Urban ecological environment investigation based on a cloud computing platform and optimization of computer neural network algorithm

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Abstract
The rapid development of Internet technology has contributed to the development of the Internet. The rapid expansion of the industrial application scale and the sharp increase of data generated by an industrial application and cloud computing have promoted the birth and development of cloud computing platform technology. Data analysis has become an important support for company decision-making; how to quickly and effectively extract useful information from large data sets is very important. Among them, clustering analysis and computer neural network algorithms are the most important methods of data mining. Due to the limitations of computer performance and programming models, traditional data mining methods cannot meet the efficiency and computing needs of a large amount of information. The development of cloud computing technology has opened up a new research field of cloud mining clustering analysis and neural network algorithm formation. The first research is the deployment of the Hadoop cluster based on Linux, and the novelty lies in the parallelization of the MapReduce cluster algorithm. Because there are many clustering algorithms, this paper starts with the K-means clustering algorithm and optimizes the earlier algorithm according to the MapReduce programming model. Through the text clustering process of wine data set in the UCI database, the parallel algorithm is applied to the Hadoop cloud computing platform. Experiments show that the parallel K-means clustering algorithm in MapReduce can significantly improve the execution speed. This paper applies it to the urban ecological environment survey in China, clarifies the relationship between various factors of urban environmental governance, expands the content of urban environmental governance in China, and improves the ecological environment of Chinese cities.

Keywords Cloud computing platform · Ecological environment investigation · Computer neural network · Algorithm optimization

Introduction

With the development of information society, more and more data are increasing rapidly. Cloud computing technology was born in 2006. In a short period of years, it changed the traditional ideas of people. It is more concerned than parallel computing, grid computing, and distributed computing. This paper is about the deployment of a spark cluster on Hadoop yarn. The novel is the implementation of a computer neural network algorithm and parallel process on the Spar platform. This paper starts with back propagation (BP) neural network and provides task parallelism and task scheduler by using a directed acyclic graph (DAG) scheduler to schedule tasks. According to DAG, task planning is divided into different phases, each of which is divided into a series of tasks running simultaneously (shufflemaptask and resulttask). Spark introduces Resilient Distributed Dataset (RDD) data model based on worksets and is suitable for much iterative computing. Therefore, it uses a yarn resource management framework to schedule resources, and the parallel algorithm is applied to the Hadoop cloud computing platform (Ye et al. 2019). As shown in the experiment, we use KDDCUP to run intrusion detection data set in the classification process, and the parallel algorithm of a computer neural network can significantly improve the
execution speed. Urban environmental management is a complex and common problem. In the past, the emphasis on economic goals has destroyed the original urban ecological balance (Rahimzadeh et al. 2009). In recent years, many urban environmental problems often appear, and the demand for urban environmental governance is becoming stronger and stronger (Smida et al. 2019). Holistic management theory is a management theory which appeared in the late 20th century. It aims to solve various “thorny” and “fragmentation” problems, with the emphasis on integration and coordination, mutual enhancement of objectives and means, and application of information technology (Tomczyk and Sulikowska 2018). For China, it is very important to modernize public administration and improve its ruling ability, which has a good guiding significance. China is in an important period of social change, and various social problems are emerging. Facing the “fragmentation” and “tricky” problems of urban environmental governance, the ecological environment survey is based on the theory of holistic governance, starting from the general work of institutions and departments at all levels within the government, focusing on the prevention and guidance of the needs and results of citizens, and combining the organization and form of the Chinese government, government activities, and the use of information technology. The integration of environmental management system, urban environmental governance level, governance function, public–private cooperation, coordination in policies, regulations, services, and supervision and the integration of unique information technology are strengthened (Schar et al. 2004). The urban environmental management information system optimizes the algorithm and gradually establishes integration of environmental protection technology (Varfi et al. 2009).

**Materials and methods**

**Overview of the study area**

W is one belt one road important strategic city, is the connection between northern and southern the Xinjiang Uygur Autonomous Region, and the economic and cultural links between the East and the West. W City is located in the middle of Eurasia, at the north foot of the Tianshan Mountains, and at the south end of Junggar Basin. It is the inland city farthest from the ocean in the world (Watts et al. 2018). The geographical center of the Asian continent is located in Y Town, W County, the southern suburb of the city. W’s whole city manages seven administrative districts and one county, with a total area of 14,216 km², of which the urban area is 365.88 km². Figure 1 shows a schematic of the study area:

**Research methods**

**Ecological environment assessment model**

Because the unit and attribute of each indicator are different, in order to compare the influence degree of each indicator conveniently and exclude the influence of indicator dimension, it is necessary to standardize the value of each indicator.
to facilitate the calculation of evaluation results (Zhang et al. 2017). The range standardization formula is used to standardize each index before a comprehensive calculation. The value range is 0 to 1. The larger the value, the better. The standardization formula of index is as follows:

\[ y = \frac{X - X_{\text{min}}}{X_{\text{max}} - X_{\text{min}}} \]  \hspace{1cm} (1)

\[ y = \frac{X_{\text{max}} - X}{X_{\text{max}} - X_{\text{min}}} \]  \hspace{1cm} (2)

One index in the index system can only represent one aspect of the environment in the study area. In order to comprehensively reflect the changes of ecological environment quality, the most widely used comprehensive index model is used to obtain the ecological environment quality of the study area by weighted sum of all indexes. The formula of the composite index model is as follows:

\[ E = \sum_{i=1}^{n} W_i P_i \]  \hspace{1cm} (3)

Cloud computing neural network algorithm model

Suppose there is an input node in the input layer of the BP network, a hidenum node in the hidden layer, and an output node in the output layer. According to the idea of block matrix, the net input of the hidden layer is as follows.

\[
\text{HIN} = \left( \begin{array}{c}
\text{hin} \\
\text{hidenum \times 1}
\end{array} \right) = \left( w_{11} \ldots w_{1\times\text{inputnum}} \right) \times \left( x_{1} \ldots x_{\text{inputnum} \times 1} \right)
\]

Hidden layer output:

\[ \text{HOUT} = \left( \begin{array}{c}
\text{hout} \\
\text{hidenum \times 1}
\end{array} \right) = \frac{1}{1 + e^{-\text{HIN}}} \]  \hspace{1cm} (5)
Net input of output layer:

\[ Y_{\text{IN}} (\text{output})_{\text{num}} = \frac{y_{\text{IN}}(\text{output})_{\text{num}}}{C_2} = \frac{W_{\text{outputnum}}(\text{hidden})_{\text{num}+1}}{C_2} + \frac{1}{\text{hidenum}+1} \times H_{\text{OUT}}^{18/19} (\text{hidenum}+1)_{\times 1} \]

\[ (6) \]

**Extraction of evaluation index**

Various vegetation indices from remote sensing data analysis techniques are widely used to monitor crop growth, land cover change, and spatial distribution. It is found that the generalized difference vegetation index (GDVI) is more sensitive than the normalized vegetation index (NDVI) in arid areas with low vegetation coverage, and it can more accurately reflect the vegetation change in arid areas, and the range of vegetation coverage is between 0 and 1.

The three characteristic components generated by tassel cap transformation, namely, brightness component, green component, and humidity component, represent different physical parameters of the Earth’s surface and are widely used in remote sensing to detect the changes in the ecological environment. The moisture component can be used to extract water from the soil in an arid area and detect the change of land drought state.

Fig. 3 Vegetation coverage distribution of W City from 2006 to 2020

Zeng Yongnian et al. used albedo NDVI feature space to analyze the relationship between desertification and land surface quantitative parameters and put forward the difference index of desertification monitoring. With the change of desertification trend, the model is used to change the degree of land desertification in the study area.

The distribution data of annual precipitation and annual temperature are interpolated from the data of China’s surface meteorological stations located in and around W City. Firstly, according to the geographical location of the weather station, select the data in and around the survey area, then convert the data stored in the document format into SHP format, use the interpolation method to convert it into the grid image of the same resolution, and finally cut out the scope of the study area.

In prosperous cities, lights are always bright at night. In recent years, night light remote sensing technology has been widely used in evaluating urbanization development, characterizing human activities, measuring economic growth, identifying construction land, and so on. Because the intensity of night light can show a certain degree of human activity, the indicator of night light brightness is selected as one of the humanistic indexes. Operating linescan system (OLS) sensor obtains night lighting data from national defense meteorological satellite program.
Based on the national land use/cover remote sensing monitoring and classification system, we will study the terrain and the impact of human activities on the study area. Combined with the existing classification cases in the relevant environmental assessment results, according to the research objectives of this paper, the land-use types are divided into vegetation, cultivated land, water body, construction land, and unused land (bare land, sand). At present, there are two main land use classification methods: visual interpretation and automatic computer classification. Visual interpretation must be compatible with field work, which is time-consuming and laborious, and limited by the interpreter’s perception, but it has the advantage of high classification accuracy. Automatic computer classification requires less human and material resources, the interpretation process is limited by subjective cognition, and the classification speed is fast. In order to improve the accuracy of classification extraction as much as possible and complete the classification quickly, in this paper, we use the decision tree classification method to track and classify the image first and then correct the wrong classification through visual interpretation.

Results

Evaluation results of ecological environment quality indicators

Landsat 1-8 series satellites are Earth observation satellites launched by NASA. The data sources of this paper are mainly Landsat 5 and Landsat 8 satellite data. Landsat 5 and Landsat 8 remote sensing images in 2006, 2013, and 2020 are selected as the main data sources. In order to obtain more accurate information about the area, the survey time is July or August, when the vegetation condition of the area is good. Finally, in Fig. 2, the image of the study area is cut out according to the administrative boundary of city W.

After the calculated generalized interpolation vegetation index is standardized, the range of vegetation coverage is between 0 and 1. The vegetation coverage of W City from 2006 to 2020 is shown in Fig. 3. The higher the value is, the better the vegetation condition is.

![Fig. 4](image-url) Distribution of soil moisture in W City from 2006 to 2020

After the humidity index is standardized, the range of humidity values is 0–1, as shown in Fig. 4. The higher the value is, the higher the soil moisture content is, and the smaller the degree of land drought is.
Finally, the distribution of land desertification degree in the study area is obtained. After the desertification difference index is standardized, the range is between 0 and 1. The larger the value is, the higher the desertification degree is, as shown in Fig. 5.

The distribution data of annual precipitation and annual temperature are interpolated from the data of China’s surface meteorological stations located in and around W City. Firstly, according to the geographical location of the weather station, select the data in and around the survey area, then convert the data stored in the document format into SHP format, and use the interpolation method to convert it into the grid image of the same resolution. Finally, cut out the scope of the study area and get the distribution map of annual precipitation and annual temperature of W City in the three study periods as shown in Fig. 6.

The average annual temperature distribution of W City from 2006 to 2020 is shown in Fig. 7.

Use DMSP/OLS night light image to extract the gray value of night light and get the distribution of night light intensity, as shown in Fig. 8. It can be seen that during the study period, the light intensity in the central urban area was relatively high and showed an expanding trend, indicating that human activities were constantly strengthening.

The overall distribution of land use in the study area is shown in Fig. 9. Vegetation and unused bare land account for the largest proportion, and cultivated land is mainly distributed around the urban built-up area. It can be seen from the figure that W City is expanding from 2006 to 2020, the construction land is increasing, and the distribution of cultivated land is also increasing.

At present, there are two main land use classification methods: visual interpretation and computer automatic classification. Visual interpretation must be compatible with field work, which is time-consuming and laborious, and limited by the interpreter’s perception, but it has the advantage of high classification accuracy. Automatic computer classification reduces the manpower and material resources, the interpretation process is limited by subjective cognition, and the classification speed is fast. In order to improve the accuracy of classification extraction as much as possible and complete the classification quickly, in this paper, we use the decision tree classification method to track and classify the image and then use the artificial vision interpretation to correct the wrong
classification. Finally, an error matrix is used to evaluate the classification accuracy. Table 1 shows the accuracy of the classification results; the overall accuracy is more than 85%, which meets the application requirements.

It can be seen from Table 2 that the proportion of vegetation coverage has decreased by nearly 10%. The statistical results show that the impact of human activities on the change of land use types is increasing. During the survey period, construction land, unused land, cultivated land, and water body are increasing.

According to the impact of land-use types on the ecological environment, the index of land use degree is classified into vegetation, cultivated land, water area, construction land, and unused land. As most of the unused land in W City is desert areas with a poor environment, it is ranked last. The assignment of grading standardization is shown in Table 3.

The number of days that the air quality reached grade II (Table 4) indicates that from 2006 to 2017, it exceeded the grade II air quality of W City.

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**Comprehensive evaluation results of ecological environment quality**

This chapter introduces the data source and processing process used in the process of environmental quality comprehensive assessment in detail. The specific indicators of vegetation index, soil index, climate index, and humanity index are extracted. According to the distribution image of the indicators, the changing trend of environmental factors in W City can be preliminarily qualitatively judged. In this chapter, the weight of indicators is calculated by using the analytic hierarchy process, and comprehensive evaluation is the evaluation of environmental quality. From 2006 to 2017, the average value of the environmental quality assessment index tends to decline. As shown in Fig. 10:

**Assessment grade and change analysis of ecological environment quality**

The natural break point method uses the natural interruption in the data distribution as the basis of classification and uses the
overall change of each level and the minimization principle to determine the break point of classification, which is convenient for comparing the regional environmental changes during the study period. The method is used to grade the evaluation results of the three phases, and the classification results are shown in Fig. 11. The evaluation results are divided into four levels, the first level of regional environmental quality is the highest, as can be seen from Fig. 11, the first level of environmental quality in 2006 is significantly more than that in 2013 and 2020, and the fourth level of the regional area is significantly increased in 2020 due to the decline of environmental quality. The fourth grade is mainly distributed in the northern and central regions, mainly because there are deserts in the northern region, which leads to the low level of ecological environment quality, while the southwest and northwest regions have a high level of environmental quality due to the distribution of mountains and farmland.

In order to reveal the change characteristics of W City’s ecological environment quality, the difference calculation of W City’s environmental assessment results from 2006 to 2020 is carried out. If the calculation result is positive, it means that the environmental quality improvement assessment index rises; if it is negative, it means that the environmental quality degradation assessment index drops, and the calculation result is zero, which means that the environmental quality has not changed. The difference calculation result is shown in Fig. 12. During the study period, the improvement of the ecological environment mainly focused on the central cities and mountainous areas in the southeast, while the Midong area adjacent to Junggar Basin in the North continued to deteriorate. According to the statistical bulletin of W City, the environmental improvement of some areas in the central urban area is related to the urban greening work carried out by the government in recent years.

Figure 13 shows the proportion of the area with changed environmental quality in the whole city. The statistical results show that from 2006 to 2010, the area with unchanged environmental quality is the largest, accounting for 73.63%. By 2020, the degradation of environmental quality will be obvious, and the proportion of deteriorated areas will reach 67.2%, only 3.09% of the regional environmental quality will be improved.
Discussion

Application research of cloud computing platform

Cloud computing is the end-to-end development of distributed computing, parallel computing, and grid computing. Users can obtain computer and disk space and network and information services through the following ways. The functions of cloud computing are as follows:

Super large scale: most cloud computing centers are composed of a large number of computers. Google’s Cloud Computing Center, for example, already has millions of servers.

Abstraction (virtualization): the physical resources of cloud computing devices are abstracted at the logical level to form a resource pool. Users can use different devices to get application services anywhere, so as to improve resource utilization (Aalijahan et al. 2019).

High reliability: the cloud computing center adopts a variety of measures, such as elasticity of multiple copies of data, heartbeat detection, and interoperability of computing nodes in software and hardware, to ensure the reliability of services. We can keep it and automatically redeploy it after the task fails until the task is finally completed.

Versatility: few specific applications exist in the cloud computing center, but it can effectively support most of the major applications in the industry, and Cloud Computing supports a variety of different types of applications running at the same time, which can ensure the quality of these services (Austin et al. 2020).

High scalability: various APIs can be used to meet the needs of users, and the cloud resources used by users can be adjusted and expanded dynamically according to the needs of applications.

On-demand service: users can purchase on demand without prior investment in software, hardware, and facilities.

Cheap: the cluster only needs ordinary PC nodes and is based on low-cost disks.

Automation: in the cloud, whether it is the deployment of applications, services, resources, or the management of software or hardware, automation is adopted.

Energy-saving and environmental protection: cloud computing technology allows multiple workloads to be integrated into the cloud through underutilized servers to improve resource utilization.

Ideal operation and maintenance mechanism: at the other end of the cloud, there is a special team to help users manage...
information, an advanced data center to help users store data, and a strict permission management strategy to ensure security.

Optimization path of computer neural network algorithm

Before the development and implementation of the neural network algorithm based on a spark, we first understand the relevant process to be considered when implementing the general neural network algorithm.

The process of realizing a typical neural network algorithm needs data preprocessing, data partition, data training weight modeling, and network performance testing. In data modeling, this is an iterative process. The traditional distributed computing process based on Hadoop MapReduce needs to create an appropriate map and reduce program for each process (Barnett et al. 2012). In this case, when the next map task needs data, the data generated by the previous reduce will be written to disk. If there is a lot of waste, the execution time of the job will be very long and mainly spent on I/O.

Spark framework provides parallelism by using parallel RDD abstraction and API management interface (such as action statement). The time and frequency of RDD partial separation and shuffle operation have been taken into account.

Urban ecological environment quality improvement strategy

Strengthen the integration of governance functions

Holistic management emphasizes the integration of management functions, which mainly refers to “the integration of functions within institutions, such as the integration of departments of the State Council” or the integration of functional

| Table 1 | Accuracy table of land use classification |
|---------|------------------------------------------|
| Years   | 2006          | 2013         | 2020         |
| Overall accuracy   | 92.08% | 93.56% | 92.59% |
| Kappa coefficient  | 0.89   | 0.91    | 0.89  |
institutions, such as the integration of health insurance and society. The overall public management of the urban ecological environment in China is inseparable from the coordination and integration of the internal organization of the government (Darand et al. 2015). Strengthening the integration between the government ministries and functional departments is the premise of urban ecological environment governance. The integration of management functions can start from three aspects:

(1) Strengthen the city’s urban environmental management objectives

Urban environmental management is based on the maintenance of the city’s “ecology.” In short, urban “ecology” requires green development, a low-carbon lifestyle, and people’s harmonious coexistence. Improving the importance of “green” city construction and guiding each city construction towards the development direction of a green city are the overall goals of China’s urban environmental management strategy. The realization of the goal needs the cooperation of all relevant elements of the system (Feudale and Shukla 2011). The state needs to actively advocate the concept of an “ecological city.” The management of the urban ecological environment is the immediate responsibility of all departments and all civil servants. As a government, we should clearly define China’s urban development goals, take ecological cities as urban development measures, and bring the creation of urban ecological civilization into China’s socialist modernization and environmental protection. We will actively promote it, take the establishment of ecological civilization system as the goal, fully understand the spirit of the 17th and 18th National Congresses of the Communist Party of China and the spirit of the guiding opinions on civilization construction at the Third Plenary Session of the 18th Central Committee, and strengthen the social understanding of ecological civilization and urban ecological environment. To ensure that the legal form to regulate the construction of urban ecological environment and urban ecological environment management objectives (Ekamper et al. 2010), for example, we will establish an air quality control index system with PM2.5 concentration as the main index and formulate a road map for reducing air quality standards and other pollutant emissions in 2040. Relevant environmental policies can ensure the consistency of environmental governance objectives and strengthen each other’s governance means and objectives.

(2) Construction of regional environmental comprehensive management system

Hicks emphasizes that governance integration is the integration between the government and the organization. At present, under the coordination of relevant government departments and institutions in the region, the management technology of major departments (i.e., major ministries and agencies) for the urban environment and environmental governance in China is in a mature stage (Ghavidel Rahimi 2011). The establishment of a regional integrated environmental management system for integration in China may be a breakthrough in China’s environmental management. “Regional environmental integrated management system” refers to the coordinated management between departments and management departments to achieve economic development, energy consumption, and energy use at the regional level, so as to maximize the protection of the region’s ecology and environment. Make full use of local resources, ecological strength, and ecosystem services to reduce local pollutant emissions, achieve environmental quality objectives, and promote the sustainable development of the region. As far as China’s actual situation is concerned, China’s administrative divisions are equivalent to a comprehensive regional environmental management system. China has 23 provinces, 5 autonomous regions, 4

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### Table 2: Statistical table of land use classification

| Type of land use | Years       | Area (km²) | Percentage (%) | Area (kil³) | Percentage (%) | Area (kil³) | Percentage (%) | Area (kil³) | Percentage (%) | Area (kil³) | Percentage (%) |
|-----------------|-------------|------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|
| Arable land     | 2006        | 2039.48    | 14.36          | 6231.63     | 43.89          | 123.18      | 0.86           | 318.61      | 2.24           | 5485.24     | 38.63          |
|                 | 2013        | 2033.85    | 14.32          | 6548.55     | 46.12          | 201.31      | 1.42           | 376.04      | 2.64           | 5038.39     | 35.48          |
|                 | 2020        | 2796.5     | 19.7           | 4459.83     | 31.41          | 170.98      | 1.20           | 617.06      | 4.35           | 6153.77     | 43.34          |

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### Table 3: Classification and standardization of land use types

| Land-use type | Arable land | Vegetation | Waters | Construction land | Unused land |
|---------------|-------------|------------|--------|-------------------|-------------|
| Standardized value | 0.9         | 0.7        | 0.5    | 0.3               | 0.1         |

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municipalities directly under the central government, and 2 special administrative regions. The province and autonomous region are divided into counties and autonomous regions. The municipal administrative region establishes the county-level regional environmental management system for each county, the provincial administrative region establishes the regional environmental management system for the Municipal City, and the state constructs the regional environmental management system with provincial units (Perkins and Alexander 2013). These systems carry out major reforms in urban environmental management. At the same time, the regional integrated environmental management system requires interagency and interregional coordination and integration, which must be exactly the same as China’s administrative system. Secondly, in the vertical structure, the relationship between the superior and subordinate government departments is between the leader and the led. In the horizontal structure, the cooperation between the same level of functional departments and different departments within the government is parallel. This vertical and horizontal structure contributes to the realization of the interdepartmental and interregional requirements for regional integrated environmental management systems. Therefore, at the present stage, there is a method of integrated regional environmental management system for urban ecosystem management, which is a feasible strategy to realize the overall management in the Chinese environment (Ghavidel Rahimi and Ahmadi 2015; Piticar 2018).

(3) Establishment of a coordinating and deliberative body

Strengthening coordination and setting up advisory bodies are essential for promoting urban environmental governance.

| Years | 2006 | 2013 | 2020 |
|-------|------|------|------|
| Number of days (days) when air quality reaches level 2 or higher | 283  | 267  | 242  |

Fig. 10 Comprehensive evaluation results of ecological environment quality in W City
nationwide, as many public sectors involved in urban environmental governance are at the same level. The Third Plenary Session of the 18th CPC Central Committee passed the “decision of the CPC Central Committee on several major issues of deepening reform” and established a steering group for comprehensively deepening reform (Hoseini et al. 2013). The economic and ecological civilization system is a priority project team, and its importance is obvious. The establishment of the reform group is very important for the modernization of China’s social

**Fig. 11** Grading map of comprehensive assessment results of ecological environment quality in W City from 2006 to 2020

**Fig. 12** Detection of ecological environment quality change in W City from 2006 to 2020 based on difference method
management system and management ability. Under the leadership of the central government, each province has set up a leading group to deepen the reform and coordinate the governance, overall planning, and management of the urban ecological environment. Under the leading group, a special urban environmental management organization should be established (Gosling et al. 2009). At the same time, the special agency is responsible for coordinating the work of relevant departments and evaluating the policies and implementation of environmental governance and urban ecological construction of relevant departments. Timely communication of difficult problems to the reform led group will cover a wider range of coordination, which can improve the overall management efficiency of the urban environment (Lu et al. 2015).

**Strengthen the integration of governance levels**

The integration of the administrative level means reducing the governance level of urban environmental governance and create a flat governance organizational structure model. A flat organizational structure helps to improve communication, strengthen horizontal communication between different departments and levels, speed up decision-making, shorten the distance between levels, and reduce the malicious governance model caused by poor communication and government self-interest (Jaagus 2006). At present, China implements four levels of administrative management, but China’s governance system has actually reached the fifth level, which not only increases the management cost and reduces the management efficiency, but also ensures the overall management of the urban ecological environment. By strengthening interagency cooperation, co-governance of cities and counties, and joint management among friendly cities, the administrative level can be integrated into urban environmental management.

**Conclusion**

This paper studies the recent fog events and proposes a new model of environmental city governance in China. The theory of overall management is one of the successful representatives of the dialogue between modern administration and sociology. It forms its own complete theoretical system through the research on the management theory, the new durgan institutionalism and organizational sociology, and the essence of the new management theory. Among them, the solution of “fragmentation” and “trickiness” is the direction of efforts, a direct way to emphasize trust and responsibility, the use, coordination, and integration of information technology, and the mutual strengthening of each other through purpose and means. The modern multiprocessor parallel processing technology has put forward high requirements for data organization format or equipment, so it cannot be applied on large scale. Based on the detailed research of cloud computing and the emergence of many cloud computing platforms in recent years, this paper studies MapReduce parallel programming on the basis of the research on the existing text clustering algorithm and neural network algorithm.

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Declarations

Conflict of interest The authors declare that they have no competing interests.

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