# Research on Social Public Governance Method Based on Intelligent Prediction Algorithm

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**Abstract.** The problem of social public governance has become an important content of attention. The multi-objective optimization problem of minimizing the incremental cost of public governance input and maximizing the incremental benefit obtained is related to the development of social public governance. In response to this problem, this paper proposes a social public governance method based on intelligent algorithms to maximize benefits in multi-objective problems. First, under the combined optimization of different social governance schemes, the improved genetic algorithm is used to obtain multiple pareto solutions; secondly, the gain obtained by the unit incremental cost is used as the evaluation index; finally, the experimental verification shows that: The algorithm has certain advantages.

**Keywords:** Social public governance · intelligent algorithms · superiority

## 1 Introduction

Social public governance refers to the management of social public areas and social public affairs. In the current historical process of the country's rapid economic development, the score of urban public governance is the evaluation standard for the public to measure the quality of a city's public governance. When we pursue healthy and rapid economic development, we do not blindly regard economic development as the evaluation index for the development and progress of the city, we hope that the economic life and the ecological circle will develop in a balanced way, and that the economic development will also take into account the most intuitive feelings of the public [1, 2]. To a certain extent, the public may be more concerned about their own money bags, education, medical care, pensions, etc. These are also hot topics that the people care about and discuss at the current Two Sessions. The "Report on Public Governance of Chinese Provincial Capital Cities" by Beijing Tianze Economic Research Institute pointed out that the important stakeholders of public governance in this city should be the residents of this city. The level of social public governance or public services enjoyed by urban residents comes from their subjective feelings. Under certain circumstances, it can also be considered that residents' perception of social public governance itself also comes from the public services they enjoy [3, 4].


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There are many factors that affect the score of social public governance, and the influence of different factors on social public governance is very different. It is of practical significance to find important factors that affect the score of social public governance and analyze how these factors affect it. Using traditional parametric modeling methods, it is difficult to determine a suitable model to reflect the dependence of social public governance scores on many influencing factors. Within the scope of the influencing factors involved, to a certain extent, the influence of these factors on the social public governance score can be better dealt with, starting from the influence mode of each important influencing factor, and correctly grasping their impact on the social public governance score. Influence, seize the most important influencing factors, put limited resources and energy in the places where the public needs the most, provide them with the best social public services, and create a better social and public environment for people [5, 6].

Social public governance is the main concept in the social industry [7]. By implementing a certain construction cost, good environmental benefits and economic benefits can be obtained, which has attracted attention and heated discussions in various regions. The incremental benefits of green social governance have certain uncertainties, and there is still a certain distance for the large-scale development and construction of green social governance [8]. The characteristic of green social governance is that it can effectively save energy and energy, and different energy-saving schemes will also result in different environmental benefits and construction costs. The optimal design of green social governance is to make it have the smallest incremental cost of construction and obtain larger incremental benefits [9–11].

The energy-saving projects of green social governance include air conditioning and heating, smart lighting, renewable energy utilization, roof development, etc. By comprehensively utilizing different energy-saving projects and exerting the degree of environmental protection from each link, the overall greenness of social governance can be achieved, which is also the core of the concept of green social governance.

## 2 Multi-objective Social Governance Optimization Based on Genetic Algorithm

For the objective optimization problem, in general, by adjusting the variables of the system, under the constraints of constraints, through multiple iterations and operations, the appropriate variable values are finally obtained, so that the value of the objective function is optimal. Objective optimization problems are widely used in various fields to solve practical problems by optimizing multi-objective problems or combining different methods. In the optimization of multi-objective problems, it is necessary to obtain the pareto solution of the function in the process of solving, so as to maintain a balanced state between various optimization objectives. For such problems, in the general solution process, the algorithm needs to be optimized, so as to realize the solution of the multi-objective problem into the solution of the single-objective problem.

Genetic algorithm is an effective optimal solution search method, which can be used to solve various kinds of problems, whether it is the optimization of social governance or the layout of power system, etc., can be calculated and solved by genetic algorithm.

The process of genetic algorithm mainly includes initializing population, fitness function setting, algorithm operation and so on. The initial population of the algorithm is set according to the optimized objective function, and an appropriate fitness function is selected to evaluate the individuality of the population. According to the fitness function and the idea of survival of the fittest, the genetic algorithm determines whether the individual population can be used as the genetic parent, and then through the exchange of chromosomes with other parents, an excellent offspring individual with a large amount of genetic information is formed. In the process of chromosomal inheritance, there is a certain probability of crossover and mutation operations, so as to improve the vitality of the group and avoid the limitations of the algorithm. The overall optimization process of the genetic algorithm is as follows: firstly, the traditional genetic algorithm is replaced; secondly, the whole group is hierarchically processed according to the mutual relationship between individuals; The verification of the data realizes that the calculation amount of the algorithm is reduced, and the operation efficiency of the algorithm is improved. The optimized algorithm flow chart is shown in Fig. 1.

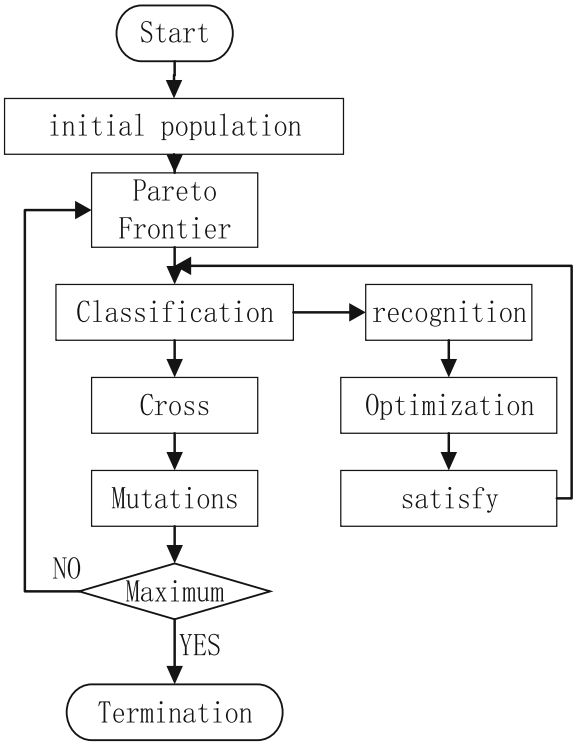


**Fig. 1.** Improved Genetic Algorithm Process

Incremental benefit is to subtract the incremental cost of social governance from the comprehensive benefits of social governance. The expression of social governance $\Delta Y$ is:

$$\Delta Y = \Delta L - \Delta D \tag{1}$$

In the formula, $\Delta L$ represents the incremental benefit, including all the benefits generated; $\Delta D$ represents the incremental cost, where the construction cost is much larger than the operating cost.

The calculation of incremental cost needs to be sorted out according to its composition, so its expression is:

$$\Delta D = \Delta D_d + \Delta D_c \tag{2}$$

In the formula, $\Delta D_d$ is the decision increment of green building. $\Delta D_c$ is the increment generated during construction.

$\Delta D_d$ is expressed as:

$$\Delta D_d = A \times P_1 \tag{3}$$

In the formula, A is the renovation area of green social governance (including buildings, etc.), $P_1$is the design consulting cost and the simulated energy consumption cost, where the simulated cost can be ignored relative to the consulting cost. $\Delta D_c$ can be expressed as:

$$\Delta D_c = \sum_{i=1}^{m} \Delta D_{ci} \tag{4}$$

In the formula, i represents the number of energy-saving technologies used in social governance renovation. Commonly used renovation technologies include exterior wall renovation, air-conditioning facility system renovation, lighting system renovation, new energy power system renovation, and roof energy-saving and water-saving technology renovation, etc. project. $\Delta D_{ci}$ is the incremental cost of the corresponding retrofit technology.

The incremental economic benefits of social governance are usually calculated based on statistical data, because the occurrence of incremental benefits varies from year to year, and they all occur during the operation stage. The formula for incremental economic benefits can be expressed as:

$$\Delta L = \Delta L_a \cdot P(\Delta L_a, i_0, n) \tag{5}$$

In the formula, the value of economic benefit $\Delta L$ is closely related to its discount coefficient P and annual benefit $\Delta L_a$. n is the operating life of the building, generally 50 years. i0 is the benchmark discount rate for project operation.

The composition of the annual income includes many aspects, namely, the environmental increment $\Delta L_h$ formed by reducing environmental pollution and carbon emissions, the effective economic benefit $\Delta L_e$ formed by the saving of conventional energy,

and the formation by the saving of power facilities and the supply of excess electricity. The social benefit $\Delta L_s$ et al. Therefore, the expression of annual return $\Delta S_a$ is:

$$\Delta L_a = \Delta L_e + \Delta L_h + \Delta L_s \tag{6}$$

In the formula, different benefit increments are formed in different ways. The generation of economic benefits $\Delta L_e$ is due to the formation of renovation facilities in the process of social governance renovation, so it also includes the benefits of five parts: retaining walls, lamps, energy, roof, and air conditioning, so it can be expressed as:

$$\Delta L_e = \sum_{i=1}^{5} L_{ei} \tag{7}$$

The formula for environmental benefit $\Delta L_h$ is expressed as:

$$\Delta L_h = \Delta Q \cdot \delta \cdot E = \sum_{i=1}^{5} \Delta Q_i \cdot \delta \cdot E \tag{8}$$

In the formula, the formation of environmental benefits is due to the effective reduction of carbon emissions, sulfur dioxide, nitrogen, etc. in the air due to energy-saving technologies, thereby forming beneficial values for the environment. $\Delta Q_i$ is the energy savings resulting from different improvement techniques. $\delta$ is the conversion coefficient of thermal coal, which takes a value of 0.0004, so as to convert the energy saving into coal saving, which is used to measure its environmental benefits.

The expression of social benefit $\Delta L_s$ is:

$$\Delta L_s = \Delta Q \times P_3 = \Delta Q \times (0.2 + 0.22) \tag{9}$$

In the formula, $\Delta Q$ is the amount of electricity saved by the renovation and operation of green buildings, and $P_3$ is the value formed by energy saving and electricity investment.

## 3 Experiment Analysis

In order to verify the overall performance of the algorithm in this paper, it is simulated and verified, and the effectiveness of the algorithm proposed in this study is verified by comparing it with the traditional social governance algorithm. The experimental tool adopts MATLAB 2017b.

Under the same experimental conditions, the same data set is selected for simulation, and the simulation operation speed of different algorithms is compared. The calculation results are shown in Fig. 2.

The calculation results in Fig. 2 show that the algorithm of this study is also superior to the traditional algorithm in terms of algorithm repeatability and stability. The algorithm proposed in this study is more stable and has almost the same computing time, while the other two algorithms have fluctuations in computing time. Conditions, and the computation time is greater than the algorithm proposed in this study.

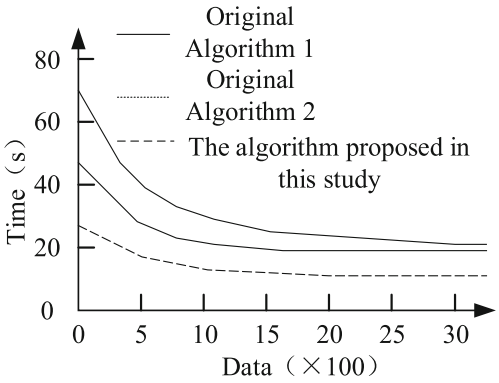


**Fig. 2.** Algorithm running results

## 4 Conclusion

Public risk management refers to the process of risk management for various emergencies in the social and public fields.

(1) Strengthening and innovating social governance is an inevitable requirement to adapt to social development. In rural areas, new forms of production and operation have flourished, industrial and occupational structures have undergone dramatic changes, hundreds of millions of farmers have gone out to work, and new types of communities have emerged; Comprehensive change. Under the new situation, the original social organizational structure and governance model are obviously out of touch with the new social needs and social reality, resulting in many new social contradictions and social problems, which must be solved through innovative social governance.

(2) Strengthening and innovating social governance is the only way to improve the socialist market economic system. The biggest institutional change since my country's reform and opening up is the replacement of the planned economic system by the socialist market economic system. The market is not omnipotent. For example, it is difficult to eliminate the excessive income gap, and it cannot automatically realize the sharing of development achievements by all. To better play the role of the socialist market economic system and realize the sharing of development achievements by all people, corresponding social governance is required. Models and governance systems go along with it. For example, only relying on the market-oriented commercial housing system is not enough to meet the housing needs of all the people, and a housing security system must be established; the market mechanism of free competition will cause the income gap to widen, which must be corrected through the redistribution system.

Therefore, the research on public management risk is of great significance.

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