Artificial intelligence system for evaluating county-level government social governance based on heterogeneous network

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Abstract

With the rapid development of mobile communication network technology and the increase of various demands, users have put forward higher requirements for the performance of today’s communication technology. Different types of communication subnets can be combined to create different heterogeneous network technologies, which can effectively expand network coverage and improve system communication performance. This paper studies the allocation and decomposition of D2D resources into different heterogeneous network systems. In contrast, this article optimizes the functions of the social information system based on management needs, and integrates the artificial intelligence system into a multi-case study method set of three components based on the correlation between the advantages of the equal embedded artificial intelligence system, and integrates the social management the most common situations in information systems are the subject of research. Research shows that the three basic elements of artificial intelligence systems have been incorporated into social management information systems. The ability, perception, and political promotion of the artificial intelligence system were unearthed, thereby establishing a county-level government social governance evaluation system. Reasonably determining the weights of indicators at all levels is the key to a reasonable assessment of social governance. The weight values of indicators at all levels directly affect the results of the comprehensive evaluation of social governance by county-level governments. The indicator system should use expert scoring methods to determine the weight of each indicator. In terms of data collection, it can be collected through annual statistical data and questionnaire data. Finally, a comprehensive social governance index will be formed for county-level governments, and further research and analysis will be required in terms of index analysis, weighting, and data availability.

1. Introduction

With the rapid development of wireless communication, the scale of the network is constantly expanding. Especially in the case of heterogeneous wireless networks, as the number of users increases, the number of base stations also increases, and the wireless network environment becomes more complicated [1]. Therefore, the issue of improving energy efficiency and resource supply must be resolved immediately. The deeply improved learning algorithm can effectively provide dynamic sources, thereby reducing the complexity of calculations and enabling users to have reasonable performance and safety requirements [2]. Therefore, this article mainly focuses on the different situations of heterogeneous networks, and studies the combination and optimization of energy efficiency and data [3]. Based on the security level of personnel and communication, a D2D resource allocation mechanism consistent with the discrete pigeon swarm algorithm is proposed, and the idea of the map compass operator and reasoning algorithm is improved. In response to various network system failures, a closed-loop power control algorithm is used to set the transmission power for D2D users to optimize the transmission power [4]. The simulation results show that the method improves the target efficiency and spectrum efficiency of the system, and optimizes the communication quality. In addition, this article based on the information management function of the artificial intelligence system is the result of the combined effect of the internal and
external factors of the social governance reform [5]. The optimization of the information system given by the artificial intelligence system to social governance is not a process in which the government actively chooses to develop training, nor is it that the artificial intelligence system itself has advantages and can be directly applied, but a demand process that actively selects the external environment and internal management and governance [6]. The end result is the best solution between improving the government's management capabilities, using advanced tools and methods to meet the needs of advanced technology and the actual needs of social development. According to this article, an index system for county-level government social governance evaluation was finally established [7]. Establish an index system aimed at evaluating the social governance evaluation of county-level governments in order to achieve a good degree of governance [8]. Through interviews with experts and empirical tests, an attempt was made to extract 47 measurable indicators for use in evaluating the comprehensive indicator system of county-level government social governance comprehensive evaluation [9].

2. Related Work

The literature introduces the particle swarm algorithm and pigeon swarm algorithm for D2D spectrum allocation, and the same swarm intelligence algorithm has been developed [10]. At the same time, the performance of the improved algorithm is verified and evaluated by setting the test function, and finally the optimal detection of the D2D spectrum matrix is searched iteratively. The literature describes the combination of power distribution and power control [11]. By establishing different parameters and comparing and analyzing traffic changes in different resource allocation mechanisms through simulation experiments, the combined resource management mechanism proposed in this paper can be minimized, and system utilization and performance indicators can be improved [12]. The literature introduces the problem of optimizing the combination of user data rate and base station communication security level in various wireless networks composed of wireless access technologies including LWA transmission mode. The literature introduces a unified optimization model, reconstructs the mathematical model line, and uses CPLEX optimization software to get the optimal solution to the problem [13]. Finally, it can be concluded from the simulation results that the composition of the wireless access technology is different, including the LWA transmission mode. The creation of a wireless network can effectively increase the user's data rate, and can also meet the communication security level required by the user. The literature describes the interruption problem in heterogeneous networks [14]. The closed-loop power control algorithm is used to dynamically adjust the time-varying power transmission. By setting different values to select the best parameters, the power control algorithm is further improved and optimized [15–16].

3. Heterogeneous Network And Artificial Intelligence System Model

3.1. Heterogeneous Network

In terms of quantity distribution, different types of networks including 2G, 3G and 4G networks are connected to the core network through gateways, and finally to the Internet network. The differential network system model studied in this paper mainly includes a macro cell network composed of macro
base stations, a micro cell network composed of micro base stations, and a D2D communication network integrated with D2D communication technology. Figure 1 shows a typical heterogeneous network model.

3.2. Data Model

This chapter focuses on D2D spectrum allocation and interference to different networks. Cellular users who provide spectrum for D2D users adopt the link mode. First, the number of multiplexed channels is represented by the letter N, the number of micro-cell users in the model is represented by the letter L, the number of macro-cell users is J, and the number of D2D users is I. The micro cell terminal is a single-user macro cell spectrum (CUE) source that allows reuse, and can only provide spectrum for a pair of D2D users. Because the base station has the function of restoring the user channel state, all terminal user information can be retrieved from the corresponding base station. Set A={1,2,...,L} to represent the distribution of the number of micro-cell users (PUE1), B={1,2,..., J} to represent the distribution of the number of macro-cell users (CUE), C = C={1,2,...,l} represents the distribution of the number of D2D users. The heterogeneous cellular network model in this chapter is shown in Fig. 2.

It can be seen from the topological structure of the system model distribution network that in the communication process, D2D (DUE-Tx) and micro-cell users (PUE1) used for transmission at the sender will cause interference to the macro base station. The macro cell user (CUE) will cause D2D receiver-side interference (DUE-Rx), the micro cell user will interfere with the D2D user transmitter, and the D2D user transmitter and macro cell user will cause the micro base station (P-eNB) to be interfered. Therefore, compared with the traditional cellular network, the problem of system failure may be more serious due to the introduction of D2D communication users and micro-cell users in the heterogeneous network.

The mathematical expressions for the path loss of D2D user i and cellular user j in the model in this chapter are as follows:

\[ PL_i = 38.47 + 20 \times \log_{10} (d(i)) + 30 \times \log_{10} (f_c) \]

\[ PL_j = 35.24 + 35 \times \log_{10} (d(i)) + 26 \times \log_{10} (f_c / 5.0) \]

Among them, \(d(i)\) in the formula represents the distance between a pair of D2D communication users, \(d(j)\) represents the distance between the cellular user and the corresponding base station, and the meter (m) is the unit for calculating the distance. The carrier frequency of the system is denoted by \(f\) and the unit is GHz.

In the communication model, the calculation of channel gain is affected by many factors, including channel loss and fast disappearing factors in the communication process. The related mathematical calculation formula is as follows:
The signal-to-noise ratio (SINR) of user microcell 1 in channel n is:

\[ \text{SINR}_i^n = \frac{P_l g_{l,p_l}}{\sum_{j \in B} \rho_j^n P_j g_{j,p_l} + \sum_{i \in C} \rho_i^n P_i g_{i,p_l} + \sigma_N^2} \]

The signal-to-interference and noise ratio of macro cell user j in channel n is:

\[ \text{SINR}_j^n = \frac{P_j g_{j,M}}{\sum_{l \in A} \rho_l^n P_l g_{l,M} + \sum_{i \in C} \rho_i^n P_i g_{i,M} + \sigma_N^2} \]

The signal interference and noise ratio of D2D users on channel n is:

\[ \text{SINR}_{i,j} = \frac{P_i g_{i,i}}{\sum_{l \in A} \rho_l^n P_l g_{l,i} + \sum_{j \in B} \rho_j^n P_j g_{j,i} + \sigma_N^2} \]

It is assumed that the channel sources of the macro cell and the micro cell are used, and it can be guaranteed that the two can communicate normally. If D2D is used to allocate spectrum, system transfer is the optimization goal. According to Shannon's formula, the target mobility and control state of the optimization problem are as follows:

\[ T_{max} = \max_{f^n_i, \rho^n_l, \rho_{i,j}} \{ \sum_{n=1}^N \left[ \sum_{l \in A} \rho_l^n \log_2 (1 + \text{SINR}_i^n) \right] + \sum_{j \in B} \rho_j^n \log_2 (1 + \text{SINR}_j^n) + \sum_{i \in C, j \in B} \rho_{i,j} \log_2 (1 + \text{SINR}_{i,j}) \} \]

\[ P_l \leq P_{max}^l, \text{SINR}_i^n \geq \text{SINR}_{i,TH}^n, \forall l \in A \]

\[ P_j \leq P_{max}^j, \text{SINR}_j^n \geq \text{SINR}_{j,TH}^n, \forall j \in B \]
Among them, the formula (7) is set to maximize the progress of the system manufacturing goal; in order to ensure the normal communication with the end user, the user signal interference and noise ratio (SINR) and power transmission are set limits, formula (8)~ (10) Actually shows the signal-to-interference and noise ratio (SINR) of micro-cell users, macro-cell users and D2D users are higher than the threshold, and the transmission power of all users is lower than their respective coverage. Formula (11) and Formula (12) indicate that only one channel is allowed to be multiplexed by the two user communication devices of the macro cell, and the channel provided by the system can only be multiplexed by one user. Formula (13) and Formula (14) are used to calculate the position and velocity of particles.

\[
x_i^t = (x_{i1}^t, x_{i2}^t, \ldots, x_{iD}^t)^T, x_{id}^t \in [X_{min}, X_{max}]
\]

\[
v_i^t = (v_{i1}^t, v_{i2}^t, \ldots, v_{iD}^t)^T, v_{id}^t \in [V_{min}, V_{max}]
\]

Formulas (15) and (16) are used to express the best position of the individual and the whole.

\[
p_i^t = (p_{i1}^t, p_{i2}^t, \ldots, p_{iD}^t)^T
\]

\[
p_z^t = (p_{z1}^t, p_{z2}^t, \ldots, p_{zD}^t)^T
\]

Equations (17) and (18) give expressions for the maximum velocity and maximum position of particles:

\[
P_i \leq P_{max}, \text{SINR}_{i,j} \geq \text{SINR}_{i,j,TH}, \forall i \in C
\]

\[
\sum_{n=1}^{N} \rho_i^n \leq 1, \sum_{l \in A} \rho_i^n \leq 1, \forall l \in A
\]

\[
\sum_{n=1}^{N} \rho_j^n \leq 1, \sum_{j \in B, i \in C} \rho_{i,j} \leq 1, \forall j \in B, \forall i \in C
\]
Inertia weight is the most important parameter in PSO control. Different values will get different results, and choosing its value will directly determine the performance of the search algorithm. During the search algorithm, it can be dynamically adjusted and changed. If the inertia weight is increased, the calculation speed of the algorithm can be accelerated, and it is suitable for optimization problems that require rapid convergence of the global speed. If the value of the inertia weight ratio is reduced, the local search capability of the algorithm can be directly determined, and the local operation of the algorithm can be enhanced by reducing its value. The mathematical expression is:

\[ v_{id}^{t+1} = w v_{id}^{t} + c_1 r_1 (p_{id}^{t} - x_{id}^{t}) + c_2 r_2 (p_{gd}^{t} - x_{id}^{t}) \]

\[ x_{id}^{t+1} = x_{id}^{t} + v_{id}^{t+1} \]

Analysis shows that the choice of inertia weight has an important impact on the global and local PSO detection capabilities. While improving the local search capability of PSO, it also improves the convergence of the particle swarm algorithm.

### 3.3. Simulation analysis

In order to prove the effectiveness of the mechanism proposed in this chapter in solving D2D spectrum allocation and interruption problems, simulation tests were carried out on different converged network models. Table 1 shows each parameter setting in the different three-layer network system simulation used in this chapter:
In order to reasonably select the value of the weight inertia control factor $k$ in the developed discrete particle swarm algorithm, the simulation data in Table 1 must be compared and analyzed in detail. It can be seen from the value distribution that if $k \in [1.5, 3.0]$, the optimal value of the average activity is hidden, so the value of this interval can be considered. If $k_3 = 1, k_2 = 1.5, k_2 = 2, k_2 = 2.5,$ and $k_2 = 3$, the network revenue value under the BPSO-NIW algorithm will change with the number of iterations, as shown in Fig. 3.

It can be seen from the trend curve that there is a direct relationship between the maximum value of the network revenue and the cost of the control factor. For comparison and detailed analysis, it is necessary to compare the satisfaction speed of the algorithm under the same control factor with the maximum value of the system gain under different control factor values. The experimental results have the following situations: (1) If the same value is used, that is, $k_2 = 3$, the algorithm meets the requirements of the 62nd generation iteration, and the corresponding total value is the system's revenue of 508.08 kbps; (2) If used Different values, namely $k_2 = 1.5$ and $k_2 = 2$, even if the maximum value of the return is fixed, the algorithm can easily drop to the maximum local efficiency. After repeated trials, it is found that if $k_2 = 2.5$, the algorithm has the fastest accumulation speed, and the maximum system benefit obtained at the
same time is 549.18 kbps. Therefore, the value of the control factor k2 in the improved particle swarm algorithm in this chapter is 2.5, and the value of k3 is 1.

In order to check the search capabilities of the improved algorithm more comprehensively and compare the same production purpose (the overall benefit of the network), this experiment simulation selects 3 different algorithms in the channel source allocation to compare with the algorithms in this chapter. The simulation result is shown in Fig. 4.

4. Implementation Of An Intelligent System For County-level Government Social Governance Evaluation

4.1. System construction goals and key elements

In order to find a scientific method to evaluate the social management capabilities of the multi-responsibility network, we conducted an in-depth analysis and analysis of the key elements, connections and rules of the multi-responsibility management system. The multi-responsibility social management system takes network and service management as the basic working model, and integrates management and services in various fields such as social management, urban management and public services. Under a certain organizational structure, understand the relevance of multiple departments and organizations available in the business. The multi-responsibility social management system focuses on business functions previously dispersed in large-scale network organization systems, and creates centralized management and centralized services within a specific management model. Therefore, the capabilities of the system are included in the three aspects of management efficiency, service efficiency and synergy to realize the improvement of social governance and urban management capabilities, and improve the efficiency of urban public services.

The multi-responsibility social management system is a large interconnected system that combines business functions with many different businesses in many fields. The collaboration between business domain systems and work levels and information exchange must be maintained through the constraints of standards and norms. There are two main parts: information foundation and business foundation.

From the perspective of system structure, a multi-responsibility social management system has three systems: a multi-responsibility network service system, a multi-responsibility network management system, and a multi-responsibility network business collaboration system.

(1) Multi-responsibility social management service system

The multi-responsibility social management service system describes the multi-responsibility social management system from the perspective of the service system, which is an organic combination of objects, organizational structures and platforms. An organizational structure established under a specific management system, which relies on an information-based business platform to provide social services for various service purposes.
(2) Multi-responsibility social management system

The multi-responsibility social management system is a description of the multi-responsibility social management system from the perspective of the system management mechanism. It consists of an organizational structure, a business platform, and a standard that specifically restricts information and business.

The organizational structure is the foundation of the management system. The organizational structure is usually planned and modeled at the highest level of the organization, has multiple social management responsibilities, and can be applied to relevant departments according to local management models. The organizational structure contains key management elements, such as hierarchical relationships (job reporting relationships), available roles, workflow, and review relationships. The business platform includes well-known content management information, such as organizational management, personnel management, business process management, performance evaluation, and other business activities.

4.2. Evaluation model

Process of analysis hierarchy (AHP), it is based on the in-depth analysis of nature, influencing factors and factors related to complex issues, and uses less information to mathematically process the thinking process in the decision-making process, thereby providing complex multi-objective problem decision-making and meeting multiple standards or unstructured decision-making behavior provides a quick decision-making method. The basic idea of Analytic Hierarchy Process is to create a complex problem by combining the "pairwise comparison" of these elements, thereby changing the general judgment on the weight of several elements. Each element is for decision-making problems with hierarchical indicators for interpolated evaluation, and the number of targets is largely difficult to describe. The hierarchical analysis process can help achieve more accurate decision-making methods.

First, establish the hierarchical structure of the multi-responsibility model of social management skills: the multi-responsibility social management system improves management efficiency and service efficiency by improving coordination capabilities, achieving improved social governance and urban management capabilities, and improving urban public service efficiency.

The second layer is the basic layer, which defines many rules closely related to the realization of this goal: business collaboration, management efficiency and service efficiency.

The third layer is the indicator layer, which sets relevant test indicators for each scale. Nowadays, evaluation indicators can be formulated in the local multi-responsibility network management team, or by organizing experts to provide relevant construction documents and instructions, such as social management, urban management and community construction. Take the structural standards of the indicators in Table 2 as an example.
<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Evaluation index</th>
<th>Conceptualization/Quantitative Evaluation Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business synergy</td>
<td>The degree of business process synergy</td>
<td>Establish cross-departmental and cross-level business collaboration processes, and evaluate the degree of business process collaboration from the perspective of process penetration, completeness, and business types covered.</td>
</tr>
<tr>
<td></td>
<td>Information resource sharing degree</td>
<td>Establish types of shared information resources, information update mechanism, sharing scope, convenience and safety of shared use</td>
</tr>
<tr>
<td></td>
<td>Event sip &quot;one-stop shop&quot;</td>
<td>It has a unified event delivery platform, which shields the boundaries of business areas at the information delivery end, and brings convenience for residents to upload information.</td>
</tr>
<tr>
<td>Management efficiency</td>
<td>Process can be optimized</td>
<td>It has a process optimization mechanism to facilitate the continuous optimization of the incident handling process.</td>
</tr>
<tr>
<td></td>
<td>Organizational structure rationality</td>
<td>Evaluate the rationality of the organizational structure from the following aspects: separation of powers and responsibilities, no ambiguity, smooth communication, and high efficiency.</td>
</tr>
<tr>
<td></td>
<td>Time-limited closing rate (quantitative index)</td>
<td>Event completed within the specified time limit/total number of events*100%</td>
</tr>
<tr>
<td>Service efficiency</td>
<td>Unified assessment and evaluation situation</td>
<td>Have a reasonable evaluation mechanism covering all roles in the organizational structure</td>
</tr>
<tr>
<td></td>
<td>Proportion of Excellent Satisfaction Rating (Quantitative Index)</td>
<td>Evaluate the most satisfactory event volume/total event volume*100%</td>
</tr>
<tr>
<td></td>
<td>Multi-channel integration</td>
<td>Integration of multiple service channels, no difference in service</td>
</tr>
<tr>
<td></td>
<td>Public service coverage (quantitative index)</td>
<td>Types of public services provided by the system/total amount of public services *100%</td>
</tr>
<tr>
<td></td>
<td>Service target information coverage rate (quantitative index)</td>
<td>Number of service targets with basically complete information/total number of people in the region *100%</td>
</tr>
</tbody>
</table>
According to the relationship between the above criteria and indicators, a systematic scoring indicator system is established, as shown in Table 3.

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Evaluation index</th>
<th>Conceptualization/Quantitative Evaluation Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Terminal application coverage (quantitative index)</td>
<td>Number of terminal users/total number of people in the region*100%</td>
</tr>
</tbody>
</table>

Table 3  
Evaluation index system

<table>
<thead>
<tr>
<th>Multi-responsibility grid social governance system evaluation index system A</th>
<th>Business synergy capability B1</th>
<th>Business process synergy degree B11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Information resource sharing degree B12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One-stop event reporting B13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High efficiency management ability B2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Process can be optimized B21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rationality of organizational structure B22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time-limited closing rate B23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unified assessment and evaluation situation B24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High-performance service capability B3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proportion of excellent satisfaction rating B31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multi-channel integration degree B32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public service coverage rate B33</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Service target information coverage rate B34</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Terminal application coverage rate B35</td>
<td></td>
</tr>
</tbody>
</table>

(1) Create a paired comparison evaluation matrix to compare the significance of each scale measure (three basic abilities B1, B2, B3) relative to the overall goal A. The comparison scale can be 1–10 marks, which means that the average importance changes from the same importance to extremely important.
Under normal circumstances, the amount of data to be compared should be evaluated based on comprehensive professional data and the business experience of business experts and senior business personnel.

(2) Evaluation of the level and relevance of the level list. The order level is based on the superior judgment matrix to calculate the important factors related to the level. The mathematical method is to use the eigenvalues and eigenvectors in the evaluation matrix.

(3) Total rank and total weight Total rank refers to the relative weight of the lowest index layer relative to the highest target. Because when calculating this weight, the two weight levels of the target criterion and the criterion index are determined to be complete, so they are combined weights. The combined weight is a parameter that is finally used to calculate the complete test score in the ability evaluation model. The calculation method is as follows: 

\[ W_{A-Bij} = W_{Bi-Bij} \times W_{A-Bi} \]

Table 4 shows the weight measurement values of each indicator in the final calculation model of the test system:

<table>
<thead>
<tr>
<th>Index layer</th>
<th>Criterion layer</th>
<th>B₁</th>
<th>B₂</th>
<th>B₃</th>
<th>The weight of each indicator relative to the overall goal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B₁₁</td>
<td>0.69</td>
<td></td>
<td></td>
<td>0.1127</td>
</tr>
<tr>
<td></td>
<td>B₁₂</td>
<td>1.948</td>
<td></td>
<td></td>
<td>0.3183</td>
</tr>
<tr>
<td></td>
<td>B₂₁</td>
<td>0.367</td>
<td></td>
<td></td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>b₂₁</td>
<td>0.4332</td>
<td></td>
<td></td>
<td>0.2338</td>
</tr>
<tr>
<td></td>
<td>B₂₂</td>
<td>2.1047</td>
<td></td>
<td></td>
<td>1.1357</td>
</tr>
<tr>
<td></td>
<td>B₂₃</td>
<td>1.0328</td>
<td></td>
<td></td>
<td>0.5573</td>
</tr>
<tr>
<td></td>
<td>B₂₄</td>
<td>0.7463</td>
<td></td>
<td></td>
<td>0.4027</td>
</tr>
<tr>
<td></td>
<td>B₃₁</td>
<td>2.0003</td>
<td>0.5941</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B₃₂</td>
<td>0.791</td>
<td></td>
<td>0.2349</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B₃₃</td>
<td>1.3275</td>
<td>0.3943</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B₃₄</td>
<td>0.4607</td>
<td>0.1368</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B₃₅</td>
<td>0.407</td>
<td>0.1209</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3. **Optimization path of social governance intelligent system**

Through multi-case analysis of the artificial intelligence system embedded in the management information system, three factors that affect the application of artificial intelligence system are obtained: the ability of artificial intelligence system, perception ability and political drive. This paper proposes the technology of optimizing the flow function information system.

Science and technology have a wide-ranging impact on promoting world change. The maturity of artificial intelligence systems has laid a technical foundation for artificial intelligence systems to optimize the functions of social management information systems. In the process of optimizing the activities of the local information system to reduce urban poverty, a certain technology made full use of its advantages in artificial intelligence systems and laid a solid foundation. To successfully implement the project and use the advantages of artificial intelligence systems to contribute to the poverty alleviation of information systems. A network group united city based on artificial intelligence engine services and development services officially launched and used an artificial intelligence public service platform.

Technological progress is a "double-edged sword", and the government's attitude towards new technologies determines the country's expectations for technological availability. For example, under the strong leadership and support of the government, a new platform "artificial intelligence + agricultural industrialization" was implemented in a province. Government impetus plays an important role in the effective implementation process. Therefore, the strong support of the state and government and the firm determination and action to promote the development and implementation of artificial intelligence systems provide political guarantee for the wide application of these systems in the field of social management.

5. **Conclusion**

This paper considers the research strategy of resource allocation and power control in heterogeneous networks, takes system traffic as an evaluation indicator, and improves the use of spectrum and traffic under normal service communication (QOS) and system conditions with reduced presence. This article first studies the resource management scheme that combines resource allocation and power control to increase the user's transmission power and effectively analyze and simulate various source management schemes. On the basis of using the analytic hierarchy model to evaluate the social management responsibilities of multiple responsibilities, it effectively avoids the lack and inaccuracy of the determination of rights and responsibilities, and provides an effective solution for scientifically and reasonably evaluating the social management of multiple responsibilities.

**Declarations**

**Declaration of Competing Interest**
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

**Ethical approval**

This article does not contain any studies with human participants performed by any of the authors.

**Data Availability**

Data will be made available on request.

**References**


Figures

![Diagram of network architecture]

Figure 1
Heterogeneous network model

Figure 2

Three-layer heterogeneous network communication model
Figure 3

The change curve of the improved algorithm MSR in this chapter under different control factors
Figure 4

The change curve of the total benefit value of the system with the number of iterations.