Research Article

Data-Driven Winter Landscape Design and Pleasant Factor Analysis of Elderly Friendly Parks in Severe Cold Cities in Northeast China under the Background of Artificial Intelligence

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Urban parks not only combine the greening of the city with the natural landscape but also are places for people’s daily fitness, leisure, entertainment, and activities to meet their psychological needs. At present, the design of our country’s northeast severe cold city park is not perfect, which cannot fully highlight the regional characteristics and show the local winter natural landscape. Under the background of the lagging development of the northeast severe cold city park, we use artificial intelligence technology and data-driven algorithm to design a new northeast severe cold city elderly friendly park. The experimental results are as follows: (1) we analyze the development trend of population aging in our country. As the main demanders of urban parks, the elderly determined the research direction of the experiment, investigated the needs of different people for the park, and designed the function of the park according to the needs of the park. (2) On the basis of retaining the traditional garden design, show artificial intelligence technology in the design of urban parks and transforming the urban park design with intelligent construction cannot only let tourists have better entertainment and exercise but also enable residents to better invest in the park surroundings. Intelligent park design can not only show the unique park landscape but also relieve the pressure of tourists.

1. Introduction

As the child of the scientific field in the new era, artificial intelligence technology can be seen in every industry. Of course, artificial intelligence also wants to show itself in the field of literature and art. This article mainly introduces the development and exploration of literature and art under the background of artificial intelligence technology. Through the big data survey and questionnaire collection and analysis, this paper investigates and analyzes the learning situation of Chinese subjects of middle school students and studies their reading situation and analysis ability from the perspective of students. The data survey and analysis show that 10% of the students have good literary reading and analysis ability, and more than 70% of the students have general literary reading and analysis ability. Fifteen percent of the students are poor in literary reading and analysis. Through the combination of artificial intelligence technology, it is found that it can better cultivate students’ literary learning style and improve their reading and analysis ability [1]. The development of artificial intelligence technology has brought many benefits to various fields, including education. This article explores how artificial intelligence brings opportunities for improving the studying process and burgeon creative educational methods, such as hybrid teaching. On this basis, the author attempts to put forward some preliminary suggestions: the combination of artificial intelligence technology and Chinese learning and reading [2]. With the development of artificial intelligence technology and the popularization of smartphones, the marketing mode of mobile client has become a new way for enterprises to promote the garment industry. This method can help consumers better choose products and promote
consumption. With the continuous improvement of China’s international status, the development and construction of traditional garment customization application under the background of artificial intelligence is of great significance [3]. With the gradual development of artificial intelligence technology, the design of environmental art combined with artificial intelligence technology has been effectively recognized. How to realize the integration of artificial intelligence technology and environmental art design in the research is a new direction of artificial intelligence technology research. This paper mainly introduces how to integrate the two. The first step is to analyze the current social situation and existing problems of the environmental art design, compare the application of some artificial intelligence technology in environmental art design and the artificial environment with the traditional artificial intelligence model, and then collect and analyze the data through the experiment of artificial intelligence. The experimental analysis shows that the model constructed by artificial intelligence technology is more accurate and clearer than the traditional artificial construction model. Even the simulated three-dimensional image is more practical and realistic, which also shows that it has been widely used in reality [4]. To establish and create a safe computer network environment, the application of artificial intelligence in computer network technology under the background of big data is analyzed. First, introduce artificial intelligence and understand its development surrounded by big data. Then, it analyzes the current development status of artificial intelligence and defines the application direction of artificial intelligence technology in the field of computer network and communication problem-solving. Finally, the expert system, artificial neural network technology, data mining technology, autonomous agent technology, security management technology, problem-solving technology, expert knowledge base technology, and computer network fuzzy information processing technology are analyzed. This goal is to solve the difficulties by showing the characteristics and advantages of artificial intelligence technology, which provides a powerful shield for the security of computer network system [5]. Many studies have documented the link between the Arctic Oscillation (AO) and the frequency of winter extreme temperatures in East Asia. The explanation of the imbalance is that compared with the due north polar oscillation, the central point of the anti-Arctic Oscillation extends around, which is convenient and helpful to establish a closer relationship with the frequency of extreme weather. Therefore, the relationship between the number of extreme weather and anti-Arctic oscillation was more significant years ago. In addition, there is another view that heat flow expansion will be formed in the upper part of the airflow at the same time as the anti-Arctic Oscillation. Therefore, the kinetic energy of the anti-Arctic Oscillation better reflects the large-scale changes in extreme weather [6]. This is the kinetic energy evolution process of the cold and hot flow in Northeast China on July 19, 2010. The main causes and formation process of heat flow expansion in the severe cold area of Northeast China are discussed and studied. Research shows that as the air temperature rises, air molecules begin to vibrate and move more, usually creating more distance between them, resulting in heat flow expansion. This study is particularly interested in assessing the role of thermal advection in the development of cold vortex bar clinic. The results show that the rising of air in relatively warm regions and the sinking of air in relatively cold regions are conducive to the release of turbulent extended exergy (e’T), which is then converted into turbulent kinetic energy (KT). This process occurs in the formation and enhancement of cold vortices. In addition, the barotropic energy conversion is another important process of KT growth, which gradually increases after the cold vortex begins. In addition to friction consumption, the KT flux in the vertical direction will also consume part of KT. ET flux, baroclinic energy conversion, and diabatic generation are favorable factors for ET growth, but due to the release of a large amount of ET, the growth of ET decreases with time. In the process of cold vortex formation, the energy conversion process in the lower troposphere, including baroclinic and barotropic energy conversion, ET to KT energy conversion, and ET flux, is stronger than those in other regions. This explains the effect of excessive temperature between air molecules on heat flow expansion. Finally, temperature is a monotonic function of the average molecular kinetic energy of matter. When the temperature in the air rises, the air molecules begin to vibrate with each other and move at high speed [7]. Many studies have documented the link between the Arctic Oscillation (AO) and the frequency of winter extreme temperatures in East Asia. This paper explains the imbalance of extreme cold weather in the severe cold area of Northeast China and then deeply analyzes the causes of this extreme weather. The results show that the cause of this extremely cold weather is directly proportional to the occurrence of the Arctic Oscillation. If the occurrence of the Arctic Oscillation is not significant, the occurrence of this extremely cold weather is not significant. If the occurrence of the Arctic Oscillation is significant, it also indicates that the occurrence of the extremely cold weather is significant. The existence of this relationship can be explained by that compared with the proportional Arctic Oscillation, the inverse Arctic Oscillation extends from the center to all around, which is more helpful to compare with the frequency of extreme weather. Therefore, the frequency of extremely cold weather was more closely related to the Arctic Oscillation years ago. In addition, it is also said that when the extremely cold weather is inversely proportional to the Arctic Oscillation, there is a transverse vortex around the large airflow, which occurs in the center of the Arctic Oscillation. Therefore, the negatively correlated Arctic Oscillation can better reflect the instantaneous changes in the surrounding weather, which is closely related to the occurrence of extremely cold weather [8]. The evolution of summer temperature in China in the recent 40 years is diagnosed by rotating principal component (RPC) method, and an index reflecting the cold summer in Northeast China is obtained. The time lag correlation analysis is carried out with the 500 hPa potential height in the northern hemisphere and the Global SST. The low temperature in Northeast China usually starts from May and lasts for about one year, forming a “cold summer year.” In
addition, the monthly average temperature in June of the previous year and June of the next year is significantly higher than the normal value. The results show that these characteristics are closely related to the atmospheric circulation anomaly in the “cold summer year.” The monthly average 500 hPa potential height in Northeast China from April to April of the next year is lower than the normal value while the data in the previous June and the second June are significantly higher than the normal level [9]. Using the reanalysis data of daily potential height from 1981 to 2010 (a total of 30 years) released by NCEP/NCAR, the Northeast China cold vortex (cvonc) is inversely and analyzed, the average state of cvonc is extracted and analyzed, the deviation index of cvonc is defined, and the rationality of describing the intensity of cvonc is discussed. The results show that (1) when cvonc is at 500 hPa, the probability distribution of block center potential height is similar to Gaussian regression normal distribution, and the result value obtained from Gaussian distribution has some corresponding characteristics. (2) The deviation index of cvonc is defined according to the average state of cvonc, which can not only represent the degree that cvonc deviates. On the whole, it also reflects some problems in some areas, which means that it can directly some strength characteristics [10]. Due to the special climate of winter city, winter city has a greater impact on the life of the elderly than other cities. Therefore, the design of new urban parks is the primary task of park designers [11]. By studying the needs of the parks near the residence of the elderly, the design of urban parks is gradually improved, making the design more humanized, systematic, and comprehensive. Exploring the urban park design plays an important role in the elderly, making the landscape space more suitable for the physiological and psychological needs of the elderly [12]. Ecological waterfront park landscape is an important resource for urban development and plays an important role in improving urban landscape. Taking the design of Wuhan Shahu Park as an example, this paper deeply conveys the urban ecological landscape design concept and technology; puts forward the ecological landscape design concept of unique, humanized, and renewable resources; and combines the historical context of the Heritage Park. It provides a certain reference for waterfront ecological landscape design [13]. Nanhai Forest Scenic Park covers an area of 370000 hectares. Every year, 20 million tourists come here for cross-country skiing, downhill skiing, hiking, and cycling. It is also home to surviving plant species and rare fauna such as goat horns and lynx. Recent pressures include the increasing concentration of skiing traffic at higher altitudes and more skiing due to the shortage of snow resources elsewhere [14]. This paper investigates the current situation of landscape design for the elderly in three community parks: Jingang Park, Feifeng Mountain Olympic Park, and Labor Park in Fuzhou. Combined with the physiological and psychological characteristics of the elderly, this paper analyzes the disadvantages of the design of Fuzhou elderly community park. Combined with community construction and horticultural treatment, a reasonable spatial layout and barrier-free design are proposed to suit the elderly activities in Fuzhou Community Park [15].

2. Winter Landscape Design of Elderly Friendly Community Park under the Background of Artificial Intelligence

2.1. Development of Artificial Intelligence. The development of artificial intelligence technology has experienced technological innovation. It has been developed for more than 70 years, and it has stored immeasurable potential. Its development process can be distinguished from development time and technology. From the perspective of time evolution, the development of artificial intelligence technology can be divided into initiation stage, birth stage, golden period, first trough, peak period, second trough, and current development stage. Technically speaking, artificial intelligence can be developed into solving intelligence, perceptual intelligence, and cognitive intelligence.

2.2. The Elderly Are Divided According to Age Standards. The issue of population aging proposed at the United Nations in 1982 can be judged by the age of 60. Through the investigation and evaluation of the quality of the global human body and the aging of the population by the United Nations health organization, it further puts forward the standard for the differentiation of the age of the elderly. (1) The elderly aged between 60 and 74 are young and old. This age group is because their daily activities are relatively less than before. Due to the growth of age, in addition to their basic material needs, they also need to meet their spiritual and cultural needs; (2) the elderly aged between 75 and 89 are called the elderly. Most of the elderly in this age group basically do not carry out dynamic activities because their physical strength and intelligence are not as good as before. Their daily activities usually focus on walking in parks and communities; (3) those aged 90 and above become elderly people. Because they are basically self-cultivation at home, they are elderly, and partly because they cannot take care of themselves and need the care of their families.

2.3. Town Park. So far, there is no accurate and unified definition of the concept of urban park. There are many explanations from different angles. The encyclopedia points out that urban parks are a kind of urban green space. Urban parks are directly funded by the government or public organizations to provide public places for people to rest, entertainment, and play. Compared with other cities and towns in Northeast China, the development of parks and facilities in cities and towns is relatively old, and the development of parks is not balanced. Therefore, focusing on the cold cities in Northeast China, this paper designs the winter landscape of the elderly friendly park under the background of new artificial intelligence, which is convenient for the elderly to enjoy and play.
2.3.1. Definition of Park Landscape Facilities. Park landscape facilities refer to all public equipment in the park that can serve the people or have a specific function. The landscape facilities of Gong Park are indispensable to a park, which endows the park with functionality and uniqueness, which not only enhances the spatial quality of urban parks but also enhances people’s economy of life.

2.3.2. Division of Park Landscape Facilities. The park landscape facilities are divided into (1) necessary landscape transportation facilities, such as the entrance and exit of a park and the park road. The entrance and exit of the park are the necessary passages of the park. The entrance and exit of the park must be simple and unobstructed and provide simple service facilities for tourists; (2) the activity places of the park landscape are combined with artificial intelligence to build new entertainment facilities to serve the masses. For example, replacing the traditional service staff with AI machines not only promotes artificial intelligence but also attracts the masses to play, launch intelligent shooting machines, and record themselves at a certain time. As the main places to rest, pavilions and chairs are also valuable heritage in Chinese traditional park culture and essential elements of modern gardens. Because the traditional pavilion seats are small in size and high in position, they are not suitable for the elderly, so special tables and chairs should be built for the convenience of the elderly; (3) the service facilities of the park shall include public toilet facilities and landmark landscape signs. Many parks are equipped with a small number of toilets, which makes it inconvenient to use. For the convenience of special elderly people, public toilets should be equipped with special barrier-free toilets. As the guiding route, transmitting information, and warning function of the park, the design of symbolic landscape signs should meet the characteristics of simplicity and easy to understand.

3. Artificial Intelligence Data-Driven Algorithm

3.1. Research Model of Artificial Intelligence Machine. What is support vector machine? In short, the initial definition of support vector machine is to find a hyperplane in a sample hyperspace. The learning purpose of support vector machine is to find a hyperplane with the largest interval.

The mathematical expression is:

\[
\min \frac{1}{2} |w|^2,
\]

\[\text{s.t. } y_i (w^T x_i + b) \geq 1.\]  

(1)

The optimization formula (1) solves the required hypersector, and the mathematical expression is:

\[
\min \frac{1}{2} |w|^2 + C \sum_{i=1}^{m} X_{i},
\]

\[\text{s.t. } y_i (w^T x_i + b) \geq 1 - \zeta_i, \quad \zeta_i \geq 0, i = 1, 2, \ldots, m.\]

(2)

This choice of C also has a significant influence on the generalization expression of support vector machine. When \(C = 0\), support vector machine cannot achieve the effect of classification. When \(C\) is infinite, all samples are forced to meet the constraints of formula (1). Therefore, choosing an appropriate value for \(C\) exists a deep influence on the generalization performance of sustain vector machine.

As shown in Table 1, some common nuclear parameters are recorded. However, in practical applications, the parameters of SVM are mostly linear, and the data are inseparable. Therefore, most support vector machines are nonlinear. Support vector machine involves many parameters, one of which is the kernel parameter.

Convolutional neural network turns the full connection of neural network into partial connection and adds some weight sharing strategies. However, the learning method of convolutional neural network is still back-propagation algorithm.

Define a loss function between neural networks for simulation learning. There are two kinds of loss functions, one is mean square deviation, and the expression is:

\[C(w, b) = \frac{1}{2m} \sum_{i=1}^{m} |y_i - f(x_i)|^2.\]

(3)

Cross-entropy expression:

\[C(w, b) = \frac{1}{2m} \left[ y_i \ln f(x_i) + (1 - y_i) \ln (1 - f(x_i)) \right].\]

(4)

3.2. Artificial Intelligence Machine Optimization Algorithm. In the process of mathematics learning, optimization algorithm is an ancient but very practical mathematical skill in solving problems. In real scientific inquiry or life, many problems can be reduced to optimization problems, for example, the location of buildings, the path planning of road construction, and the investment of stocks and bonds. The first thing to learn about artificial intelligence technology is artificial intelligence machine optimization algorithm. Most AI machine learning algorithms involve optimization.

Gradient descent means: gradient descent means is a very classic and practical optimization method. When the function is not convex, the solution uncertainty of ladder descent method is the best solution, but when the action is concave, the solution must be the optimal solution. The expression of gradient descent method is:

\[x^{k+1} = x^k + \lambda (-\nabla f(x^k)),\]

(5)

where \(-\nabla f(x^k)\) indicates the current location, \(x^k\) represents negative gradient direction, and \(\lambda\) represents the step size.

In learning machine model, in order to maintain the balance between the speed and accuracy of machine model learning algorithm, multiquantity gradient descent method and contingent gradient descent method are proposed. It can be seen that the advantages and disadvantages of the two algorithms also echo each other. The solution obtained by
the multiquantity gradient descent method is more global, but the efficiency is low. The probabilistic gradient descent method only solves the local optimal solution. When exploring problems, the combination of the gradient method and the probabilistic method not only meets the advantages of the probabilistic method but also meets the decline of the quality in the process of solving the problem.

The learning idea of Newton method is to expand the second-order Taylor expansion at the point to be calculated and then find the next point based on the point to be calculated. The mathematical expression is

\[ f(x) = f(x^k) + \nabla f(x^k)(x - x^k) + \frac{1}{2}(x - x^k)^T \nabla^2 f(x^k)(x - x^k). \]  

(6)

Take the derivative of formula (6) and make the derivative 0 as

\[ \nabla f(x^k) + \nabla^2 f(x^k)(x - x^k) = 0. \]  

(7)

Formula (7) is further improved to obtain the iterative formula of Newton method, and its expression is

\[ x^{k+1} = x^k - \nabla^2 f(x^k)^{-1} \nabla f(x^k). \]  

(8)

If the objective function of the solution is required to be a quadratic function, because the expansion of Taylor formula is a quadratic polynomial, when starting from a certain point, it only takes one step of circulation to reach the minimum value of \( F(x) \).

Conjugate gradient method: let \( A \) be an order symmetric positive definite matrix \( n \times n \), and let \( X \) and \( Y \) be \( n \)-dimensional vectors. If formula (9) holds, then \( X \) and \( Y \) are in common with respect to \( A \).

\[ X^TAY = 0. \]  

(9)

3.3. Artificial Intelligence Machine Quantum Genetic Algorithm. What is quantum genetic algorithm? The definition of quantum genetic algorithm is that in computer learning, the smallest unit of stored information is byte. If it is not 1, it is 0. In quantum computer, the smallest unit of information storage is qubit, either 1 or 0, or the superposition of 1 and 0. The expression of qubits is as follows:

\[ |\psi\rangle = a|0\rangle + |\beta\rangle, \]  

(10)

\[ |a|^2 + |\beta|^2 = 1. \]  

(11)

If you want to change the value of qubits, you can change it through quanta \( a \) and \( \beta \). Value of quantum gate satisfaction \( UU^* = U^*U, \) and \( U^* \) is the common matrix of \( U \). The quantum gate updates the qubit through formula (12) and sets the new qubit as \( \{a'/\beta'\} \), and the expression is

\[ \left[ \begin{array}{c} a' \\ \beta' \end{array} \right] = U \left[ \begin{array}{c} a \\ \beta \end{array} \right]. \]  

(12)

Superparameter optimization of genetic algorithm: the essence of the so-called hyperparameter is to find a set of suitable parameters for the learning of machine model, which can make the generalization ability of the machine model the strongest. However, the search for parameters is not random but to optimize the problem into a model and find parameters through optimization. The optimization parameter expression is

\[ \lambda^* = \arg \min \text{Err}(x_{test}, A_1(x_{train}, \theta)). \]  

(13)

It is to select a set of good hyperparameters in the hyperparameter space (that is, select an optimal one and a set of hyperparameters after decoding) to minimize the generalization error of the machine learning model on the test set. However, the superparameter selection space is generally large or even infinite, and we usually do not know much about the superparameter selection space. Therefore, using optimization algorithm to solve this problem is a more effective idea.

3.4. Artificial Intelligence Data-Driven Parameter Optimization. Because the evolutionary algorithm is very effective in solving the cost of black box function, especially in solving hyperparametric optimization problems and machine learning models, the efficiency of the traditional population-based evolutionary algorithm is very low. Therefore, a data-driven optimization algorithm is suggested. This basic view of data-driven optimization is to use the estimation information of the solution to establish a regression model in the iterative optimization process. Regression model is also called agent model. Its main function is to predict which possible optimal solution in each iterative algorithm and then estimate these possible optimal
3.4.1. Gaussian Process Regression. Gaussian process regression is used to define the traditional Gaussian process to the Gaussian distribution in time. The mathematical expression is

\[ f(x) = \text{GP}(0, k(x, x')). \]  

(14)

In formula (14), \( k(x, x') \) is the covariance function, and the commonly used covariance function expression is

\[ k(x, x') = \exp \left( -\frac{1}{2} \| x_1 - x_2 \|^2 \right). \]  

(15)

How to carry out regression modeling through Gaussian process:

Suppose there is a training set \( D = \{(x_1, y_1), (x_2, y_2), \ldots, (x_n, y_n)\} \), now we need budget points \( x_{n+1} \) and budget value at \( y_{n+1} \):

\[ f_{n+1} \sim \text{GP} \left( \begin{pmatrix} \sum_{i=1}^{n} \sum_{j=1}^{n} k(x_i, x_j) \end{pmatrix}, \begin{pmatrix} k(x, x'_{n+1}) \end{pmatrix} \right). \]  

(16)

The distribution of \( f_{n+1} \) can be deduced from formula (16), and the expression is

\[ p(f_{n+1} | D, x_{n+1}) = \text{GP}(u((x_{n+1}), \delta^2(x_{n+1})))). \]  

(17)

In formula (17), \( u((x_{n+1}) = kK^{-1}f_{n+1}, \delta^2(x_{n+1}) = (k(x, x, x_{n+1}) - kK^{-1}k') \). If there is a homogeneity problem, that is, when the decision variables have the same impact on the final solution result, the covariance function of formula (18) is usually selected:

\[ k(x, x') = \exp \left( -\frac{1}{2\theta} \| x - x' \|^2 \right). \]  

(18)

If there is a heterogeneity problem, that is, when the decision variables have different effects on the final solution result, the covariance function of formula (19) is usually selected, and the expression is

\[ k(x, x') = \exp \left( -\frac{1}{2} (x, x')^\top \text{diag}(\theta^{-1})(x - x') \right). \]  

(19)

In addition to the above two kernel functions, there is also a classical kernel function, which is expressed as

\[ k(x, x') = \frac{1}{2^{\frac{1}{2}}} \left( 2\sqrt{\ell} \| x, x' \| \right)^2 H_\ell \left( 2\sqrt{\ell} \| x, x' \| \right). \]  

(20)

### Table 2: Details of Ackley function to be optimized.

| Type                      | Minimize                                                                 |
|---------------------------|--------------------------------------------------------------------------|
| Decision variable value   | \( x_i \in [-30, 0, 30, 0] \)                                             |
| Global minimum            | \( x_i = 0, \forall i \in \{1,2, \ldots, N\}, f(x) = 0 \)                |
| Function                  | \( f(x) = 20 - 2 \exp(-0.2\sqrt{1/N} \sum_{i=1}^{N} x_i^2) + e \exp(1/N \sum_{i=1}^{N} \cos(2\pi x_i)) \) |

### Table 3: Details of SVM to be optimized.

| Superparameter | Type     | Selection interval |
|----------------|----------|--------------------|
| C              | Continuity | [1.0,1000.0]       |
| \( \delta \)   | Continuity | [0.00001,1.0]      |

4. Winter Landscape Design and Pleasant Factor Analysis of Elderly Friendly Parks in Severe Cold Cities in Northeast China Based on Data-Driven Parameter Optimization

4.1. Experimental Analysis of Data-Driven Parameter Optimization. The hyperparametric optimization based on multiple regression function is compared with the classical Bayesian algorithm. The experimental test shows that the hyperparametric optimization based on Mars increases the time productivity to a great degree on the premise of ensuring the solution quality.

The first basic problem is Ackley function. At present, finding the extreme value of this function is a recognized challenge in the field of optimization. Some detailed instructions can be found in Table 2.

The second problem is about sorting out the random parameters of the support vector machine. In the second problem, we only need to optimize the parameters of core bandwidth 8 and core positive side coefficient C. Detailed information is given in Table 3.

As shown in Tables 3 and 4, the random parameters of the support vector machine and the details to be optimized are given.

The third question is about sorting out random hyperparameters. I think of how to sort out random hyperparameters. The details in Table 3 are as follows.

4.2. Investigation and Analysis of Population Aging. According to the survey data obtained from Table 5, the number of the world’s elderly population over the age of 60 has reached 720 million, accounting for 12% of the world’s population and growing at the rate of 90 million per year. It is expected that by 2050, the number of elderly people in the world will increase to 2.064 billion, accounting for 22% of the world’s population.

As shown in Figures 1 and 2, the development situation of China’s 60-year-old population from 2000 to 2050, and the comparison between China and the world population development situation from 1950 to 2050 shows that the aging proportion of China’s population is increasing.

The rate of population aging in China is higher than that in other countries. China has always been a populous country in the world. In recent decades, social economy
has developed rapidly, living standards and medical standards have improved, people’s life expectancy has been prolonged, and mortality has been reduced; at the same time, the family planning policy has been implemented since 1979, which has reduced China’s birth rate. The combined effect of low birth rate and low mortality has led to the development of rapid population aging in China.

4.3. Investigation and Design Analysis of Winter Tree Species in the Park. According to the survey and statistics, the cultivated plants in northeast urban parks are mainly evergreen trees and shrubs.

Table 4: RF details to be optimized.

| Superparameter                          | Type          | Selection interval         |
|----------------------------------------|---------------|----------------------------|
| Minimum number of partition templates  | Dispersed     | Integer range [2, 40]      |
| Minimum number of samples required     | Dispersed     | Integer range [2, 20]      |
| Bootstrap                              | Dispersed     | Integer range [2, 20]      |
| Standard                               | Dispersed     | True or false              |
| Standard                               | Dispersed     | Gain or entropy            |

Table 5: Development trend of the world’s elderly population.

| years | Population (100 million) | Proportion over 65 (%) | Proportion of quantity over 60 (%) | Average life span | Population growth rate (%) |
|-------|--------------------------|------------------------|-----------------------------------|-------------------|---------------------------|
| 1950  | 25.15                    | 5.1                    | 8.04                              | 46.0              | 17.7                      |
| 1960  | 36.69                    | 5.4                    | 8.34                              | 54.8              | 20.8                      |
| 1970  | 44.49                    | 5.9                    | 8.49                              | 58.0              | 17.2                      |
| 1980  | 52.46                    | 6.2                    | 9.25                              | 9.25              | 16.2                      |
| 1990  | 56.78                    | 6.5                    | 9.51                              | 62.6              | 15.7                      |
| 2000  | 61.23                    | 6.8                    | 9.93                              | 64.9              | 12.7                      |
| 2020  | 82.05                    | 8.7                    | 14.27                             | 70.5              | 9.5                       |

Figure 1: Development situation of 60-year-old population from 2000 to 2050.

As shown in the data survey in Table 6, the green vegetation of urban parks in the severe cold area of Northeast China is relatively rare, including evergreen broad-leaved trees, and almost none. According to the research and investigation, the greening of parks in the severe cold area of Northeast China is usually dominated by deciduous trees, and the proportion of green forest vegetation should be controlled at about 25%. It can not only meet the needs of tourists but also make the park lack of green landscape.

4.4. Analysis of Public Service Facilities in Parks. The equipment design of the urban park is also a part of the park environment. In the design of the urban park, the level of
public equipment and facilities shows the service quality and civilization provided by the park to tourists from the side. The matching of public facilities in the park is another public facility landscape in addition to the natural landscape and construction landscape, and its design also reflects another taste of the urban park.

Through investigation and analysis, it is found that people’s low utilization rate of urban parks in winter is not because people prefer to move in indoor space. It is difficult to resist the wind, and cold is only one of the factors. Another important factor is that the public service facilities of urban parks are not perfect, and there is no humanized design based on the needs of users. The data show that in the current environment, only 21% of people will choose to take regular outdoor activities. If we improve the construction of public facilities, 63% of people will be willing to choose outdoor activities.

As shown in Figures 3 and 4, the design of urban parks is people oriented. Designers should look at it from the perspective of users. They need to meet the users’ needs for the functions and life of the park and also need to meet the users’ visual enjoyment, emotional pleasure, and spiritual resonance in the park so as to integrate users with the park and environment.

**Figure 2:** Comparison of the development situation of the elderly population between China and the world from 1950 to 2050.

**Figure 3:** Selection of winter venues.

| Serial number | Plant name    | Section          | Latin name                  |
|---------------|---------------|------------------|------------------------------|
| 1             | Juniper       | Baike            | Sabina chinensis             |
| 2             | Cedar         | Pinaceae         | Cedrus deodara               |
| 3             | Chinese pine  | Pinaceae         | Pinus tabulaeformis          |
| 4             | White-barked  | Pinaceae         | Pinus bungeana               |
|               | Elm           | Ulmaceae         | Ulmus pumila                 |
|               | Ailanthus     | Bitter wood      | Ailanthus altissima          |
|               | Koelreuteria   | Nonpatients      | Koelreuteria paniculata      |
|               | Dryland willow| Salicaceae       | Salix matsudana              |
|               | Euonymus      | Celastraceae     | Euonymus japonicus           |
|               | Yucca         | Phoenix tailed   | Yucca gloriosa               |
|               | Longbai       | Baike            | Juniper chinensis            |
|               | Crape myrtle  | Lysimachiaceae   | Lagerstroemia indica         |
|               | Pomegranate   | Pomegranate      | Punica granatum              |
|               | Lilac         | Oleaceae         | Syringa oblata               |
|               | Gold and silver wool | Lonicerae | Lonicera maackii          |
|               | Winter Jasmine| Oleaceae         | Jasminum nudiflorum          |

**Table 6:** Common tree species in northeast urban parks.
show a harmonious relationship. As long as the above requirements are met, designers can design popular urban parks.

As shown in Figure 5, different types of places are very necessary in the design of urban parks. Due to some minor inconveniences, the proportion of 75-year-olds on vacation, traveling, and chatting has increased. The park must have quiet entertainment areas and communication places. The security design of such websites should be considered. Although the younger generation rarely go to the park, it is also useful to bring them an entertainment space in winter and attract them to go out of the house and get close to nature. In order to meet the needs of young people for leisure, sightseeing, communication, and play, urban parks should create different spaces, both open and comfortable environment and warm and private semienclosed space.

As can be seen from Figure 5, the most frequently used urban parks are the young elderly aged 60–74 and 50% of
the young elderly often enter urban parks in winter. Secondly, of middle-aged people, more than 80% will enter the park at least once a month. Their main activities in the park include culture, entertainment, and physical exercise.

4.5. Analysis of Pleasant Factors in Urban Parks. As shown in Tables 7 and 8, the “complete satisfaction” of acoustic environment and air quality is 27.1%, which is higher than that of other systems (see Table 7). The quality of the air environment and people’s comfort are more than 5%, so we are satisfied with the air environment and comfort of the park. Chi-square test showed that ecological diversity, garden characteristics, decibel environment, air environment, and other indicators failed to pass the significance test (P 0.05), indicating that biodiversity, garden characteristics, acoustic environment, air quality, and other factors did not affect residents’ satisfaction. Landscape and aesthetic flatness have a significant impact on residents’ satisfaction (P 0.05), and safety, health, and site maintenance have a significant impact on residents’ satisfaction (P 0.01).

Eight independent variables such as education level, tour frequency, and natural scenery were included in the regression to test their significance. Logistic regression was used to analyze the influencing factors of residents’ satisfaction. It is shown in Table 8. Among them, the natural landscape in winter has a profound impact on tourists’ satisfaction. In addition, psychological safety is also affecting tourists’ satisfaction, both of which are positively correlated.

5. Conclusion

Firstly, understand the development process of artificial intelligence technology, the division of the development process and its concept, as well as the research direction and background of the subject. Then, it introduces the division standard of the elderly, confirms the research purpose of this paper, and introduces the definition of the urban park and how to design an urban park combined with the special winter landscape in Northeast China. Then, it introduces the artificial intelligence data-driven algorithm, mainly including the construction of the artificial intelligence machine research model, artificial intelligence machine optimization algorithm, artificial intelligence machine quantum genetic algorithm, and the artificial intelligence machine data-driven optimization. Finally, the data-driven parameter optimization experiment is carried out, the development trend of population aging is investigated, the vegetation of urban parks in Northeast China is investigated and screened, and the public facilities and park demand of urban parks are analyzed and investigated.
Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding this work.

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