

Retraction

Retracted: Computer Management Design and Optimization of City Smart Medical Laboratory Service

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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] X. Jin, X. Zhang, T. Fan, and Y. Song, "Computer Management Design and Optimization of City Smart Medical Laboratory Service," *Mathematical Problems in Engineering*, vol. 2021, Article ID 2083416, 9 pages, 2021.

Research Article

Computer Management Design and Optimization of City Smart Medical Laboratory Service

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In order to optimize the computer management of smart medical laboratory services and find the optimal solution, we conducted experiments on the laboratory computers of hospitals in this city based on the RBF neural network, which provided references for other researchers. Through the collection of relevant data, this article summarizes and analyzes the existing medical laboratory research, summarizes the existing problems and development directions of the current laboratory, uses the RBF neural network to modify these models, and innovatively achieves a hospital laboratory computer management optimization system with the characteristics of high efficiency, low energy consumption, and fast response. The experimental results prove that the computer management and optimization of laboratory services are optimized through the RBF neural network, and the efficiency of computer management design and optimization is greatly improved. It is about 20% higher than traditional medical laboratory. This shows that the computer management design and optimization of smart medical laboratory services designed by RBF neural network can play an important role in the construction of hospital laboratories.

1. Introduction

With the proliferation of permanent residents and floating populations, cities will inevitably face many problems during the development process, including resource depletion, pollution, traffic congestion, and ecosystem destruction. At the same time, the existing medical service system can no longer satisfy the people brought about by economic growth with the increasing demand for medical services; how to solve these problems-system construction based on “smart medical care” may be a feasible solution [1–6]. The word “wisdom” of “smart medical care” lies in the fact that its construction method, operation mode, and achieved effects are very different from traditional medical construction. Research on the subject of the construction of medical service system under urban smart medical care, try to seek new path urban development and medical service system innovation [7].

In the information age, hospitals will undergo qualitative changes in both internal management and external services. At the same time, the introduction of computer technology and the emergence of network marketing will promote the networking of hospital information. In the entire system of the hospital, the laboratory is an indispensable special part of the normal operation of the hospital business, and the laboratory management of the hospital is particularly complicated [8]. Introducing smart medical care to manage hospital testing services computers more systematically and regularly enhances hospital-wide management and coordination of information for different departments and personnel [9].

A lot of research has been done by domestic and foreign experts for computer management design and optimization of smart medical examination services. Overseas, tutors can make decisions based on typing and verbal answers to questions, even without multiple choices, and respond in

languages with incorrect grammar or semantics that may appear on system. A description, etc., will be provided [10]. G. Büyüközkan and others use a dynamic inventory analysis method. Hospital material flow curves provide average inventory, duration, flow velocity, dynamic analytical parameters, and other information for a particular time period, providing a more comprehensive and accurate reactant. The changing trends in library inventory provide an effective decision-making aid for hospital management [11]. In China, the work of optimization of the computer managed design started late. To overcome the effect of vagueness caused by inconsistent or ill-formed information, E. Barnor-Ahiaku [12] recommended using a dependence to measure the degree of dependence between the features and then formulated the DDC of algorithm. The basic algorithms in the aforementioned are approximately the same, and the only difference is that the estimation is expressed with a different evaluation of the functions. The increment of the volume of characteristics selected will incrementally reduce the instability against categories, and the number of the unrecognized samples will be progressively reduced. Therefore, with the possible information confusion brought by the acknowledgement of sample of set, dynamic inter-information can be used as the performance of assessment index, and the known sample information is being deleted continuously in the feature selection process, so that the assessing index is in the unrecognized sample. The dynamic of recognition is less.

The innovation of this article is divided into two parts. First, the feasibility analysis and demand analysis of the hospital experimental management system are carried out. Based on summarizing the actual needs of the hospital's experimental management application, the system's business processes are analyzed, the areas that managers want to improve are refined, and the experimental management system is formed. The feasibility was demonstrated from the aspects of technology, economy, and operation. Second, the database design and overall design of the system are carried out. It is divided into five modules: experimental project, contract management, fund management, achievement management, and information release. The design of the system database is carried out, and the table structure of the project table, project budget table, expense management table, and patent management table is given.

2. Computer Management Design and Optimization Methods

2.1. Smart Medical. Medical care is closely related to the lives of users [13, 14]. A good service design can optimize the user's medical procedure, improve the user's medical experience, and provide better service to the user. The purpose of self-service healthcare services systems is to create convenient, intelligent, standardized, reliable, and open healthcare environment services. Medical resources are effectively used to solve the problem of long queues for registration in hospitals with "three long and one short," long queues for treatment, long queues for payment, and short treatment time. The traditional way of seeking

medical care is broken creating a new way of seeking medical care. Self-service users can complete medical services such as registration, payment, special appointment number, laboratory examination printing, and drug withdrawal at the end of the medical service, which not only saves users time but also improves the efficiency of the process, saves the hospital's human resources, and enables the hospital to adjust resources more reasonably. Simplified medical procedures enable the normal operation of the hospital, so that it can receive more patients and benefit the society [15].

The traditional experiment management work is mainly to establish the database by manually inputting the relevant data of the experiment on the computer, which can only realize the most basic retrieval function, reduces the necessary and timely communication between personnel, and makes the transmission of experimental information too slow or distortion does not meet people's needs for timeliness and accuracy of information, and it will also cause heavy workloads for experiment managers [16]. By adopting the advantages of computer development and strong conditions for rapid network development, the problems that exist in traditional experimental management tasks can be fully solved. By analyzing user needs, analyzing key contact points, designing service systems, and conducting comprehensive investigations, medical procedures, and user experience, it is used to study patient medical procedures, doctor-patient contradictions, and other issues and implement service design methods in Internet + medical experience research [17].

The main development goal of smart healthcare is the technical and operational realization, how to both understand and translate more fully the anticipation and needs of the customer, and how to more fully match the body, the structure, and function of the product. The RBF algorithm model designed in this article mainly focuses on the principles of test planning, target system construction, and evaluation system construction. The evaluation model should conduct basic evaluation from multiple aspects and add evaluation indicators to more comprehensively analyze the impact of the RBF algorithm on the computer management design. In order to realize these goals, we need to calculate a lot of data, and so a more sophisticated system can be built. The key point of use for application should be used in line with the following format:

$$M = \frac{x}{(x + i + 1)},$$

$$p_{la} = l_a + \left[\frac{d_a - (l_a + 1)}{c_{\text{skip}}(D)} \right] \times c_{\text{skip}}(D) + 1,$$

$$d(x_i, x_j) = \sqrt{\left(|x_{i1} - x_{j1}|^2 + |x_{i2} - x_{j2}|^2 + \dots + |x_{in} - x_{jn}|^2 \right)}. \quad (1)$$

Based on the properties of medical and healthcare systems, we have made improvements to the concerned calculation functions.

$$f(i) = x_0 + x_1y_1 + x_2y_2 + x_3y_3. \quad (2)$$

Developed countries have made great progress in the field of hospital information systems. For example, developed countries such as Japan and the United States have gradually established relatively mature hospital information systems. The current transformation process of hospital information system is decentralized, intelligent, wide-area, and integrated [18, 19]. The inspection management system is a subsystem of the hospital information system. The intelligent development of hospital information systems has also led to the intelligent development of lab systems, and the development of lab computer systems is becoming more and more perfect.

In the experiment management business, data such as experimenter information and user personal information cannot be shared, making it impossible for financial personnel, administrators, and ordinary users to communicate and communicate in time, and information sharing operations cannot be completed. In the experimental work of the hospital, the project is the foundation, management is the method, and controllability is the goal. Through the overall control of the experimental work, a closed loop of experimental project management is formed to continuously reduce the incidence of bad problems in the hospital's experimental work. The advantage of this is that we can find problems earlier. The data in the system can be monitored and read at any time, and statistics can be performed at any time, which is convenient for project member task management, project team progress management, and quality control of the laboratory.

In medicine, the intelligence of laboratory management helps to understand the overall management and information of the entire hospital. It can be used to fully understand the laboratory information system, including the use of the laboratory and the status of research projects. Save the environment and provide reliable data for medical research.

2.2. Radial Basis Function Neural Network. Generally speaking, the traditional neural network algorithm is as follows:

$$G(x, y) = \exp\left(-\frac{x^2 + y^2}{2\sigma^2}\right). \quad (3)$$

Among them, σ is the mean-square error. It is represented by kernels and rolls of graphs with different σ values. Subsequently the expression is shown as follows:

$$L(x, y) = -\frac{1}{\pi\sigma^4} \left(1 - \frac{x^2 + y^2}{2\sigma^2}\right) \exp\left(-\frac{x^2 + y^2}{2\sigma^2}\right). \quad (4)$$

The effect is related to the value of σ :

$$Q = \frac{1}{2a^2r^{-1}} \left(\frac{2b^2}{a^2r^{-1}}P - t\right)^{-1} [a^2r^{-1}t^2 + 2(1 - b^2)t],$$

$$a \in [-1, 0] \cup [0, 1], \quad (5)$$

$$K = \frac{a}{2br}t,$$

$$\lambda_x(ct_n - t) > 0,$$

and so

$$Q = \frac{1}{2a^2r^{-1}} \left(\frac{2b^2}{a^2r^{-1}}t - L\right)^{-1} [a^2r^{-1}L^2 + 2(1 - a^2)L]. \quad (6)$$

Radial basis function (RBF) is a multidimensional spatial plug-in technique that can overcome some of the drawbacks of BP neural networks and has a wide range of applications. RBF neural networks are a mathematical model that simulates synaptic cohesion in the cerebrum, being very similar to that of human brain with its organization and powerful functional capabilities for dealing with nonlinear approximation to the structure and its characteristics [20]. A radial basis function neural and denervation network is a type of feedforward neural and denervation network. The entrance and exit of the entire RBF neural network are approximately as follows: at the beginning, the input layer is nonlinearly mapped to the hidden layer, and then the hidden layer is mapped back to the linear mapping [21]. The organization of RBF calculational network is shown in Figure 1.

The parallel processing function of the RBF neural contract network effectively ensures its data production and processing efficiency. Separated from the layer-by-layer substructure, with RBF neural and contractual as one possible network, it can be composed of an input layer, a hidden layer, and an output layer. The profile of the input layer consists of user-specific source to node, the hidden layer is user-defined based on those given user-specific practical considerations, and the output layer is a specific production response to the input layer [22]. The neurons in the hidden layer is most commonly the number determined by the gold segment optimization of the methods. After you have cleared the number of neighboring neurons, the links can be skipped and that input vector can be mapped into hidden layer to the hidden layer directly. The flow is shown in Figure 2.

The algorithm of RBF neighborhood neural contract is as follows:

$$\langle u \rangle = \int_{-\infty}^{\infty} u |F\alpha(u)|^2 du = \int_{-\infty}^{\infty} f * (t) \varepsilon^\alpha f(t) dt, \quad (7)$$

where ε^α represents the fractional frequency operator and its expression is

$$\varepsilon^\alpha = \cos \alpha * \delta + \sin \alpha * \lambda. \quad (8)$$

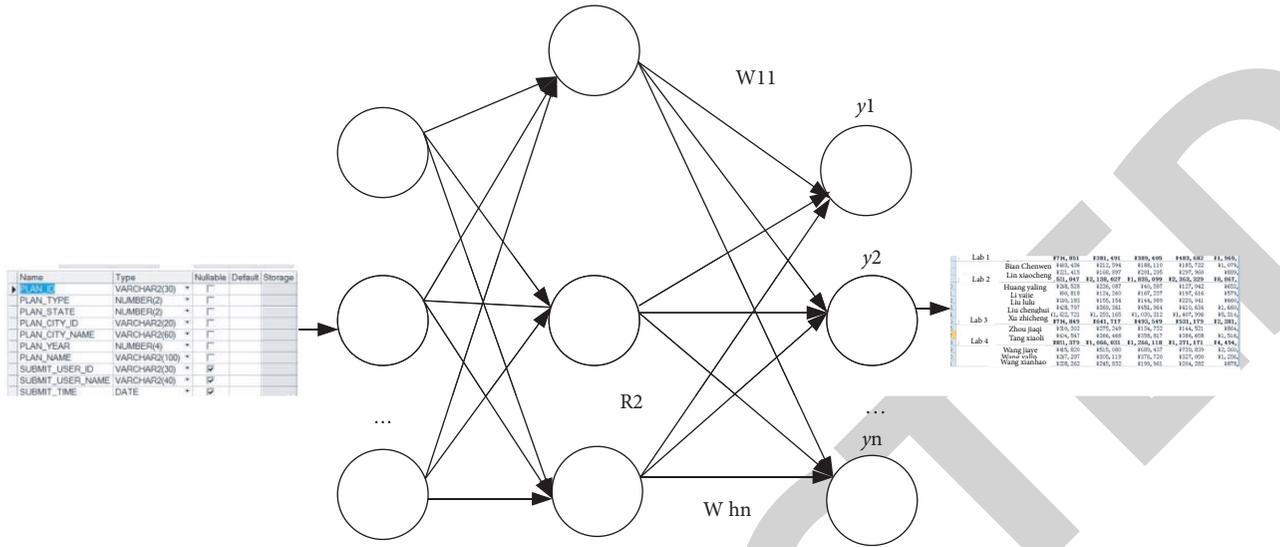


FIGURE 1: RBF neural network operation.

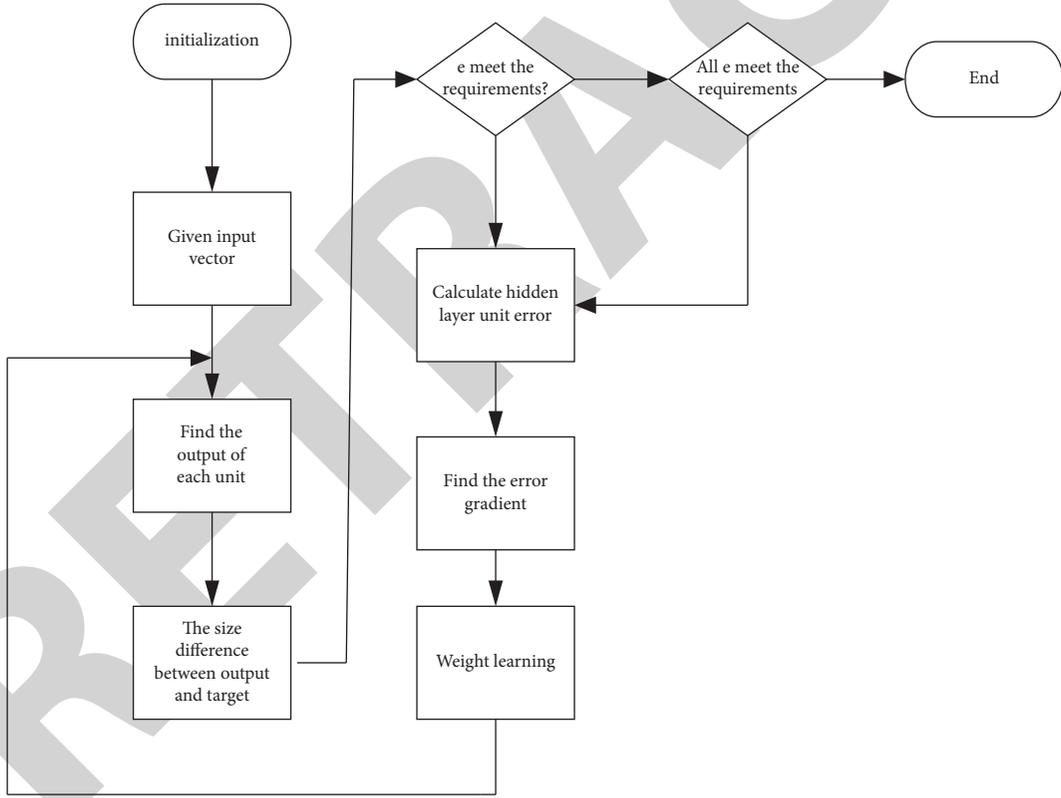


FIGURE 2: Flowchart of RBF neural network.

Among them, the time operator is represented by δ , and the frequency operator is represented by λ . Finally, the instantaneous fraction u of $s(t)$ is

$$u(t) = \kappa \left\{ \frac{\gamma s(t)}{s(t)} \right\}. \quad (9)$$

This is obtained by replacing it by the following equation:

$$u(t) = \kappa \left\{ \frac{\lambda s(t)}{s(t)} \right\} = \kappa \left\{ \frac{\cos \alpha * t * s(t) + \sin \alpha * -jds(t)/dt}{s(t)} \right\}. \quad (10)$$

The parallel processing can be represented by the RBF of a neural forest.

$$r(t) = d(t)s(t) = d(t) \text{rect}\left(\frac{t}{T}\right) e^{j\omega t}. \quad (11)$$

The experimental strategies of workers' habits can be developed by the hospital computer manager system after the introduction of RBF neural network from the user's habits [23], given that teaching system a "brain" will ultimately free the user from tedious traditional experiments. Since the system is to understand the user's life-habit in real time and then develop a control regimen, when the user may have changed or the user's habits may have experienced a change, the one can quickly adapt to this environment.

Hospital laboratory management systems based on intelligent algorithms provide low-cost system maintenance and management. The overall system architecture is sophisticated, the management tools are complete, and monitoring and maintenance of the entire system are very easy. The system has strong defensive capabilities with protective measures, which can effectively prevent the intrusion of illegal users. At the same time, it also ensures that no damage will be caused to the system due to human operating errors, which may cause the system to crash.

2.3. Management System. In recent years, the state has given great support and assistance to the work of medical laboratories, and the hardware level and resources of hospitals have been greatly improved. The methods of hospital laboratory management have gradually developed from manual management in the past to information management, which greatly saves manpower and material resources. The informatization of hospital laboratory management is the development trend of the modernization of hospitals. In order to strengthen the management of laboratory activities, many large-scale laboratory medical institutions in China facilitate the display of laboratory results and promote the sharing and exchange of related information [24].

The laboratory management systems of major medical institutions are a platform for displaying their own medical level and laboratory capabilities, but most domestic medical institutions use static web pages to publish relevant laboratory information [25]. This form is due to the lack of dynamic databases and front desks. The support of page interaction cannot be dynamically updated in time. However, most of the laboratory management information systems developed by some medical institutions are developed in the form of local intranets. At the same time, it can be seen from reality that the sharing rate of such information is not high [26, 27]. The WEB technology solves the limitations of the local intranet, better improves the real-time nature of information, can speed up the circulation of information, improve the sharing of laboratory information, and make laboratory management more standardized, scientific, and modern.

The hardware and network environment of the hospital's laboratory management system have been applied to the hospital's internal network to ensure safety while using the hospital's existing resources without adding or rewiring hardware resources. The computer management framework is shown in Figure 3.

According to demand research, system development must meet the requirements of six major aspects. The first is the experimental project management function. It needs to include various functions to cover the various steps of a project from establishment to acceptance, and to provide tools for better management of experimental projects in the hospital. The second is the contract management function. A project often has to sign multiple contracts. The hospital has always kept the contract in paper-based filing. The time of receipt and payment of the contract needs to be checked frequently, and it is difficult to find. Therefore, the system needs to include four functions of contract declaration, contract payment, contract collection, and contract ledger to further standardize the hospital's experimental project contract management. The third is the fund management function [28]. Currently, special funding related to experiments is managed by the experimental department and there is a shortage of special computerized software. The receipt and expenditure of funds can only be recorded on the account book, which is not convenient to view and manage. Therefore, the fund management function must include two small modules: fund receipt and fund expenditure, to strictly regulate the flow of project funds. The fourth is the function of experimental results management. This function helps the laboratory department to manage the results of patents, papers, monographs, software copyrights, etc. and manage the experimental results of the hospital. The fifth is the function of information release. Including the issuance of policies and regulations, the download of related software, the sending and receiving of messages on the site, and the connection with the hospital's SMS platform, etc., information release can effectively ensure the delivery and release of hospital information.

3. Computer Management Design and Optimization Experiment

3.1. System Composition. Hospital experiment management systems are designed based on a network environment where applications are distributed. Inevitably, the architecture is a multilevel, well-distributed B/S structure. The laboratory can be divided into two parts: the driver and the client. In addition, the core of the whole system is the controller. The hardware requires specific conditions, and the Oracle database must run a higher version. The main components are the application server, the acknowledgment database server, and the web server.

3.2. Test Environment. In the usual case, software testing is performed as soon as the system development is finished, so black-box testing and white-box testing are used simultaneously. If a problem is found during testing, the system developer improvises the wrong module immediately. The measurement of several modules is divided into two different parts. Part of it is a very complete test. The responsiveness and correctness of the template are tested through this test. The other part is to find and improve the error and then retest. The main difference between the test

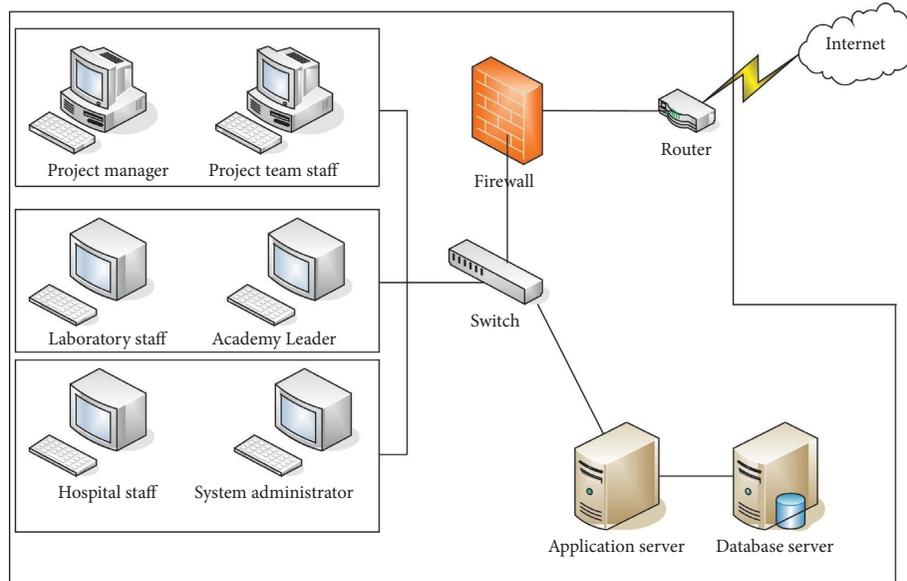


FIGURE 3: Laboratory computer management framework.

TABLE 1: Test environment computer configuration.

Hardware	CPU	Intel(R) Core (TM) i5-6500 3.20 GHz
	RAM	8.00 GB
	Hard disk	500 GB
Software	Operating system	Microsoft Windows 7
	Browser	Internet Explorer 8.0

environments of the second part and the first part is that the CPU uses Xeon E5405 2.0. The test environment of the system is shown in Table 1:

3.3. System Test. The functional measurement of the system mainly includes the registration, login, setting function, task administration function, task preparation function, and the experiment activity function and the experiment query for the main functionalities, as it is shown in Table 2.

During the system effectiveness testing, there was technical testing in terms of background sampling and coding according to a specific format, and hardware such as servers were tested repeatedly until satisfactory test results were obtained. As can be gauged from the resulting table, the implementation of the new one was basically being designed and tested to be successful after the necessary functionality was analyzed.

4. Computer Management Design and Optimization Experiment Analysis

4.1. Laboratory Computer Changes. We have made statistics on the changes of computer performance in the laboratory services of the first municipal hospital in recent years, and we can clearly see the data changes over time, as shown in Figure 4.

From Figure 4, we can see that, in recent years, the overall change in the computer performance of the hospital's

laboratory services has shown an upward trend. Especially in the past five years, with the development of computers, the performance of computers has increased greatly. In general, the speed of development in the past five years is better than that in other time periods. In order to compare with the computer management of the hospital laboratory constructed based on the radial basis function neural network, we have made statistics on the parameters of the hospital laboratory constructed by the radial basis function neural network, as shown in Tables 3 and 4.

We operate the hardware and network environment of the hospital's experimental management system, use the existing resources of the hospital, and do not need to add additional hardware resources and rewiring, and at the same time, it is applied to the hospital's internal network, and the safety can be guaranteed.

4.2. Differences between Different Algorithms. We complete this paper; the Gaussian function is selected for the RBF network. The Gaussian function is simple and easy to analyze, so theoretical analysis is easy. The approximate characteristics of the RBF network are optimal and there are no minimum values with other algorithms by simulation and comparison through prediction tables and predictions comparison curves to find the optimal value of the algorithm. Details are shown in Figure 5.

From Figure 5, we can see that as the number of times the computer runs continuously changes, the gap between different algorithms also changes to a certain extent. It is also clear that the values predicted by the RBF algorithm are better than the values predicted by the BP neural network algorithm, which is closer to the real value, especially when it is just run and the number of runs exceeds 600 times. The BP neural network algorithm is only close to the data predicted by RBF when the number of runs is 300 to 500. But overall, it is RBF. The value predicted by the

TABLE 2: System function test table.

Functional module	Function name	Test steps	Test results
Login/registration module	Registered Login	Register operation Perform login operation	Successfully registered Successfully logged in
Main functions of the system	Setting function	Perform action explanation test	Test success
	Task management function	Take action demonstration test	Test success
	Task development function	Conduct technical points test	Test success
	Experimental activity function	Perform technical analysis test	Test success
	Experimental query function	Take practice method test	Test success
	Homework	Take classwork test	Test success

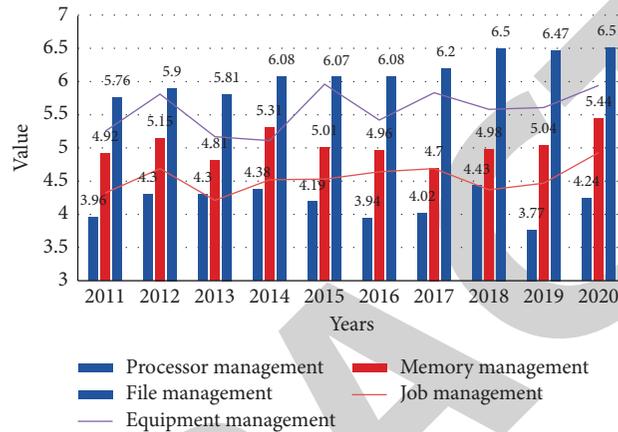


FIGURE 4: Computer performance changes.

TABLE 3: Peak number of users of the system.

Support user volume system	User number	Number of users during peak hours	Peak period
OLAP	10000	>200	Not fixed
Flexible query	1000	>100	Not fixed
Fixed report	2000	>100	Daily
Detailed data	5000	>200	Daily
Data management	Several	—	Not fixed

TABLE 4: System response timetable.

Support user volume system	User number	Number of users during peak hours	Peak period
OLAP	Unlimited	Second level	1–2 s
Flexible query	<5 million	Second level	1–10 s
Flexible query	>5 million	Minute level	1–10 mins
Fixed report	Unlimited	Second level	0–3 s
Detailed data	10 million	Second level	1–30 s
Other	<10 million	Minute level	1–10 mins

algorithm is closer to the actual value. In order to verify the accuracy of the test, we conducted a 10-day simulation experiment comparison on the computer again. The details are shown in Figure 6.

It can be seen from Figure 6 that the accuracy of the RBF network is higher than that of the BP network. The average error of RBF is about 0.046, and the average error of BP is about 0.128. Through the analysis of two experimental results, it can be concluded that RBF is more accurate than BP.

To demonstrate the running costs of each algorithm, we let the different algorithms run each other and count their consumption. Due to the deviations in hardware configurations, the executional results may also deviate from one or more different computers, but the visualizations of the relative time difference between the computations should be of a comparable magnitude, as shown in Figure 7.

As can be observed from Figure 7, the disadvantages of the RBF network on the computational cost are not very well defined. Two metrics are in a higher level than the other

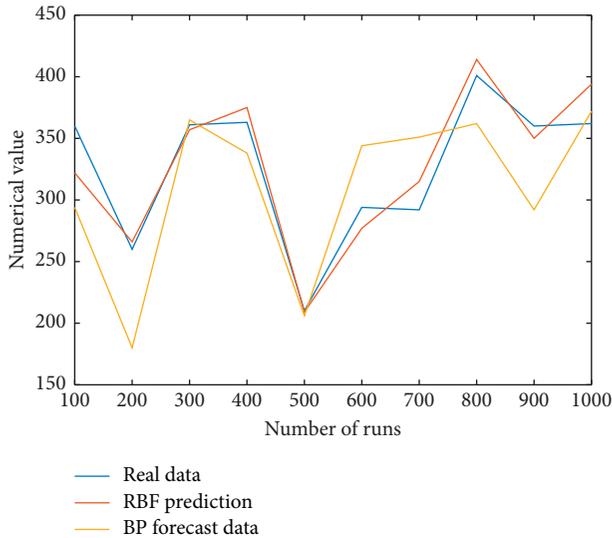


FIGURE 5: Algorithm prediction value.

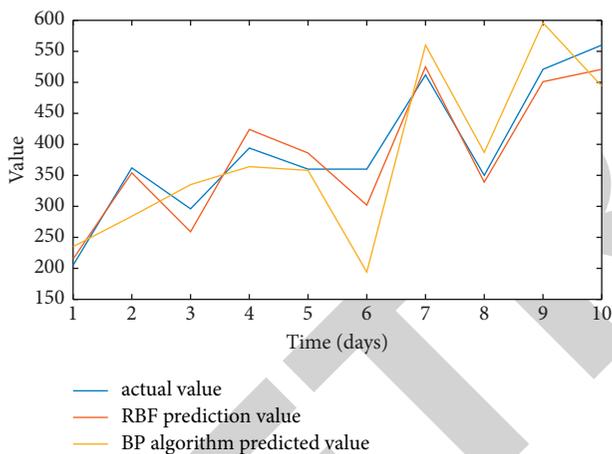


FIGURE 6: Run results within 10 days.

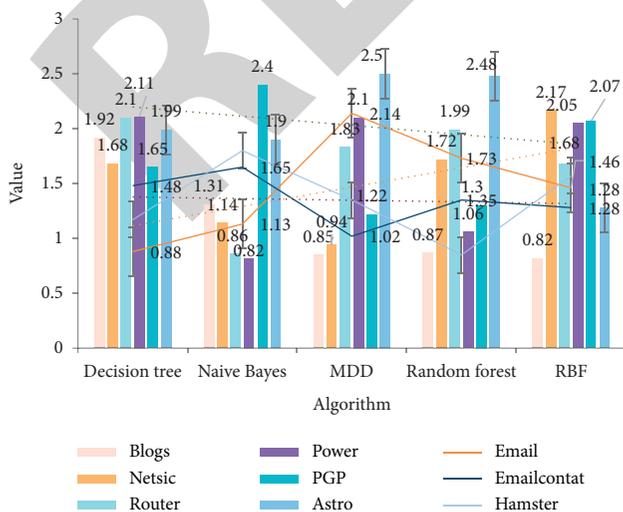


FIGURE 7: Calculation time of algorithm.

computer methods, but the cost of the other metric is much more low than the other methods, which is especially about 40% lower than the one for both Blogs and Astro.

5. Conclusion

With the rapid development of computer technology and the popularization of big data, this article adds intelligent algorithms to the research and design of hospital laboratory management systems. Applying intelligent algorithms to the system accelerates the generation of experimental intelligence and saves hospital work. Staff time improves work efficiency, and at the same time, it also allows administrators to modify the generated plan. The hospital laboratory management system can operate independently or together with other systems in the hospital, ensuring the timeliness and accuracy of information, and providing the hospital with an efficient, accurate, and timely management platform. Of course, there are some shortcomings in the research of this article. The data security in the hospital laboratory management system based on intelligent algorithms needs to be further strengthened. Appropriate encryption algorithms are designed, a standardized and secure database management system is established, and database security access and the backup function of the system are gradually improved. The application of intelligent algorithms needs to consider related influencing factors and solve related problems. Therefore, the comprehensive application of intelligent algorithms in the hospital laboratory computer management system is a subject that still needs to be studied in the future.

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 conflicts of interest.

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