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Retraction

Retracted: Design and Application of Cloud Resource-Based Ideological and Political Online Course Resource Platform

Mathematical Problems in Engineering

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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) Peer-review manipulation

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] Z. Kang, "Design and Application of Cloud Resource-Based Ideological and Political Online Course Resource Platform," *Mathematical Problems in Engineering*, vol. 2022, Article ID 3034102, 8 pages, 2022.

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Research Article

Design and Application of Cloud Resource-Based Ideological and Political Online Course Resource Platform

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Online teaching platforms have been popularized and promoted as a result of the development of network information technology, and colleges and universities encourage teachers to use a variety of network teaching platforms to innovate teaching models and improve teaching effectiveness. Using an ideological and political online course as an example, it analyzes the teaching design concepts, instructional effects, and existing problems on the online learning platform, and extracts recommendations for online course construction that have a specific reference for online course teaching. Additionally, aiming at the multiobjective cloud resource scheduling problem, this article aims to optimize the total completion time and total execution cost of the task. It does so by utilizing fuzzy mathematics, establishing a fuzzy cloud resource scheduling model, and proposing a hybrid intelligent optimization algorithm CO. The CO algorithm is validated by randomly generating cloud-computing resource scheduling data using the CloudSim simulation platform. The experimental results indicate that the CO algorithm outperforms traditional cloud resource scheduling algorithms in terms of optimization and load balancing performance.

1. Introduction

The Communist Party of China has a proud tradition of continuously strengthening and improving ideological and political education (IPE), which is a key component of the creation of socialist spiritual civilization in the new era. For the efficient growth of IPE in the modern period, it is necessary to coordinate the efforts of many departments and institutions, as well as to explore and innovate with regard to diverse IPE resources, among other things [1–5]. Fundamental to ensuring that IPE activities are carried out effectively are IPE resources. They are also the most important guarantee for promoting the scientific development and advancements of ideologies and political education systems.

There are several issues with traditional IPE theory course instruction, including out-of-date concepts, out-of-date teaching methods, and one-way instruction. These issues result in a disconnect between teaching and learning in IPE theory courses, which has a detrimental effect on the course's effectiveness. With increased Internet use and the advent of the era of big data, educational data will increasingly find its way into student information systems and learning management systems at colleges and universities across the country. The IPE theory course is expected to disrupt the traditional classroom teaching model by combining information-based and face-to-face learning in addition to relying on scientific and objective data such as big data and cloud computing to assist in the development of IPE theory courses. The purpose of this project is to expand and develop the teaching theory and method system for IPE theory courses, as well as to enhance the effectiveness of IPE theory class instruction [6–8].

The advent of the big data era has resulted in schools and universities becoming increasingly reliant on a variety of data sources. Expert-based qualitative analysis methods are being phased out in favor of data-based quantitative analysis approaches, which are less time-consuming and labor-intensive. The progressive maturity of computer technology and software development theories such as big data and cloud computing has resulted in the widespread application of big data research in a variety of industries [9, 10]. The teaching of IPE theory courses is a complicated system with intertwines at multiple levels and involves a variety of variables. It is possible to overcome the limitations of traditional teaching methods and achieve efficient integration of online and offline education by relying on a big data platform, developing innovative teaching methods, and incorporating learning organizations into the teaching of IPE theory courses.

Using cloud computing as a business computing model and as a service model, the primary goal of cloud-computing resource scheduling is to manage and alter the resources on the network in a uniform manner, and then provide service calls to users. The primary research goal of cloud-computing resource scheduling is to figure out how to manage and use computing resources and data efficiently [11].

Cloud resource scheduling is an NP-hard problem, which means that it is extremely difficult to solve. Along with reducing execution times and costs and conserving energy, effective resource scheduling takes into account the dependability, security, availability, and scalability of the tasks. Even if you use the existing scheduling methods, such as time slice rotation, the first-in-first-out algorithm, the hash method, and the greedy algorithm, it is difficult to achieve complete satisfaction of all aspects of cloud-computing resource scheduling, resulting in service performance imbalance or other issues [12, 13].

Intelligent algorithms, according to current research directions, are the most promising approach to resolving the cloud-computing resource scheduling challenge at the moment. Such algorithms include particle swarm optimization (PSO), ant colony optimization (ACO), genetic algorithms (GA), and simulated annealing algorithms (SA), among others [14–20]. Its benefits include a smaller number of adjustable parameters and a faster convergence rate. Additionally, as previously stated [21, 22], the particle swarm optimization algorithm will memorize both the current global optimal and local optimal while searching. This will benefit future particle swarm optimization searches. However, because it makes use of random initialization, the particle swarm optimization approach is susceptible to issues such as unequal particle distribution across a solution space or particle overfitting, both of which are detrimental to particle population optimization [23–25].

When it comes to solving nonlinear problems, Covariance Matrix Adaptive Evolutionary Strategy (CAMES) is an excellent algorithm because it was designed based on evolutionary strategy and has a high degree of flexibility [26, 27]. It is proposed in this article to leverage CMAES's superior guiding performance to address the PSO algorithm's initialization stage shortcomings and to utilize the CMA-PSO algorithm (CO) for the cloud resources of IPE online courses to address the PSO algorithm's initialization stage shortcomings. Determine a solution to the scheduling conflict.

2. Platform Design and System Optimization Path

2.1. Design Ideas of IPE Online Course Resource Platform. During the age of epidemic prevention and control, Internet education has become unavoidably prevalent. Teachers must perform their duty by making effective use of online teaching platforms, meticulously executing instructional design and practice, and aiming to increase teaching efficiency. With the characteristics of IPE online courses and students in mind, this article makes use of the online learning platform to effectively reflect the teaching content through video, audio, and animation. It also realizes the integration of courses and network technology and conducts online teaching activities to increase students' interest in learning and achieve teaching objectives [28, 29].

The content of the IPE online course is based on the standards established by the curriculum committee. According to the characteristics of the online learning platform, a project-based teaching method is used to facilitate students' learning, teachers' guidance, and supervision, and to highlight the characteristics of vocational education. Each project is aligned with the job skills needed for that particular position. In teaching, the work tasks the students are expected to perform are deconstructed, and each work task is considered to be a piece of teaching content. Students gained knowledge of the course material while completing the tasks, which not only enriched their knowledge accumulation but also exercised their knowledge application ability, which is conducive to their accumulation of practical experience and the improvement of a wide range of abilities.

This article organizes course knowledge points, instructional videos, and stage planning into categories.

Weekly assignments, the creation of related reference materials, and other activities are all examples of what you may expect.

The modules are in charge of the detailed planning and building of the course's curriculum. Then break the six short tasks into 18 subtasks, with each subtask being refined into numerous learning task points, with the course content being integrated into each of these learning task points. It is necessary to provide students with detailed task descriptions, foundational knowledge, and PowerPoint courseware as imports for them to complete the learning tasks more smoothly. Each subtask presents detailed subdivision knowledge points, and the important and difficult knowledge is fragmented for the students to complete the learning tasks more smoothly. Process and create a variety of tools for knowledge learning, such as short movies, animations, teaching visuals, and other similar materials. The online learning effect on students is ensured by four factors such as knowledge point learning, knowledge point tracking exam, key topic discussion, and knowledge and ability development in the classroom [30–32].

Students have a shaky base, and they are quickly thrown off balance by outside influences. As a result, a variety of approaches should be used to pique the interest of students in taking online courses. For each task, this research provides a clear project description, allowing students to learn more effectively and efficiently. It also organizes students to analyze the task test situation with the help of a WeChat group, allowing researchers to gain a better understanding of the students' learning situation.

Also included is a paper that divides a class into two or more small classes; selects students who have strong learning, organization, and coordination abilities; and assigns these students the role of student assistants, granting them certain powers such as the ability to view the status of other students in real-time. Students with inadequate learning initiative or difficulty should be placed in a learning context to assist them. Teachers must correct and respond to students' class discussions, homework, and tests in a timely way to inform students of the status of their assignments as soon as feasible. The platform shuffles the sequence of the questions to prevent plagiarism from occurring. In most cases, the homework is designed such that the answer cannot be copied and pasted. In general, screenshots are not permitted, and it is set such that the homework assigned by the system can only be obtained if the learning progress of the assignment point has reached 90% or above on the learning progress scale. The grade for the homework is 60. Those who come up with new ideas should be encouraged to share them as soon as possible, and additional points will be awarded to students who continue to be enthusiastic about participating in discussions. Students should be encouraged to discuss and examine issues in WeChat groups to completely spark their interest.

2.2. The Systematic Optimization Path of IPE Resources in the New Era. Systems thinking approach can be used to demonstrate that the allocation of IPE resources in the new era is fundamentally an organic whole comprised of the systematic input of relevant subjects [33], the internal integration of the IPE system, and the practical outcome. IPE resources must have their utilization rates optimized in all elements of their input and output, which must be done methodically.

We must first focus on open source and cost-saving of two major types of resource elements such as dominant and auxiliary, to effectively optimize the IPE resources in the new era. This will promote the realization of a multiresource system, which will, in turn, promote the realization of a system of multiple resources, to promote the realization of a multiresource system maximum on a cumulative basis It is related to the premise and foundation of the IPE system when dominant IPE resources are introduced, whereas the introduction of auxiliary IPE resources significantly increases the legitimacy of IPE activities. This information can only be obtained through the input connection of the IPE system. They can achieve the continual accumulation of synergistic resources between the two, and therefore establish a firm foundation for the effective operation of the system of IPE in the long run [34].

On the one hand, efforts should be made to open source and increase the aspects of party- and state-led IPE tools that are currently available. The party and the state are the two most important input subjects for IPE materials, respectively. To ensure that the IPE system operates effectively in the new era, the relevant departments of the party and the state must first clarify their respective missions and responsibilities, and then continuously improve the overall stock of IPE resources available to the public. For example, in terms of the theoretical resources of IPE in the new era, while it is necessary to continue to interpret and study the classic Marxist theories in the new era, it is also necessary to promote the widespread dissemination of new ideas and new theories in the new era from a forward-looking perspective to further strengthen the ideas of the new era. The theoretical resources of political education provide a strong basis for future success. To promote the scientific development of the IPE system, while the relevant departments of the party and the state are constantly optimizing the allocation of power resources for IPE, they should also prioritize the improvement of relevant systems and the strengthening of organizational guarantees, in addition to constantly optimizing the allocation of power resources for IPE. That is the only thing that can give long-term power from the top-down for fostering the growth of the IPE system in the new millennium.

On the other hand, when it comes to the elements of supplementary IPE materials for the general public, efforts should be made to find added value while also avoiding loss. The participation of the general public provides social support for increasing the efficiency with which IPE resources are utilized. However, the social resources generated by the general public as a result of their participation in IPE are not only diverse in nature but are also extremely flexible. Consequently, it is an essential precondition for continuously improving the social adaptation of IPE while simultaneously increasing public excitement for involvement and preventing the depletion of publicly funded IPE resources. The trick in this approach is to accomplish two things exceptionally well. First and foremost, we must continually build public confidence in the party and the country's political leadership. Political trust is the ideal foundation for achieving long-term stability within a political party and throughout a country's political system. IPE, as the most fundamental method of constructing the ideology of a party and a country, is primarily concerned with consolidating the ruling basis of the party and optimizing the governance of the country. Because of this, it is essential to diligently gather IPE. The social resources of education must be used to continuously develop the governance and leadership qualities of the party and the country, as well as to significantly improve the living conditions of the people in the country. As long as the political trust is consistently strengthened, we will be able to win the ideology and value recognition of the public for IPE. In the second place, we must continue to foster the normative formation of public engagement in IPE constantly. The role of IPE in information dissemination, for example, can be enhanced through the integration of social organizations and other means. The standardization of the public participation process can also be improved, thereby ensuring a steady accumulation of social resources for IPE over time.

For practical development, on the other hand, it is necessary to establish a systematic operating mechanism that will provide institutional guarantees for the scientific development and effective utilization of various resource elements within the IPE system, as well as for the development of various resource elements outside of the system. To encourage a balanced growth of diverse resource elements of IPE, it is required to concentrate efforts on the formation of a coordinated development mechanism from within the IPE system. To give an example, as the party and the country continue to devote resources to IPE in the new era, the theoretical resources, historical resources, power resources, material resources, human resources, institutional resources, and organizational resources of IPE have all been amassed to a significant degree. Although there have been some conversations about public participation in IPE, there have been few discussions about public participation in general. Consequently, we should devote more attention to and exert greater effort in mining and refining the social resources of IPE, to ensure that a favorable environment for the development of the IPE system can be created based on existing accumulated resources [35, 36].

3. Method

In cloud-computing resource scheduling, tasks are run on virtual machines (VM) according to feasibility algorithms. A task can only be executed on one VM, but a VM can execute different tasks. Figure 1 shows the correspondence between tasks and VMs, where T_i represents the task number i, and V_j represents the virtual machine number j.

Due to the unpredictable nature of task execution, it is impossible to predict the precise time of task completion, resulting in a high degree of uncertainty about the task's completion. To account for this uncertainty, the scheduling of cloud-computing resources is modeled using the triangular fuzzy numbers method [3].

The scheduling algorithm portion of Figure 1 illustrates how multiple scheduling schemes are generated. The evaluation function for each of the alternative scheduling schemes is determined under unknown conditions. The evaluation function is represented by an equation under certain conditions.

$$\mathrm{Res}(P_i) = tr\mathrm{Time}(P_i) + \mathrm{cir}\mathrm{Cost}(P_i), \tag{1}$$

$$r\mathrm{Time}(P_i) = \frac{\mathrm{Time}(P_i) - \mathrm{Time}_{\min}}{\mathrm{Time}_{\max} - \mathrm{Time}_{\min}},$$
$$r\mathrm{Cost}(P_i) = \frac{\mathrm{Cost}(P_i) - \mathrm{Cost}_{\min}}{\mathrm{Cost}_{\max} - \mathrm{Cost}_{\min}}. \tag{2}$$

where P_i represents a scheduling scheme, $\mathrm{Res}(P_i)$ represents the evaluation function of the scheduling scheme, t and c represent the time factor and cost factor, respectively, indicating the impact of time and cost on the evaluation function. $\mathrm{Time}_{\max}$ and $\mathrm{Time}_{\min}$ represent the longest and shortest time for the task to execute on the virtual machine, respectively, $\mathrm{Cost}_{\max}$ and $\mathrm{Cost}_{\min}$ represent the maximum and minimum cost of task execution, respectively.

The total execution time of the scheduling scheme is

$$\mathrm{Time}(P_i) = \max_{j=1}^{m} vm\mathrm{Time}. \tag{3}$$

$vm\mathrm{Time}_j$ represents the execution time of the jth virtual machine.

The total execution cost of the scheduling scheme is

$$\mathrm{Cost}(P_i) = \sum_{j=1}^{m} vm\mathrm{Time}_j \times cst_j, \tag{4}$$

where cst_j represents the execution cost of the jth virtual machine per unit time.

The execution time of the task is

$$\mu_T(x) = \begin{cases} \dfrac{x - t^L}{t^M - t^L}, x \in \left[t^L, t^M\right], \\ \dfrac{t^R - x}{t^R - t^M}, x \in \left[t^M, t^R\right], \end{cases}$$
$$t^L = t^M \times (I + (1 - l) \times r\mathrm{and}),$$
$$t^R = t^M \times (1 + (u - l) \times r\mathrm{and}), \tag{5}$$

where l and u represent the coefficients of the fuzzy lower bound and the fuzzy upper bound, and $r$and represents the randomly generated number in the range of $[0, 1]$. According to the linear characteristics and decomposability of triangular fuzzy numbers, the evaluation function in the uncertain cloud-computing resource scheduling model is expressed as

$$\min\{\mathrm{res}(P_i)\} = \min\left\{P^L, P^R, P^M\right\}. \tag{6}$$

Then, we have

$$\min\{res(P_i)\} = \min\left\{P_\eta + \alpha P_u\right\}, \tag{7}$$

where α is the weight coefficient.

Due to the non-convex nature of the problem, the PSO algorithm may enter a local optimal state during the optimization process; if the random initialization method is used, the algorithm may be hampered by issues such as uneven distribution of the initial solution and excessive fitting during the optimization process. It is impossible to find the ideal solution. The CMA-PSO algorithm makes use of the properties of the robustness of the covariance matrix to the invariance of the search space mapping to find the optimal search space mapping. When dealing with non-convex objective functions, it is effective in resolving the problem.

It is based on the adaptive modification of the multi-dimensional covariance matrix to make it gradually approach the Hessian matrix so that it can converge to the optimal solution. Using the covariance matrix, this work generates the starting matrix of the CO method and initializes the particle population in accordance with this feature. The covariance matrix is updated using the update method.

$$C = (1 - c_1 - c_u)C + c_1\left(\mathrm{path}_c\mathrm{path}_c^T + \delta(h_\sigma)C\right)$$
$$+ c_u \sum_{i=1}^{u}\left[\omega_i\left(\frac{(rgrgx_i - m)}{\sigma}\right)\left(\frac{(rgrgx_i - m)}{\sigma}\right)^T\right]. \tag{8}$$

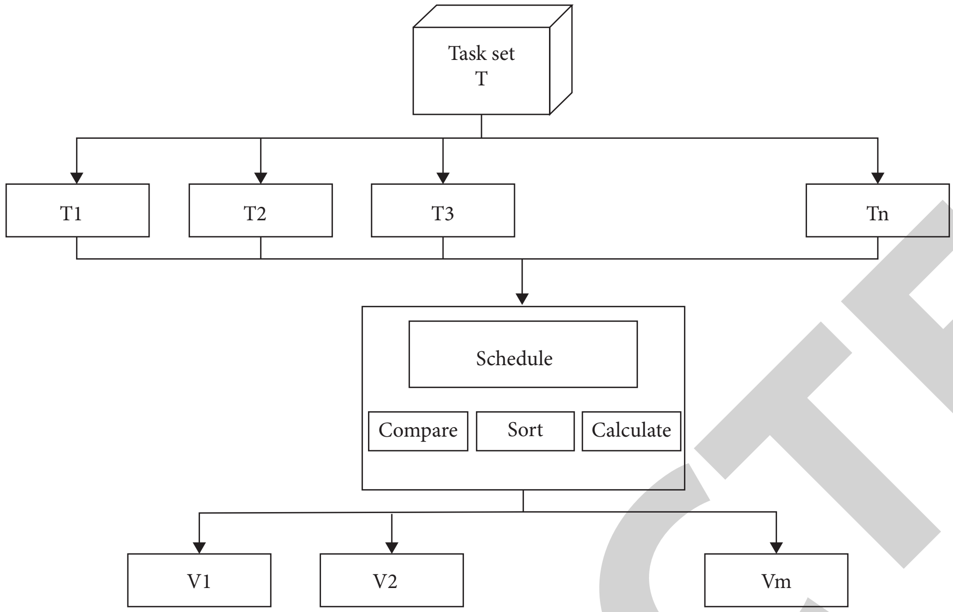

Figure 1: Structure of task.

Each particle's displacement indicates a scheduling scheme when the CO method is used to solve the fuzzy cloud-computing resource scheduling problem, and the velocity and displacement of each particle are updated by comparing the values of the related evaluation functions. Its dimensions correspond to the size of the task set, each dimension corresponds to a task, and the value of each dimension corresponds to the type of virtual machine on which the task is executed. Example of interaction between particles, tasks, and virtual machines is illustrated in Figure 2.

0	1	2	3		n
3	1	m	0	......	2

Figure 2: Example of particle expression.

4. Simulation Results

It is necessary to conduct simulation tests to verify the accuracy of the CO algorithm suggested in this work when it comes to tackling fuzzy cloud-computing resource scheduling problems. To do so, the cloud-computing simulation platform, CloudSim is utilized. Zhan [16] describes a technique for generating a virtual machine set where the size of each task in the task set is [2000, 150,000] and the execution speed of the virtual machine is in the range [200, 1500] when using the approach. The execution time of the task on separate virtual machines is calculated according to the size and the speed of the task with which it is executed on each virtual machine. The execution cost of the VM per unit time is calculated in accordance with the processing schedule of the VM, which is determined according to the regulations.

IGD, HV, and C-metric are used to compare the performance of the CO algorithm, NSGA-1, NSGA-2, and NSGA-3 algorithms in this article, as shown in Figure 3. To verify the performance of the algorithm in this article, IGD, HV, and C-metric are used to compare the performance of the CO algorithm.

In Figure 3, the algorithm CO has the lowest IGD value, indicating that the distribution of the solution provided by CO is more uniform than the distribution obtained by the other algorithms. The algorithm with the highest HV value is algorithm CO, which indicates that the quality of the solution obtained by it is likewise the highest. The C-metric value indicates that the convergence of the solution found by the CO method is improved as a result of the high-quality set that was obtained at the start of the algorithmic run. In conclusion, the CO algorithm suggested in this research can be used to create a more efficient scheduling scheme.

This article proposes a cloud resource-based IPE online course resource platform that uses different task scales to verify the accuracy and actual performance of the cloud resource scheduling model. Using different task scales, the same VM scale is used to determine the cloud-computing resource scheduling model and uncertain cloud-computing resources in the cloud resource-based IPE online course resource platform. The scheduling model is tested and contrasted in an experimental setting. The evaluation functions of the two models are shown in Figure 4, which compares them. The number of jobs is represented by the abscissa, the value of the evaluation function is represented by the ordinate, and the number of virtual machines is 5.

According to Figure 4, regardless of the job scale, the CO evaluation function value is always greater than the cloud-computing resource scheduling evaluation function value, although the work size is smaller in this case. This is due to the inherent uncertainty in task execution, which must be taken into account during the experiment. the fact that there is such a degree of insecurity.

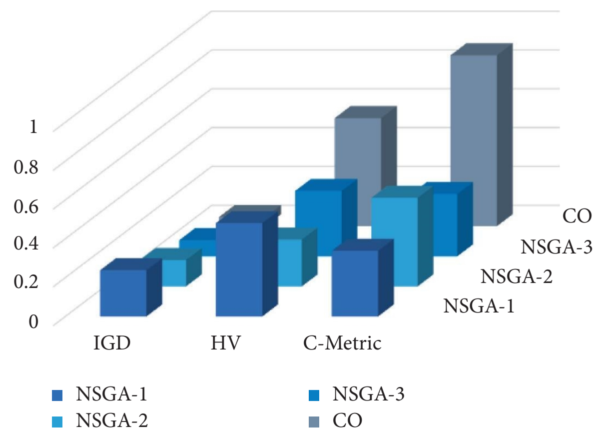

Figure 3: Comparison of four methods.

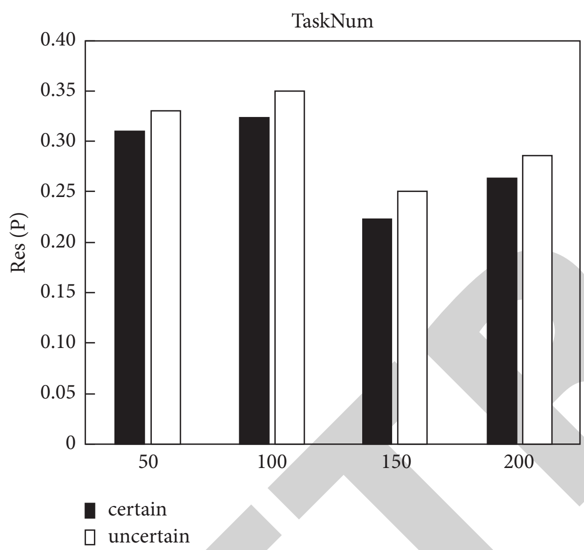

Figure 4: Model comparison.

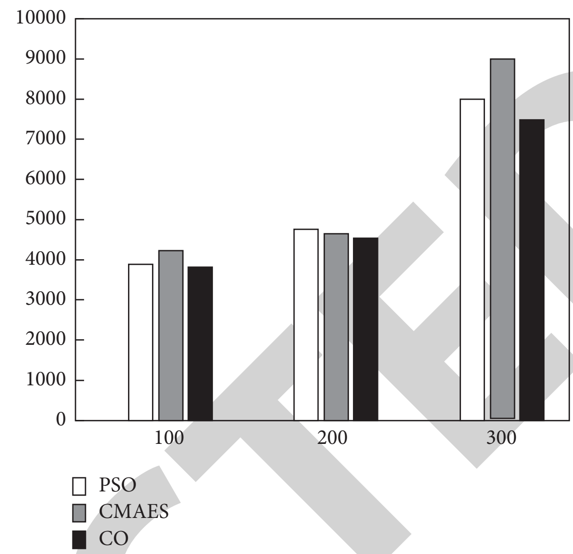

Figure 5: Comparison results of run time.

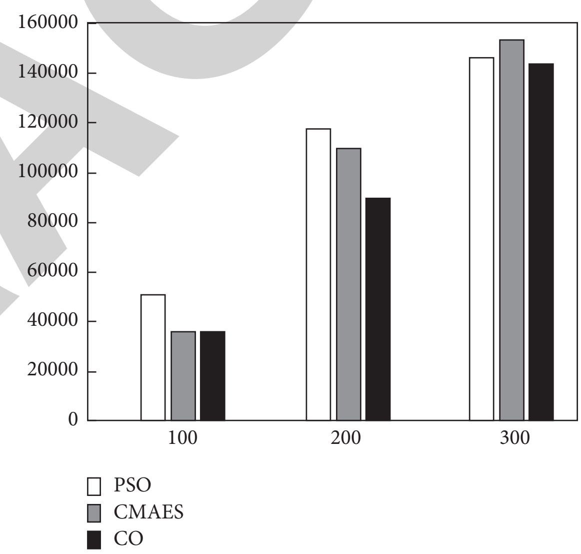

Figure 6: Comparison results of running cost.

The weight ratio method is used in this study to control the time and cost of the evaluation function, which is discussed in detail elsewhere. At 0.5, all PSO, CMAES, and CO algorithm tasks are recorded and executed, as well as the total execution time and cost of the PSO, CMAES, and CO algorithm tasks. The assignment necessitates the use of five virtual machines, the results of which are depicted in Figures 5 and 6. The abscissa in the figure represents one task. The overall execution time is depicted in Figure 5, while the total execution cost is depicted in Figure 6, with the ordinate representing the total execution time.

As mentioned previously, Figures 5 and 6 illustrate how the overall job execution time and total cost of the same data set are recorded using three distinct techniques. We demonstrate in this research that the CO algorithm can solve the resource scheduling scheme while meeting dual objectives and also completing the task in three steps. Because it takes the least amount of time to complete, it also costs the least.

5. Conclusion

Online teaching platforms have grown in popularity and prominence as a result of the advancement of network information technology. Additionally, educational institutions have encouraged teachers to innovate the teaching mode and increase the effectiveness of the teaching process through the use of a variety of online teaching platforms. We examine the teaching design ideas, teaching effects, and platform issues associated with the online course on ideology and politics, and refine the suggestions for online course construction, which have a certain reference effect on online course teaching and are refined further. For the multi-objective cloud resource scheduling problem, a fuzzy cloud resource scheduling model is developed, and a hybrid intelligent optimization algorithm CO is proposed to optimize both the task's total completion time and overall execution cost. This algorithm is used to solve the fuzzy cloud resource scheduling model. According to the results of the experiments, the CO algorithm outperforms the standard cloud resource scheduling algorithm in terms of optimization seeking ability and load balancing performance.

Data Availability

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

Conflicts of Interest

The author declares that he has no conflicts of interest.

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