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Retraction

Retracted: Emergency Scheduling Optimization Simulation of Cloud Computing Platform Network Public Resources

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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[1] D. Liu, Z. Yao, and L. Chen, "Emergency Scheduling Optimization Simulation of Cloud Computing Platform Network Public Resources," *Complexity*, vol. 2021, Article ID 9950198, 11 pages, 2021.

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Research Article

Emergency Scheduling Optimization Simulation of Cloud Computing Platform Network Public Resources

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Emergency scheduling of public resources on the cloud computing platform network can effectively improve the network emergency rescue capability of the cloud computing platform. To schedule the network common resources, it is necessary to generate the initial population through the Hamming distance constraint and improve the objective function as the fitness function to complete the emergency scheduling of the network common resources. The traditional method, from the perspective of public resource fairness and priority mapping, uses incremental optimization algorithm to realize emergency scheduling of public resources, neglecting the improvement process of the objective function, which leads to unsatisfactory scheduling effect. An emergency scheduling method of cloud computing platform network public resources based on genetic algorithm is proposed. With emergency public resource scheduling time cost and transportation cost minimizing target, initial population by Hamming distance constraints, emergency scheduling model, and the corresponding objective function improvement as the fitness function, the genetic algorithm to individual selection and crossover and mutation probability were optimized and complete the public emergency resources scheduling. Experimental results show that the proposed method can effectively improve the efficiency of emergency resource scheduling, and the reliability of emergency scheduling is better.

1. Introduction

With the rapid development of the Internet, the number of network public resources is growing linearly. Cloud computing platform can allocate a large number of complex computing resources to distributed computing resources, providing strong computing power and parallel processing support for resource processing, which is widely used in various fields [1, 2]. In the cloud computing platform network, since the cloud computing platform presents the characteristics of dynamic changes, how to conduct emergency scheduling of public resources has now become the core mechanism of the cloud computing platform [3, 4]. Early public cloud computing network resource scheduling is researched mainly in order to promote application performance under the premise of the overall utilization of public resources through the virtual machine continuously to reduce the use of server migration quantity and reduce system energy consumption; however, there are uncertainties in emergencies and urgent public resource requirements, for a long time delay in using the above scheduling method dispatch, scheduling with low reliability [5]. In this case, how to fairly and reasonably deploy network public resources under the cloud computing platform to each disaster site has become a major problem to be solved by emergency decision-makers in this field, which has attracted extensive attention [6].

The rapid development of the Internet at the present stage leads to the increase of network exchange data with the increase of users. It also led to the widespread of information exchange which is frequently part of the data in the process of processing, and there will be some errors, defects, or the same data in different terminal having a certain difference. Moreover, with the increase of Internet users of the data, the situation has become an important problem in the field of the study, which leads to this situation being the main cause of formation, such as the following two points.

For single data source: to a certain extent, single data source may be unable to clear analysis of the relationship among data. This will directly cause the process of building model, while data format is not neat, and expression is not clear wait for a phenomenon. It can also lead to the data dependency damage and the incomplete problems.

For multiple data sources, in practical operation, all data are completed separately in the process of model design. When data is integrated, even if each data source is the same, it will cause incomplete data due to different model construction.

The early researches on emergency scheduling of network public resources on cloud computing platform mainly include the following: literature [7, 8] proposes a cloud computing platform-oriented emergency scheduling method for network public resources. This method firstly divides the servers to be scheduled into multiple server clusters, builds a common resource allocation model for energy consumption optimization in each server cluster, and adopts the constraint programming framework C110C. Solve the model and get the emergency dispatching method of public resources with optimal energy consumption. The energy consumption of resource scheduling is small, but the scheduling delay is too long. Literature 1 g proposes an emergency scheduling method for public resources in cloud computing platform network based on minimum cost and maximum flow. In this method, the problem of public resource demand and physical demand supply for emergency tasks is firstly transformed into the problem of constructing and solving the minimum cost and maximum flow graph. From the perspective of fairness and priority of public resources, the problem of constructing the graph is mapped, and the incremental optimization algorithm is adopted to realize the emergency scheduling of public resources. The scheduling delay of common resources in this method is short, but it can only adapt to the situation where the scheduling target remains unchanged, and its flexibility is poor. An emergency scheduling method for public resources in cloud computing platform network based on improved hybrid genetic algorithm is proposed in literature [9]. By improving the fitness function of genetic algorithm, this method changes the difference degree of fitness function between different chromosomes, thus enhancing the selective performance of chromosomes in the selection operator. This method can effectively improve the convergence speed of the scheduling optimization of common resources, but the scheduling performance is poor [10–14].

This paper innovatively proposes a dynamic load prediction algorithm based on exponential smoothing, which has some improvements in the prediction accuracy and can be used to optimize the placement of virtual machines. However, it does not further deal with some special cases with more frequent fluctuations. The space complexity of the algorithm is optimized to some extent, but the time complexity needs to be improved. In terms of prediction, only the load of the physical host is considered, and it is hoped that the multidimensional resources can be extended in the future work. Virtual machine placement algorithm based on multiobjective optimization optimizes multiple goals, but some factors, such as violation ratio and virtual machine migration time, are still not taken into account. This algorithm is based on ant colony algorithm. Because ant colony algorithm is an evolutionary algorithm, it needs to learn and iterate to obtain the final solution set, so the time complexity of the algorithm is too high when solving the virtual machine placement optimization model. In the future, the algorithm can be improved to reduce the time complexity of the algorithm. In the implementation of the virtual machine migration module, the built-in load determination and virtual machine selection algorithm are adopted. In the future work, we hope to put forward a more suitable load determination and virtual machine selection algorithm for the migration module and compare with the built-in algorithm in many aspects.

Aiming at the problems of the above methods, an emergency scheduling method of cloud computing platform network public resources based on genetic algorithm is proposed. The Hamming distance constraint is used to generate the initial population of the genetic algorithm, and the selection operator, crossover operator, and mutation operator of the genetic algorithm are optimized. The experimental results show that the proposed method can obtain the global earliest completion time, and the reliability of emergency scheduling is better [15–17].

2. Emergency Scheduling Principle of Cloud Computing Platform Network Public Resources

2.1. General Forms of Emergency Scheduling of Cloud Computing Resources. In recent years, the reason why cloud computing can develop rapidly and play an irreplaceable role in all fields of the current society is inseparable from the stable system structure of cloud computing. At present, cloud computing technology system structure mainly includes physical resource layer, virtual resource pool layer, middleware management layer, and SOA service layer. Figure 1 shows a top-down cloud computing system architecture.

According to the authoritative organization NIST, from the perspective of user experience, cloud computing can be divided into software as a Service SaaS, platform as a Service PaaS, and infrastructure as a Service IaaS X23-2S according to the service mode, providing corresponding services for different users, as shown in Figure 2.

Public resources of the cloud computing platform network emergency scheduling process: to form a cloud computing platform network public resource scheduling model, we need to use particle swarm optimization (PSO) algorithm for the application of public resources demand forecast, according to the results of application of public resources demand forecasting for application service quality

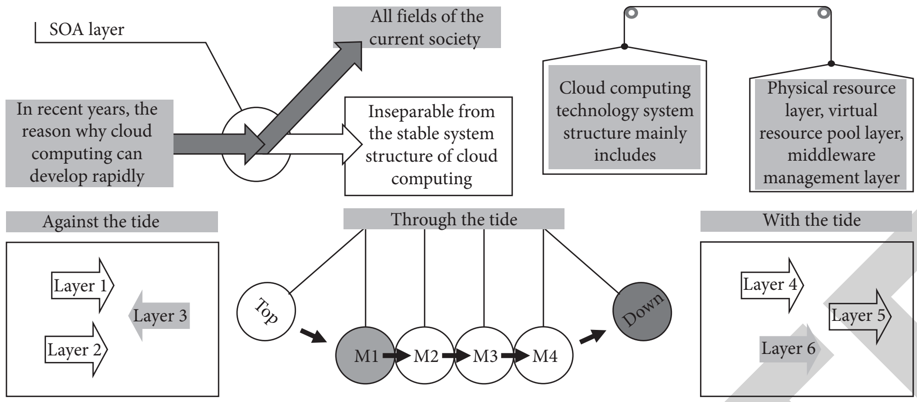

Figure 1: A top-down cloud computing system architecture.

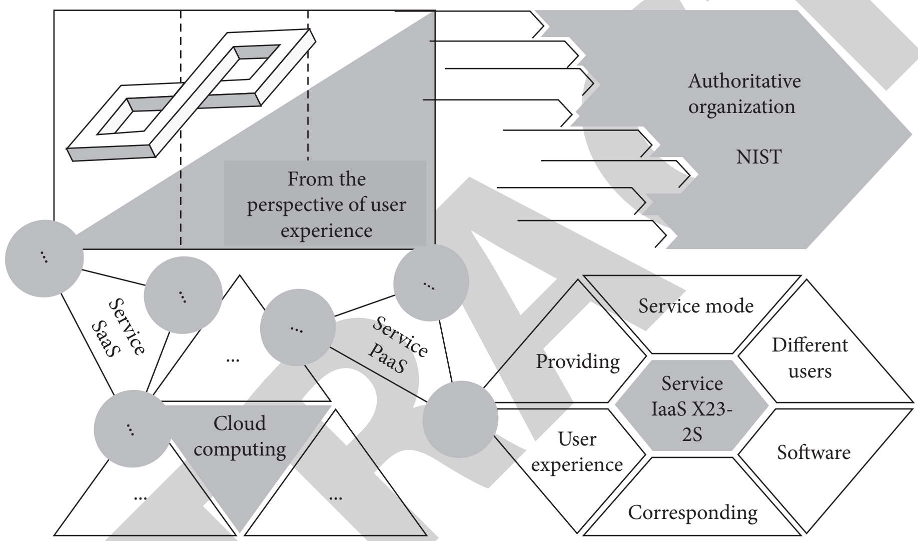

Figure 2: Cloud computing system classification.

and the utilization of public resources two objectives' optimization. On the basis of the optimal solution, the method is obtained to complete the cloud computing platform network public emergency resources scheduling, and the specific process is as follows [13].

Suppose that $v\,K$ represents the common resource vector in the cloud computing platform network, the virtual machine is placed on the physical resource m, and the bit vector is s (by China..., thrill), where =1 represents that the application k is placed on the common resource. In order to make the network common resource placed on the physical resource, the following formula is used to give the objective function:

$$Ks = \min{}'' \oint\!\!\oint\!\!\oint m \otimes \min{}'' \oint\!\!\oint\!\!\oint {}_{s}^{n}, \tag{1}$$

where it must represent the minimum number of network nodes which represents the minimum migration times of network virtual machine I; the constraint relationship between physical resources and public resources can be expressed by the following formula:

$$\begin{aligned} &\mathrm{Ps}\oplus m \iiint ms \longrightarrow \min{}'' \oint\!\!\oint\!\!\oint m \cdot h, \mathrm{P}\oplus m \iiint ms \\ &\longrightarrow \min{}'' \oint\!\!\oint\!\!\oint_{s}^{n} m \cdot h, \mathrm{XA} \lessdot \mathrm{SLO}^{*} \bigcup_{N} \mathrm{AM}. \end{aligned} \tag{2}$$

In the formula, XA represents the demand for common resources of a cloud computing platform network application, AM represents the size of a common resource, and N represents the demand of an application virtual memory resource which represents the size of a memory resource P in the cloud computing platform network. Ps Represents the application performance index of public resources on the cloud computing platform network, and SLO represents the service-level target of public resources.

Virtual machine is placed in the public emergency resources scheduling optimization goal which is in guarantee under the condition of multiple targets. Minimizing number of virtual machine migrations and physical nodes using the minimum number of particle swarm optimization algorithms was adopted to realize the public emergency scheduling optimization of resources. The definition of ant colony in the problem of optimal target for each particle characterization for a possible solution is in a D-dimensional search space, representing a population composed of m particle which represents the position of particle A. At the same time, it represents the velocity of particle in the population, and $c2$, respectively, represent learning factors; R and Ra, respectively, represent random numbers evenly distributed within the interval and represent the optimal position where particle A is currently searching for a time u. The following formula is used to give the update formula of particle X, velocity, and position:

$$\begin{aligned} W_{xy}(u) &\Leftrightarrow W_{xy}(u-1) + S_m d_n\big(q_{xy} - y_{xy}(u-1)\big), \\ q_{xy} &\Leftrightarrow W_{xy}(u-1) + \cup \prod, \end{aligned} \tag{3}$$

where the velocity of the particle at time t and via (T1) represents the velocity of the particle at time u-1.

According to the above prediction results and the improved particle swarm optimization algorithm, the two objectives of public service quality and public resource utilization are optimized, and the emergency scheduling of public resources on cloud computing platform network is completed based on the optimal solution.

$$s(k) = \left\langle \begin{matrix} k11 & & & & \\ & k22 & & & \\ & & k33 & & \\ & & & k44 & \\ & & & & k55 \end{matrix} \right\rangle . \tag{4}$$

In this way, through the above formula, other detailed information data of cloud storage information will be automatically collected inside the system. According to the collected data information, the specific length of the data block is equally divided into A; then this formula will divide the file F into M blocks on an average basis. In this paper, these data blocks with length of A are created as a kind of automatic data partition code. Then,

$$W(g) = mt(l)(\partial \varnothing \ell)\Phi \mapsto \bigcup_{i}^{q} m. \tag{5}$$

In order to successfully build the RS encoding, you first need to build a proper Vandermonde matrix. At the same time, the determinant of the matrix also needs to have the following properties; the constructed matrix H is shown in the following formula, where $h > 0$:

$$Ks = \min'' \oiiint m \oplus \min'' \oiiint_{s}^{n}. \tag{6}$$

According to the above formula, the new matrix composed of any n row vectors selected from the matrix H has the same properties as formula (1). It can be seen that any n row vectors in H are linearly independent as above. Then, for a matrix, it is converted into a matrix by automatically dividing the data into codes, as shown in formula (6).

2.2. Principles of Cloud Computing Platform Deployment. Virtual machine placement is the most important part of virtual machine migration. The placement of virtual machine is to place the virtual machine to be migrated to the appropriate destination host on the premise of meeting the resource constraints including memory, CPU, and bandwidth, optimize the resource deployment strategy of the data center, and maximize the requirements of high efficiency and low energy consumption of cloud data center [18]. In short, it is to decide which virtual machine to put on which host. The virtual machine placement problem model is shown in Figure 3.

After the above transformation, RS code is constructed. Because RS code encoding of calculation process is achieved in the restricted area, I need to meet the requirements of the calculated limit area calculation. The domain has a collection of two calculation methods at the same time, so the initial data block coding form, the newly formed m, a data block, is formed after the code redundancy data. The m, a block of data, can be seen to a certain extent. After it has a good fault tolerance, then we put the number of $k+m$.

The data block is sent to the corresponding data node. But in practice, since RS encoding can also be called rationale code, it can also be called nonimportant $(K+M, K)$, and the encoding rate is described as $K/(K+M)$. But because RS code adopted linear encoding algorithm, so the RS code can use vector group and the form of matrix multiplication, which had the E (column = CF, where C is coding matrix formation, which is also a $k+m$ row k column of the matrix, and F is said to be equal division after vector set of source files); then specific encoding process of RS code is shown below.

Suppose S is a set of nonempty elements. If we want to determine two operations in the set, we must satisfy the following three limiting properties:

(1) The method of operation in set S needs to satisfy the restriction condition of constructing Abelian group, and 0 is regarded as an identity element

(2) Data with nonzero elements in set S should be constructed into an Abelian group according to the algorithm, and 1 should be regarded as identity element [19–22]

(3) Operational methods should meet certain distribution laws, that is, arbitrary variables

Through the above description, the construction of RS code is completed, and the integrity of data is detected by using the constructed RS code. The final optimal smoothing coefficient A is obtained as the smoothing coefficient of the next stage. After the prediction is completed, the predicted value is obtained to provide the predicted value for the placement algorithm. Finally, the real value is obtained to continue a new round of prediction and a new round of optimal smoothing coefficient A is dynamically obtained. The flow chart of dynamically obtaining smoothing coefficient is shown in Figure 4.

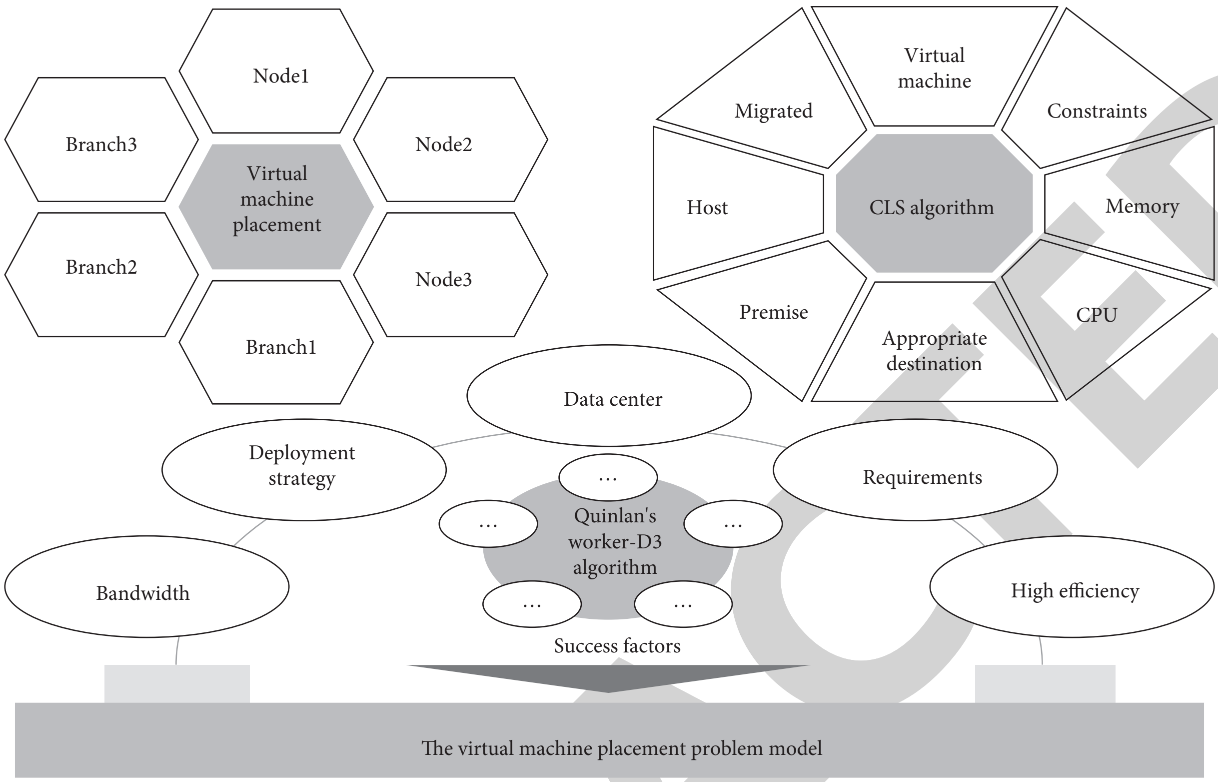

Figure 3: The virtual machine placement problem model.

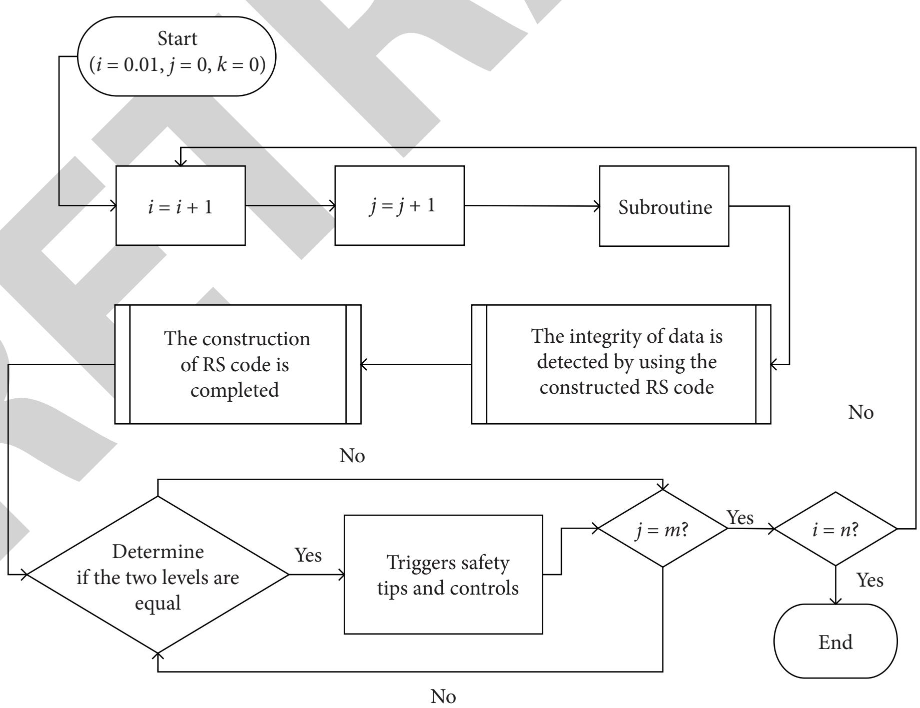

Figure 4: The flow chart of dynamically obtaining smoothing coefficient.

3. Cloud Computing Platform Network Public Resources Emergency Scheduling Method

3.1. Establish a Public Resource Scheduling Model under Various Emergency Constraints. The dynamic load prediction algorithm based on exponential smoothing in cloud computing environment proposed in this paper is mainly for the service of virtual machine placement. Firstly, the dynamic load prediction algorithm based on exponential smoothing is implemented. After the predicted value of the physical host is obtained, the predicted value is passed to the load decision module and the virtual machine placement module. The running process of the dynamic load prediction algorithm based on exponential smoothing is described as follows:

Step 1: after the environment deployment is completed, the cloud environment simulation will be started. The monitoring system will collect historical data and monitor the load changes of the physical host in real time.

Step 2: set the initial forecast value according to the weighted historical data and initialize the smoothing coefficient. For the first round of prediction, the third-order exponential smoothing algorithm is used to get the predicted value.

Step 3: update the smoothing coefficient dynamically, set the step size K to iterate the smoothing coefficient, and dynamically obtain the optimal smoothing coefficient for each physical host according to the dynamic acquisition flow chart of the smoothing coefficient.

Step 4: obtain the predicted value according to the third-order exponential smoothing algorithm and the optimal smoothing coefficient. In order to remove the noise, by setting the continuous high load times to reduce the impact of the load instantaneous rise, compare whether the load is greater than the upper limit; if greater than the Min value, the continuous high load times are plus 1, otherwise, continuous high load times.

Step 5: get the real load value of the physical host. The real value is used to dynamically update the smoothing coefficient. Return to Step 3 to start a new round of prediction.

Dynamic load forecasting based on exponential smoothing algorithm to get the predicted value of the physical host load: if the physical host of continuous high load times is greater than the value, load forecast module will load forecast decision module and virtual machine to load module; Module load determination is according to the predicted values to decide whether to trigger the virtual machine migration. Virtual machine placement module according to the load forecast determines the destination host.

In the process of emergency scheduling of cloud computing platform network public resources, with the objective of minimizing the time cost and transportation cost of emergency public resources scheduling, an emergency scheduling model of public resources under the constraint of cloud computing platform network emergency public resources demand is established. The specific process is as follows.

Suppose that there are n' emergency resource supply points and one public resource emergency demand point under the cloud computing platform network, and M' emergency public resources are needed. A represents the network emergency demand point; a represents the a' emergency public resource supply point, n represents the time needed to transmit the AI to Weng class emergency resources to a, b represents the supply of Weng class emergency public resources by a and m takes the minimization of the time cost and transportation cost of the cloud computing platform network public resources emergency scheduling as the objective function to build the emergency public resource demand center. Based on the constraint condition of public resource emergency scheduling model, an emergency scheduling mechanism x is determined. On the basis of meeting the resource demand and time urgency, the total cost of public resource scheduling is the lowest. The cloud computing platform network public resource emergency scheduling model is established as follows:

$$\begin{aligned} Si(m) &= 1 - P\text{mem} - Ppu + 1bwP, \\ Z_{za} &= (m)^{*} Y(m) n \frac{a}{n} = b, \\ Z_{zk} &= Hk(m)^{*} (m) \frac{a}{n} = b. \end{aligned} \tag{7}$$

For the seventh kind of network public resources needed by the emergency demand point, the time cost is converted into the transportation cost. To (J.) is defined as the shortest transportation time of the first kind of emergency public resources, CO (J.) is defined as the corresponding unit transportation cost, c.lt, CO (J')/to (J') represents the increased time cost of supplying such emergency public resources from the supply point a', and TC, one to (J.) represents the corresponding transportation time and converts the time cost coefficient C. (T) into the transportation cost of public resources.

Therefore, the multiobjective function of cloud computing platform network public resource emergency scheduling model can be represented as a single objective function.

In order to show the prediction accuracy more intuitively, Figure 5 shows the error sum of dynamic coefficient and static coefficient prediction results in different data centers.

In the $d1$–$d5$ scenario, the sum of errors of the predicted values obtained by the exponential smoothing algorithm based on the dynamic coefficient is smaller than that of the static coefficient; that is, the prediction accuracy of the dynamic coefficient is higher than that of the static coefficient. Especially in the large data center, the gap between the two is widening.

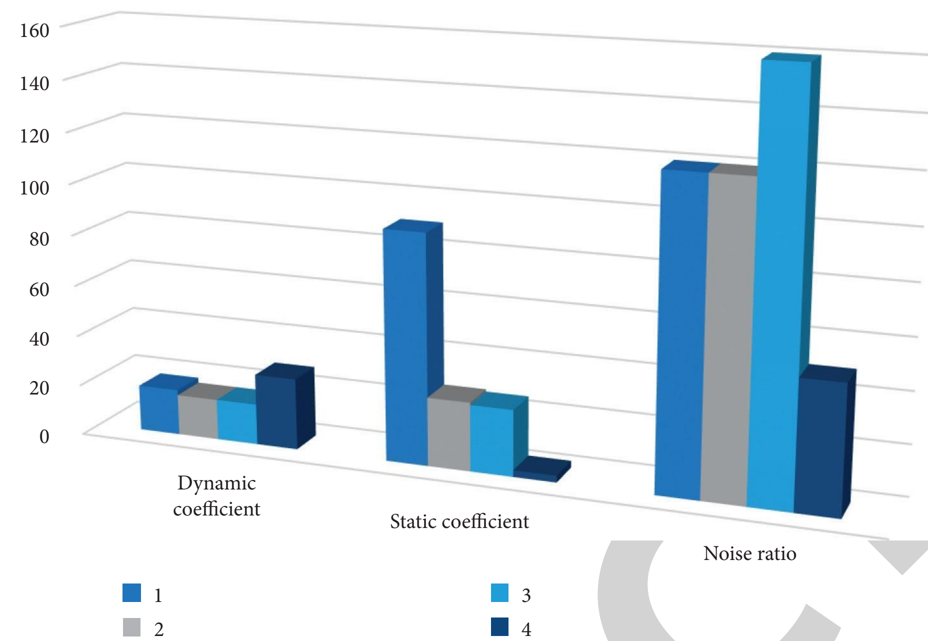

Figure 5: The error sum of dynamic coefficient and static coefficient prediction results in different data centers.

3.2. Solving the Emergency Scheduling Model of Public Resources Based on Genetic Algorithm. Public resources of the cloud computing platform network emergency scheduling process, using genetic algorithm in Section 3.1 to form a variety of emergency public resources under the constraint conditions, are applied to solve the scheduling model by Hamming distance constraints and generating initial population genetic algorithm, and the cloud computing platform network public emergency resources scheduling model improves the corresponding objective function as the fitness function. The genetic algorithm to individual selection and crossover and mutation probability were optimized and thus complete the public emergency resources scheduling. The specific process is as follows,

Binary encoding are used to analyse the chromosome codes, according to the characteristics of cloud computing platform network public emergency resources scheduling, using natural number codes are used to express, the cloud computing platform network public emergency resources scheduling tasks. Based on the analysis of the previous, the optimal solution for completing all tasks in the shortest time is obtained. The greater the adaptability of the genetic algorithm, the greater the type of improvement. The cloud computing platform is the corresponding objective function of the network public emergency resource scheduling model.

3.3. Empirical Analysis. In order to prove the comprehensive effectiveness of the proposed emergency scheduling method for cloud computing platform network public resources based on genetic algorithm, an experiment is needed. System to ILPG, an OPL Development Studio 5.5: write the simulation program; the experiment takes into account the supply level of emergency resources transport time and all kinds of public resources amount of uncertainty. From the selection of multiple supply points to a small number of outlets in emergency resource scheduling, in setting parameters of genetic algorithm, the genetic population size is set for 400 and the number of iterations is set for 5000. Set the mutation probability asp = 0.4, such that genetic individual in the initial stage focuses on global search. Genetic groups achieve a relatively uniform after accelerating convergence. Make the optimal solution of genetic algorithm as close as possible to the real solution result.

On the Hong Kong–Macau Expressway, Wuhan section up line at 205 km + 400 m after a traffic accident case analysis, a bus carrying about 10 tons of liquid chlorine tank car and a truck collided in an accident, causing a large amount of liquid chlorine from tank trucks to leak. The face of the combustion of liquid chlorine tank truck with gradually explosive chemicals needs to redeploy the emergency resource scheduling. Although there exists one disaster site, a total of five can provide resources of the save point. All the save points to the combustion of liquid chlorine tank trucks sections of the affected points can provide maximum supplies (bag), the fastest time (minutes) (K), and the corresponding scheduling cost S save point. P represents the largest amount of supplies, M represents the fastest time, and N represents scheduling cost. In order to further verify the feasibility of the method in this paper, this section will compare the repair duration of different methods in literatures to verify the system repair duration when Per(cons) changes from 20% to 80%. The comparison results of the iteration process are shown in Figure 6.

Under the constraints of the original model, the genetic algorithm was iterated for 500 times, and each parameter setting in the genetic algorithm was obtained through multiple experimental test results. When the crossover

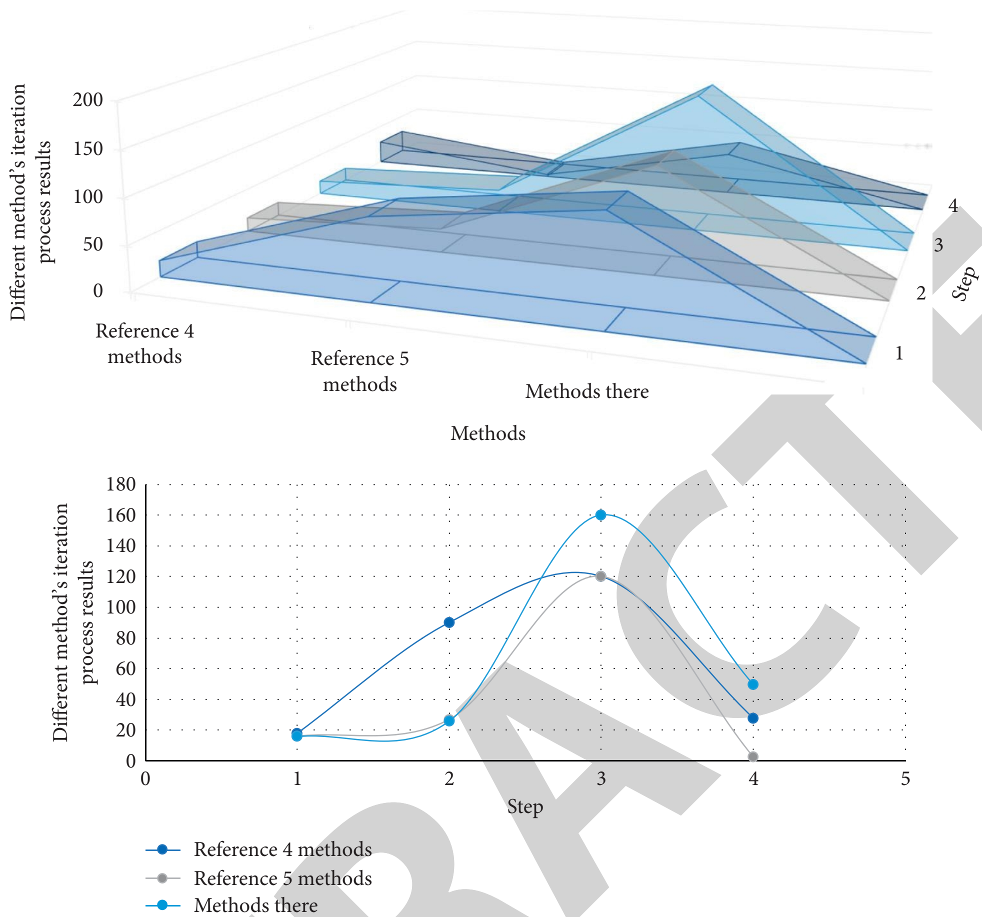

Figure 6: The comparison results of the iteration process.

probability was 0.2 and the mutation probability was 0.2, the experimental results were good.

Best save point to four, to actual combustion of liquid chlorine tank trucks affected point sequence S1, S5, S3, S4. Also, with the corresponding time for this order, for the Hong Kong-Macau Expressway Wuhan section, combustion of liquid chlorine tank trucks affected some supplies scheduling problem, respectively, using the proposed method and the scheduling method based on hidden Markov and scheduling method based on the information office of the cloud computing platform network public emergency resources scheduling experiments. Three different methods to public emergency resources scheduling (s) are compared to delay time; see the results in Figures 7 and 8.

Analysis of Figures 7 and 8 shows that the proposed method is adopted to improve the cloud computing platform network public emergency resources scheduling delay time which is far less than the scheduling method based on hidden Markov and scheduling method based on the information office. This mainly lies in the proposed method with emergency public resource scheduling time cost and transportation cost minimizing the goal, to form a variety of emergency of public resources in the cloud computing platform network demand and supply constraints as well as time constraints, such as emergency scheduling model under the condition of public resources, and it uses the ant colony algorithm to solve the scheduling model and makes the proposed method corresponding emergency scheduling delay time shorter.

Route of public resource scheduling in cloud computing platform consists of multiple resource scheduling segment series, based on the connected reliability calculation model and calculation of public emergency resources scheduling reliability, respectively, using the proposed method and the scheduling method based on hidden Markov and scheduling method based on the information office of public emergency resources scheduling reliability (%). The comparison results are shown in Figure 9.

Analysis of Figure 9 shows that the proposed method is adopted to improve the reliability of public emergency resources scheduling which is much higher than the scheduling method based on hidden Markov and scheduling method based on the information office. This mainly depends on the proposed method to form a cloud computing platform through the network to a variety of emergency public resource demand and supply constraints and time constraints such as emergency scheduling model under the condition of public resources. The cloud computing platform network public emergency resources scheduling model improves the corresponding objective function as the fitness function, the genetic algorithm to individual selection and crossover and mutation probability were improved, and the corresponding emergency scheduling method has a better reliability.

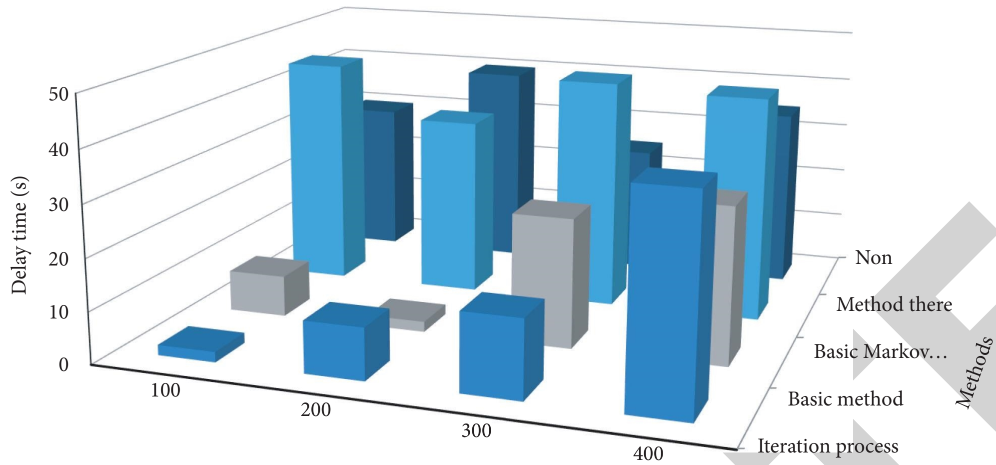

Figure 7: The results of data analysis and comparison in three-dimensional composite diagram.

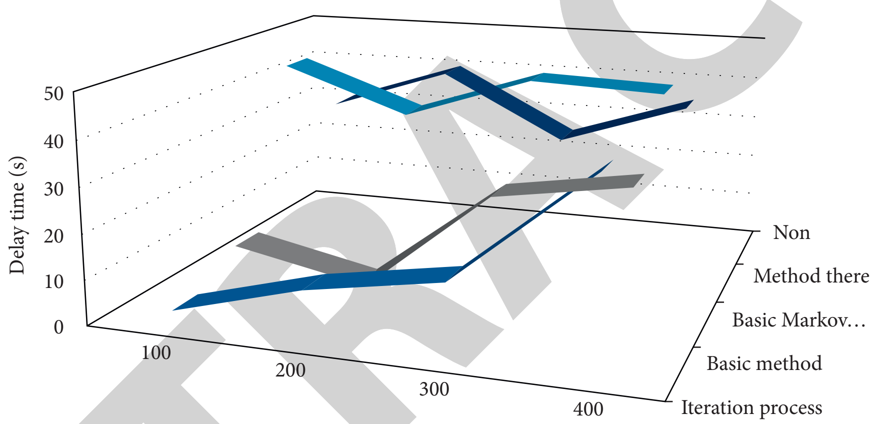

Figure 8: The results of data analysis and comparison in three-dimensional line chart.

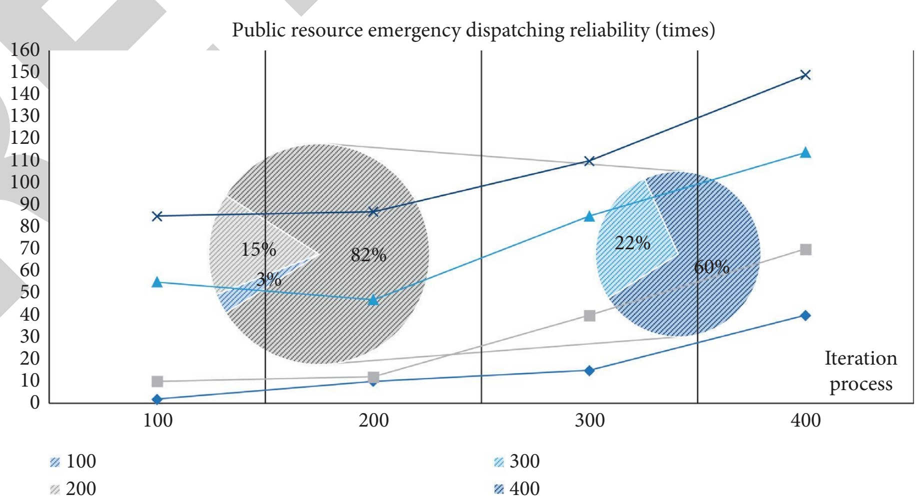

Figure 9: Comparison of public resource emergency dispatching reliability of different methods.

4. Conclusion

In view of the current method for emergency scheduling of public resources under the cloud computing platform, the Markov decision process is adopted to maximize the error tolerance time of the task group, which ignores the flexibility of the cloud computing platform and the constraints of emergency resource scheduling requirements, supply constraints, and other constraints, resulting in poor reliability of emergency scheduling. This paper innovatively proposes a dynamic load prediction algorithm based on exponential smoothing, which has some improvements in the prediction accuracy and can be used to optimize the placement of virtual machines. Therefore, an emergency scheduling method of cloud computing platform network public resources based on genetic algorithm is proposed. Experimental results show that the proposed method has strong applicability and high efficiency and can provide basis and support for emergency scheduling decisions of public resources on cloud computing platform network. In the process of frequent network data exchange, the probability of users getting invalid information increases due to the decrease of data integrity. Based on this, this paper proposes a method for data repair of MapReduce programming model. Through big data preprocessing and integrity detection, specific incomplete data can be obtained with high precision. Finally, optimization and repair can be completed by determining coding values and attribute conditions. The simulation results show that the proposed method can effectively optimize and repair incomplete information and has the advantages of less time consumption and less complicated calculation process.

Data Availability

The 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 known conflicts of interest.

Acknowledgments

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