Electronic Information Technology in the Internet of Things in Smart Cities

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Abstract. Since entering the new century, China’s economic growth has shown a trend of rapid development, and the quality of life of residents is gradually improving. Traditional community services and management can no longer meet people's needs to gradually improve the quality of life. At the same time, the popularization of the Internet and the application of Internet of Things technology in communities gave birth to the concept of smart communities. The emergence of smart communities almost meets and meets the new needs of community service and management. This document designs information and control platform for smart communities based on electronic information technology applications. Designing an intelligent community information and control platform is also the focus of research and analysis on this issue. There are many studies on smart cities, but there are still some shortcomings. The design of the information control platform includes software and hardware, the main part of which is software. Software applications are mainly provided by Android applications and community management backends, which perform some functions, such as community announcements, resident versions and useful maintenance. The realization of this material is based on LED lights, which are controlled by the Bluetooth connection of the Android system, including color and brightness adjustment. The method in this article improves the application efficiency of electronic information technology in the Internet of Things in smart cities by 23%.

Keywords: Electronic Information Technology, Smart City, Internet of Things, Android System

1. Introduction

1.1. Background and Significance
Since the beginning of the 21st century, new technologies have been developed, integrated and innovated. The Internet of Things technology has developed rapidly due to its unique advantages and is widely used in various fields of production and life. With the rise of the mobile Internet, the integration and development of new technologies, and the birth of computers and the Internet, the Internet of Things has set off a wave of technological innovation worldwide. Therefore, the application of the Internet of Things is called the third time in the history of development. ..
development of the information technology sub-industry revolution [1] shows the prominent position of the Internet of Things. Cities are the products of civilization and the progress of human society, and communities are an important part of urban development and construction. Therefore, as the lifeline of urban residents, the level of intelligence determines the management and style of the city, and reflects the soft power of the city. In the process of urban development, the application of new technologies such as the Internet of Things is integrated into the construction of communities, and the concept of smart communities was born [2]. Smart community is a new concept of community life and management. This is a new model of social management innovation following the traditional community management innovation and the integration of new technologies under the new environment [3].

The intelligent information and community control platform is a system based on Internet of Things technology applications and Internet technology applications. It integrates intelligence, efficiency and network information, and provides comprehensive and convenient services for community service management and residents' lives. Information system [4-5]. Through the intelligent community information management platform, community management organizations can relatively easily obtain and analyze community information and residents' feedback, and make relevant decisions about statistics, information analysis and communication. Relying on the community information management platform can not only innovate management methods, but also improve the efficiency of community work and provide the community with more complete and accurate public services [6].

1.2. Related Work
Because of the importance of smart cities to our lives, more and more scholars and research teams have invested in the research of smart cities, and have made very little progress [7]. Veronica has conducted in-depth research on the smart city system from big data, but because of the rapid development of household registration, this research is not suitable today [8]. Therefore, this article proposes the role of electronic information and the Internet of Things in the construction and development of smart cities [9].

1.3. Main Content
In order to solve the system problem of smart city development. This article first summarizes the previous research on smart cities through literature research methods and other methods, and then conducts a detailed analysis of the development of smart cities through relevant analysis methods. Through the method in this article, the efficiency of the application of electronic information technology in the Internet of Things in smart cities has increased by 23%.

2. Application Methods of Electronic Information Technology in The Internet of Things in Smart Cities

2.1. Research Methods of Electronic Information Technology in Smart City Iot

2.1.1. Literature research method. By consulting a large number of books and literature on big data technology, we can deeply understand the social attributes and value of big data, understand the methods of smart cities, and use literature analysis to sort out the influence of the relationship between the Internet of Things and smart cities on social governance, and seek innovation from them Point, put forward the content to be studied and preliminary research ideas.

2.1.2. System analysis method. Smart cities and the Internet of Things influence each other and restrict each other. Smart cities bring effective ways to social governance, and the Internet of Things itself needs governance. Consider it as an organic whole, and use system analysis to study the relationship between the main conference city and the Internet of Things.
2.1.3. Research method combining qualitative analysis and quantitative analysis. Through the qualitative analysis of the Internet of Things to understand the connotation, characteristics, and essence of smart cities, combined with the quantitative analysis of smart cities to study the interaction between the Internet of Things and smart cities.

2.1.4. Big data research method. By collecting, integrating and comparing data reflecting the Internet of Things, we have studied the status quo of the application of Internet of Things technology in Chinese social governance and the impact of Internet of Things technology on smart cities.

2.2. Correlation Analysis Method

There are some connections between many phenomena in nature. The relationship between the above two or more random variables is determined based on mathematical statistics, and is called approximate relationship or correlation. The analysis and determination of this relationship is called correlation analysis [10].

The main task of correlation analysis is to investigate the closeness of the relationship between variables, and draw conclusions about whether the population is relevant based on the data sample. When information about another variable can be obtained from a known variable, these two related variables are called "independent variables". The correlation between two variables is caused by a variety of complex reasons, whether one variable affects another variable, there are interactions between two variables, between two variables and between all variables. This may be due to lack of direct relationship. It is also affected by the third variable. In short, the relationship between the two includes determinism and random change. In the correlation model, both variables are random variables.

According to the closeness of the relationship between variables, correlation types can be divided into three types. That is, perfect correlation, zero correlation and statistical correlation.

(1) Complete correlation (functional relationship) between the two variables x and y. If there is a defined value y corresponding to any value x, the relationship between the two variables is complete. Correlation (ζετα1 is called functional correlation).

(2) Zero correlation (irrelevance) There is no relationship between two variables, or the change of one phenomenon (variable) does not affect the change of another phenomenon (variable). This relationship is called zero correlation or no relationship.

(3) Statistical correlation When the relationship between two variables is between complete correlation and zero correlation, it is called correlation or statistical correlation. When only checking the correlation between two variables, it is called a simple correlation; when checking the correlation between three or more variables, it is called a multiple correlation. In mathematical statistics, the parameters that determine the degree of close correlation between variables mainly include covariance and correlation coefficient.

3. Experiment of Electronic Information Technology in the Internet of Things in Smart Cities

3.1. Greedy Algorithm Model

Greedy algorithm is a simple and fast technique used to design specific problems and find the best solution. Its characteristic is that when solving the problem, it does not consider the overall situation, but only considers the local best situation of the current situation, thereby saving the time to find the best solution. Time may be wasted in the process of the best solution. When making greedy choices, use iterative methods. Every time you make a choice, the problem will shrink, so you can get the best local solution at each step of the choice, but the final overall solution may not be the best solution. Greedy algorithm can achieve resource load distribution and the shortest total execution time. The algorithm is described as follows: After initializing the timetable, the element values of each row and each time column of the timetable are arranged in descending order, making time greedy. The chosen greedy strategy is [41]. Starting from the work with sequence number 0 in the matrix, each time we try
to assign the work to the resource corresponding to the last column. Compared with other options, other options are the best. Then the allocation is complete. Otherwise, it will be allocated to resources, thereby improving the current results. If there are multiple allocation methods and the current results are the best, assign the work to the resource with the least current work to achieve load balancing. This method reflects the need to process resources faster to handle more complex tasks, find solutions to complex tasks, and reduce the total execution time of tasks.

4. Electronic Information Technology in the Internet of Things in Smart Cities

4.1. Smart City Construction Mode

Because the construction of smart cities is restricted by many factors, it is difficult to accurately define the construction model of smart cities. Each city has its own development advantages, but also its own disadvantages. The main factors affecting the construction of smart cities are:

(1) The level of economic development. Financial institutions are an important guarantee for the construction of smart cities. The urban economy of western countries is designed as a relatively highly developed country, so western developed countries have developed smart cities faster than us. They have laid the foundation for the development of smart cities. Cities with underdeveloped economies cannot develop smart cities.

(2) City management level. Unlike building a digital city, building a smart city is not a virtual copy of a real city based on knowledge, but an Internet-based urban IoT ecosystem that can control the management level of city managers.

(3) Innovation level. The potential of urban development depends on the ability to innovate. Innovation is the source of technology and the driving force of urban construction. Only continuous innovation can inject new vitality into the construction of smart cities. It can be said that the level of innovation determines the construction of smart cities. Level.

(4) Environmental restrictions. The construction of smart cities also needs to consider the current social and objective environment.

The construction of a smart city cannot exist independently of the existing social environment. It is restricted by international politics, economy and technology. It also depends on objective conditions, such as geographic area and population. Based on the above factors such as scale constraints and infrastructure status, the construction of a smart city can be divided into different methods from different angles and detailed analysis.

(1) Different economic development levels have different construction methods. In this regard, building a smart city can be divided into a comprehensive promotion model and a multi-level progress model. The overall promotional cost of this model is very high. Due to its wide scope and large scale, it requires a lot of human resources, material resources, financial resources and huge management costs. The multi-level progressive model allows you to choose innovation points and focus on key areas. The model follows the principle of "test first, test first". You can continuously summarize the experience and lessons of the construction process, guide subsequent construction, avoid detours, reduce investment risks, and allocate funds rationally.

(2) From the perspective of construction strength, it can be divided into innovation and investment. Innovation-based smart city construction has high technical content, strong continuity, large investment, and slow results. For example, when building a digital media city in Seoul, South Korea, investment-based investments are fast, dynamic and not feasible.

(3) From the perspective of construction issues, it can be said that smart cities are built under the initiative of the government, and smart cities are purchased under the initiative of the company. The construction of China's smart cities is largely led by the government, and business is only a supporting role. This is obviously different from developed countries. In developed countries, companies and scientific research institutions are leaders in building smart cities.

4.2. Greedy Algorithm and Min-Min Algorithm
In order to verify the performance of the greedy algorithm in cloud computing resource programming, we simulated the resource planning strategy based on the minimum execution algorithm and the resource planning strategy based on the greedy algorithm in terms of total execution time and total system resource usage. Done. In the experiment, the number of computing resource nodes is 10, the resource processing capacity is 100MIPS to 300MIPS, the number of tasks is 15 to 90, and the task size is 10000M to 50,000M. In terms of total task execution time, each test should be run 10 times on average. In the first experiment, when the number of tasks executed is 15 and the number of resource nodes is 10, the execution results of the resource planning strategy based on Min-Min and greedy algorithms are shown in Table 1 and Figure 1.

**Table 1.** Comparison of resource scheduling strategies between Min-Min algorithm and greedy algorithm

| Number of tasks | Min-Min | Arithmetic how are you |
|-----------------|---------|------------------------|
| 15              | 403     | 371                    |
| 30              | 487     | 404                    |
| 45              | 837     | 657                    |
| 60              | 1123    | 866                    |
| 75              | 1492    | 927                    |
| 90              | 1566    | 1088                   |

**Figure 1.** Comparison of resource scheduling strategies between Min-Min algorithm and greedy algorithm

As can be seen from the above figure, as the number of tasks gradually increases, resource scheduling based on the greedy algorithm becomes more and more advantageous in terms of total task execution time. If the number of tasks is small, the difference between the two algorithms is not obvious. For large-scale cloud computing services and tasks, cloud computing resource scheduling strategies based on greedy algorithms have advantages in terms of time to complete all tasks.

5. Conclusions

With the development of society and the improvement of the quality of life, the integration of IoT technology and community needs can better meet and reflect the characteristics of the Internet of
Things. As part of the commercialization of IoT technology, smart hardware has become a hot topic in recent years. Many home Internet companies are launching smart hardware products, such as Xiaomi scanning robots and themes, such as Yeelight LED. Smart light bulb. As smart hardware products account for the largest share of smart home products, major domestic companies also regard "home" as the main market for smart hardware. Unfortunately, no government agency has issued similar industry standards in the field of home smart homes. There is still a long way to go to develop the smart community of the future, and the development process still faces many limitations. Among them, the current home network is an important factor limiting growth. However, in recent years, with the rapid development of domestic Internet-related industries, the Internet has played a role in promoting economic growth. The state has issued policies to reduce interest rates and accelerate the popularization of the Internet, and the investment and support of the Internet by various disciplines has reached an unprecedented level. Therefore, we believe that gradually solving network problems will gradually reduce the external factors that restrict the development of smart communities, and the development and construction of smart communities will enter a rapid phase.

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