishing sensor, once the illegal intrusion alarm immediately, turn on the lights, sirens sounded and snapping pictures, send SMS and MMS; the lights, curtains, electric appliances to implement automatic control and on-site manual control and remote control network, see Fig. 5.

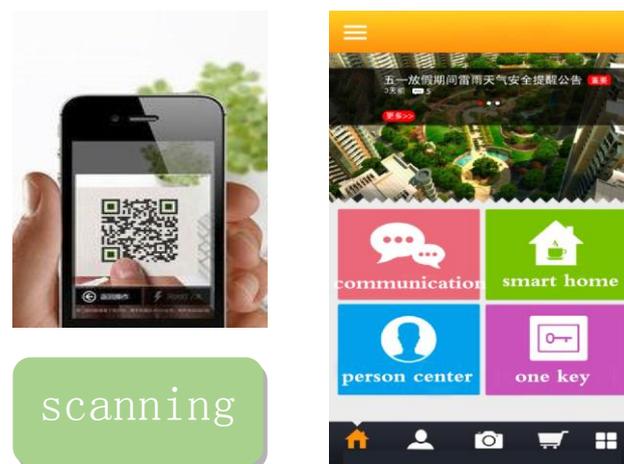


Fig. 5 App interface

Acknowledgements

This work was financially supported by 2012 Jingdezhen City Technology Fund, and 2012 JiangXi Youth Science Fund Project.

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