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*Research Article*

# The Application of Web-Based Scientific Computing System in Innovation and Entrepreneurship

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In the past ten years, the number of newly added labor forces in China has continued to grow. At the same time, with the increase in the number of university candidates, the number of university employments is also increasing. Due to employment pressure from society and alumni, the government promotes innovation and entrepreneurship and promotes innovative slogans through entrepreneurship. Universities have become the people who are concerned about this slogan. As an important tool for solving large-scale computer problems, scientific computing is increasingly used in various fields of science and engineering. With the development of high-performance computing technology, various parallel computers have appeared and are widely used. This article uses a scientific computing system to conduct research on innovation and entrepreneurship. The entire scientific computing system is a typical three-tier architecture, and the small service program is responsible for analyzing the scientific computing request in the request and generating related calculation expressions. Get the comprehensive evaluation level of innovation and entrepreneurship risk: excellent score is 3.45, good score is 2.56, general score is 1.68, and difference is 0.68.

## 1. Introduction

As China's economic development gradually stabilizes, the number of university graduates has exceeded one year, and the supply of labor far exceeds demand. Therefore, for contemporary college students, in addition to choosing their own life direction in employment, further education, and examination of civil servants, entrepreneurship is naturally also chosen by a group of quick-thinking and positive students. Entrepreneurship is a great career. However, looking at past entrepreneurial achievements, there are very few successful entrepreneurial cases.

Undergraduate entrepreneurship is a process of discovering and capturing opportunities and therefore developing products and services that are more adapted to social progress and better tap their potential to adapt to the development of the market economy. To put it simply, college students' entrepreneurship is an activity to seize opportunities and gain room for profit. The innovation of science and technology and the relief of employment pressure will be driven by these active and creative entrepreneurial activities of college students.

The innovation of this paper is the introduction of Web services and scientific computing systems and the use of the parallel matrix multiplication FOX algorithm to analyze the scalability of MMP machines. It optimizes the scalability of the scientific computing system and obtains the data comparison of the scientific computing system before and after optimization. The risk of innovation and entrepreneurship of college students is calculated through the scientific computing system, the index weight is determined by the analytic hierarchy process, and the comprehensive risk evaluation of innovation and entrepreneurship is obtained.

## 2. Related Work

Regarding scientific computing, relevant scientists have done the following research. Kumar R proposed that scientific computing involves the construction of mathematical models and quantitative analysis techniques and the use of computers to analyze and solve scientific problems. In actual use, it is basically the application of computer simulation and other forms of calculation from numerical analysis and theoretical computer science to problems in different scientific disciplines. The scientific calculation method is to gain understanding, basically through the analysis of the mathematical model implemented on the computer. Python is often used for high-performance scientific applications and is widely used in academia and scientific projects because it is easy to write and performs well [1]. West is investigating the distribution of SARS-CoV-2 among different populations, the biology and structure of the virus and its transmission mechanism, and the development of prophylactic vaccines and effective antiviral therapy. While West J research is still in the early stages of developing effective therapeutic responses, the rapid mobilization of the national research network infrastructure immediately reminds people of the strategic importance of strong and sustainable investments in large-scale computer science [2]. Regarding innovation and entrepreneurship, relevant scientists have done the following research. Barroso-Tanoira F G proposed a plan to increase the motivation of students to become creative, innovative, and entrepreneurial. Based on the intervention of commercial companies, use critical and creative thinking to improve employee performance. The results show that the plan is effective for both workers and students and that the most important factor to improve creativity, innovation, and entrepreneurship is intrinsic motivation [3]. Kumar et al. believe that in the long run, promoting social innovation and entrepreneurship is omnipotent, which will provide impetus to the country's development agenda and solve the country's social problems. A stimulating ecosystem is needed that prioritizes basic skills and innovation and adopts new, sustainable resource and technological perspectives. The research is based on practice, with special reference to contemporary social issues, and explores the prospects of social innovation and entrepreneurship in the state [4]. Sukhariyat analyzed and demonstrated the impact of innovation and entrepreneurship on the competitiveness of small, medium, and micro-enterprises. The results obtained for all indicators of all variables in this study satisfy the approach. The importance of the relationship between innovation and entrepreneurship is positive, and innovation has a significant impact on competitiveness. The importance of the relationship between entrepreneurship and competition is positive, and entrepreneurship has a significant impact on competition. Thus, innovation and entrepreneurship development directly affect the competitiveness of small, medium, and very small enterprises [5]. Presently, education is highly valued and widely developed for innovation and entrepreneurship in the colleges and universities of our country. NIU B proposes an effective and comprehensive assessment system to assess business learning in colleges and universities, monitor the implementation of business learning and provide valuable insights to ensure the integrity of bilateral business learning. According to the study, Nieu Bei made a number of analyzes and recommendations in hopes of accelerating the development of education through "dual innovation" [6]. These methods have provided some references for our research, but due to the short time and small sample size of the relevant research, the research has not been recognized by the public.

## 3. Methods of Scientific Computing System in Innovation and Entrepreneurship

*3.1. Web.* The Internet is also called the World Wide Web. It is a global, dynamic, and cross-platform graphic information system distributed on hypertext and HTTP. This is a Web service installed on the Internet. Provide a convenient and intuitive graphical user interface for the browser for searching and finding information on the Internet. Among them, documents and hyperlinks form a single network structure of information nodes on the Internet.

The main function of the Web server in operation and maintenance platform system is to respond to the request of the Web front-end page, and the request and response form are built on Http. Its workflow can be divided into four stages: link processing, request processing, response processing, and close communication. The connection process handles the connection between the web server and the previous web browser. Creating a host file indicates that the connection is successful. Search mode means that the user is sending requests and information to the web server through the web browser. The response process is related to the browser request sent to the Internet server via HTTP. After the server has processed the request, it will send the result back to the browser via HTTP, showing the whole process of searching for browser results. Disconnecting means disconnecting the connection between the web server and the browser [7].

Weaknesses in web applications are often referred to as vulnerabilities. It refers to the vulnerabilities that exist on the website, whether it is code level or logic level. This may be due to web developers controlling the development process or exploiting vulnerabilities in network components. Table 1 shows web application security risks.

The overall scanner structure is basically divided into three parts: the main scanner unit, the additional scanner unit, and the system database. The basic scanning module includes functions such as collecting data and exporting scan reports. The attached scanner mainly performs functions such as attachment detection, attachment detection, and attachment dialing. Incorporating additional modules can make it easier for testers to make phone calls, update, and add plugins; the system database is responsible for the storage and export of various data in the scanner [8]. Figure 1 shows the basic structure of a web application vulnerability scanner.

The main module of the web application vulnerability scanner has two submodules: information collection and report export. When performing a vulnerability scanning task, the first thing to work is the information collection module, which collects basic information on the target website; before the vulnerability scanning task ends, the report export module is called to make a web page vulnerability scanning report.

Table 1: Web application security risks.

| Risk name | Difficulty of attack | Vulnerability universality | Difficulty of detection | Technology impact |
|---|---|---|---|---|
| Injection | 3 | 2 | 3 | 3 |
| Invalid authentica | 3 | 2 | 2 | 3 |
| Leakage of sensitive data | 2 | 3 | 2 | 3 |
| XML external entities | 2 | 2 | 3 | 3 |
| Invalid access control | 3 | 2 | 2 | 2 |
| Security configuration error | 2 | 3 | 3 | 3 |
| Cross-site scripting | 2 | 3 | 3 | 2 |
| Unsafe deserialization | 3 | 3 | 2 | 3 |
| Use components with known vulnerabilities | 3 | 3 | 2 | 2 |
| Insufficient logging and monitoring | 3 | 3 | 1 | 2 |

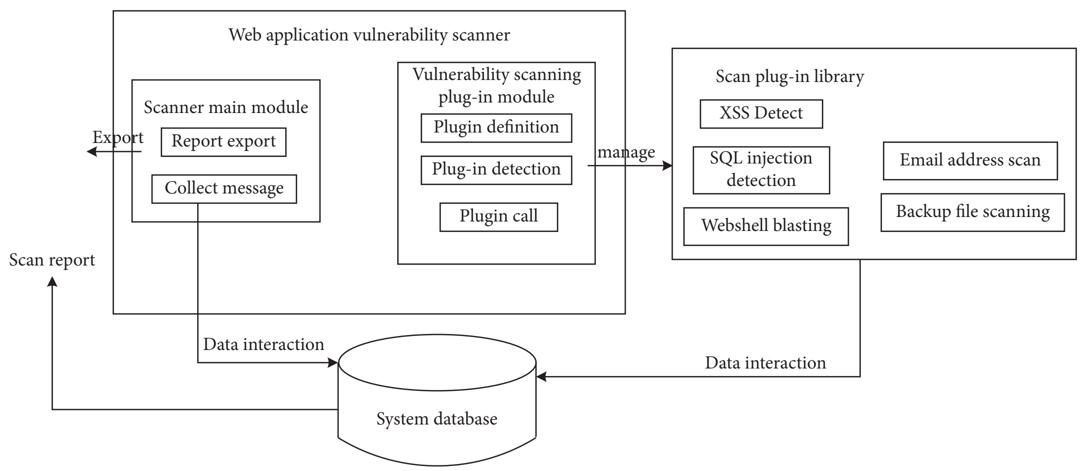


Figure 1: Basic structure of web application vulnerability scanner.

The traditional Web database system generally can adopt two methods to realize the connection and application of the Web database system. One is to provide middleware on the Web server to connect the Web server and the database server, and the other is to download the application to the client and directly access the database on the client. Middleware is responsible for managing the communication between the Web server and the database server and providing application services. It can directly call external programs or script codes to access the database. Therefore, dynamic HTML pages related to the database can be provided, or user queries can be executed, and the query results can be formatted into HTML pages. Return to the web browser through the web server. The most basic middleware technology has two kinds of gateway interface CGI and application program interface API.

Web service is any service published on the Internet that does not depend on the underlying programming language or operating system platform and uses standard XML as the message system. Generally, Web services are self-describing; that is, for every service released, the service provider needs to provide the application interface of the service. The XML file for service call contains service description information such as the function of the service, related interface methods, parameters, and attributes. Web services are also discoverable. After the service is released, it needs to be registered in the third-party service library so that users of the service system can query and call the service through a certain mechanism [9].

The service agreement involved in the Web service mainly includes the following four layers. (1) Service discovery layer. The service discovery layer is responsible for the centralized registration and management of services and provides simple service publishing and search functions. (2) The service description layer describes the public interface of the service, and WSDL language is commonly used to describe the interface of the service. (3) The message layer is responsible for encoding the message into a common XML format, making the service publisher and invoking easier to parse. (4) The service transport layer is responsible for transferring messages between applications.

The manifestations of the Web include the following:

(1) Hypertext. Hypertext is a user interface method used to display text and text-related content. At present, hypertext generally exists in the form of electronic documents. The text in it contains hypertext links that can be linked to other fields or documents, allowing direct switching from the current reading position to the text pointed to by the hypertext link.

(2) Hypermedia. Hypermedia is the abbreviation of hypermedia, which is the combination of hypertext and multimedia in the information browsing environment. Not only can users jump from one text to

another, but they can also activate a sound, display a graphic, and even play an animation.

(3) Hypertext Transfer Protocol is the most widely used network protocol on the Internet.

This structure and operation mode of Web service, on the one hand, makes it fully decouple the form of service from the content provided by the service. For example, a web service-based site only needs to set various content containers on the page by encapsulating relevant parameters in SOAP messages, passing them to the background logic module to obtain relevant content, and filling the corresponding content in its container. On the other hand, the shielding of the underlying details of Web services makes the construction of software and applications based on Web services easier and faster. Figure 2 shows the Web service architecture.

Features of the Web include the following:

(1) Graphicalization. A very important reason why the Web is very popular is its ability to display colorful graphics and text on one page at the same time. Before the Web, information on the Internet was only in text form. The Web can provide features that integrate graphics, audio, and video information.

(2) Distributed. A large amount of graphics, audio, and video information will take up a considerable amount of disk space, and we cannot even predict the amount of information. For the Web, it is not necessary to put all the information together. The information can be placed on different sites. You only need to indicate this site in the browser. Physically, the information on a site is not necessarily logically integrated. From the user's point of view, the information is integrated.

(3) Dynamic. Since the information of each website contains the information of the site itself, the information provider can frequently update the information on the site, such as the development status of a certain agreement, the company's advertising, and so on. Generally, all information sites try to ensure the timeliness of the information. Therefore, the information on the website is dynamic and frequently updated, which is guaranteed by the information provider.

*3.2. Scientific Computing.* Scientific computing refers to calculations that analyze and solve natural science, social science, and engineering problems through the establishment of mathematical models and numerical solutions and the use of computer technology.

Scientific calculations are usually expressed by various mathematical equations, and the purpose of scientific calculations is to find the numerical solutions to these equations. Such calculations involve large-scale calculations and are difficult to operate with simple computer tools. Before the advent of computers, scientific research and mechanical design relied heavily on experiments to represent data, and computers were only an auxiliary state. The rapid development of computers has made it possible to perform more and more complex calculations. The use of computers for scientific calculations has brought huge economic benefits, as well as fundamental changes in science and technology itself: traditional science and technology have only two parts: theory and experience. After using computers, computing has become an equally important third-party raw material [10].

The calculation process mainly includes three stages: establishing a mathematical model, establishing a solution calculation method, and computer realization. The establishment of a mathematical model is to establish a series of quantitative relationships, namely, a set of mathematical formulas or equations, based on the relevant subject theories. Reasonable simplification of complex models is an important measure to avoid excessive calculations. Mathematical models generally contain continuous variables, such as differential equations and integral equations, which cannot be directly processed on digital computers. To this end, the problem is discretized first. That is, the problem is converted into a discrete form containing a finite number of unknowns (such as a finite algebraic equation system), and then a solution is found. Computer realization includes a series of steps such as programming, debugging, calculation, and analysis results. The development of software technology provides suitable programming languages (such as Fortran and ALGOL) and other software tools for scientific computing, greatly improving work efficiency and reliability.

There are generally two development directions for the improvement of computing performance. One is to improve the computing performance by increasing the clock frequency of a single processor. The other direction is to improve computing performance by increasing the number of computing cores on the processor chip. However, a series of problems, such as the power consumption wall caused by the increase of the core frequency, make the improvement of the computing performance brought about by the increase of the clock frequency to an end. Since the power consumption of a single-core processor is roughly proportional to the third power of its main frequency, when the computing performance is improved by increasing the number of cores, the power consumption increases linearly. Therefore, multicore platforms have become the mainstream direction to improve computing performance.

The number of processors in the Cannon algorithm in the parallel system is just right, and the desired effect can be obtained. The problem of multiplying two matrices can be expressed as $P = M \times N$, that is, the elements of the $P$ matrix are as follows:

$$
\begin{aligned}
p_{ij} &= \sum_{l=1}^{n} m_{il} n_{lj}, \\
N_1^I &= \sum_{k=0}^{n-1} \left[ (l-k) l_c \right], \\
N^{II} &= \sum_{k=0}^{n-1} \left[ (l-1-k) l_d + l_{\text{actv}}^H + l_{\text{merg}}^H + \frac{(l-1-k)^* (l-k)}{n} l_f \right],
\end{aligned} \tag{1}
$$

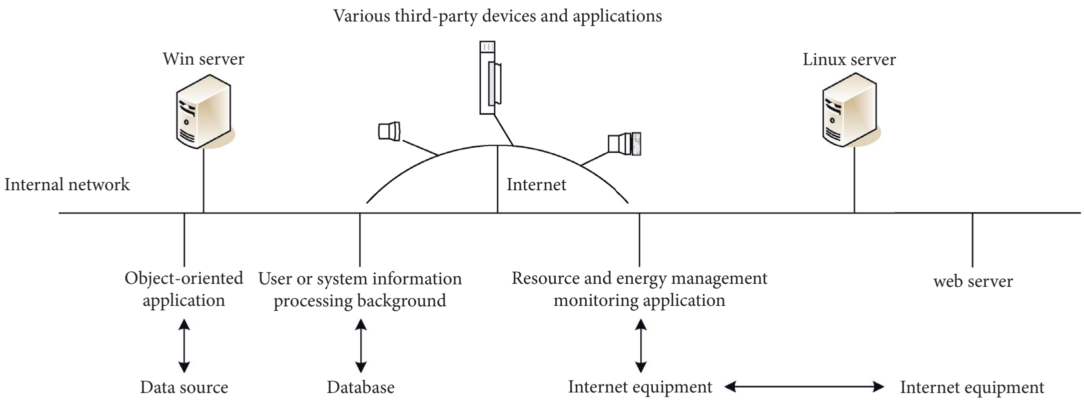


Figure 2: Web service architecture.

$l_c$-One comparison operation time.

In each super step, the execution time of each slave core is approximately as follows:

$$H_{\text{para}} = \left(h \times \frac{M}{P} \times \frac{K}{h} \times \left(\frac{N}{S} y\right)\right) h_f,$$

$$N_1^H = \sum_{k=0}^{n-1} \left[(l-1-k)h_d + (l-1-k)^* (l-k)h_f\right], \quad (2)$$

$$N_n^I = Y_c \frac{l_2 - l}{2p} h_f + N_{\text{merge}}^I + Y_c p h_f,$$

$h_f$ is the time required for a floating-point calculation. $p$ is the number of elements.

In the first superstep, the result calculation stage only needs to rearrange the calculation results of each slave core without any floating-point operations. Therefore, the calculation time is constant, which can be approximated to 0.

The total execution time of $g$ super step is as follows:

$$\begin{aligned} H_{\text{total}} &= g \times \left(H_{\text{actv}} + H_{\text{para}}\right) + H_{\text{merge}} \\ &= gH_{\text{actv}} + \frac{\text{our}}{p} Y h_f + H_{\text{merge}}, \\ N_1^I &= Y_c \left(\frac{l^2 - l}{2}\right) h_f, \\ N_{\text{para}}^{II} &= \frac{6lY_2}{p} h_f + \frac{l_2 - l}{4p} Y_2 h_f, \end{aligned} \quad (3)$$

$H_{\text{total}}$-Total execution time of super step.

The time required for execution with a single processor is approximately as follows:

$$\begin{aligned} H_1 &= \text{our}\, Y h_f, \\ N_1^2 &= Y h_f + 6lY_2 h_f + \frac{l^2 - l}{4} Y_2 h_f, \\ N_n &= Y_c \frac{l^2 - l}{2p} h_f + N_{\text{merge}}^I + Y_c p h_f + Y h_f, \end{aligned} \quad (4)$$

$N_1^2$-Sequence execution time.

The speedup ratio is as follows:

$$\begin{aligned} B &= \frac{H_1}{H_{total}} = \frac{o}{1 + \text{obH}_{\text{actv}}/\text{mknYh}_f + oT_{\text{merge}}/\text{mknYh}_f}, \\ W &= \frac{N_1}{N_n} = \left(\frac{1}{1 + f_1(p)/f_2(n)}\right) p, \\ X[k] &= \sum_{n=0}^{N-1} x[n] Q_N^{kn}, \quad 0 \le k \le N-1, \end{aligned} \quad (5)$$

$B$-Acceleration ratio.

The time complexity of serial implementation is as follows:

$$\begin{aligned} \sum_{i}^{l} (i-1)i &= \frac{\left(l^3 - l\right)}{3} \\ &= U\left(l^3 - 3\right), \\ N_1 &= \left(\frac{T}{2} \log T\right) Y h_f, \end{aligned} \quad (6)$$

$N_1$-$T$ point sequence required execution time.

The total calculation time of each slave core should be as follows:

$$\begin{aligned} 3\sum_{1}^{n-1} i^2 &= \frac{1}{2}(n-1)n(2n-1), \\ N_{\text{para}} &= \left(\frac{T}{2p} \log \frac{T}{p}\right) Y h_f + \frac{T}{p^2}\left(\frac{p}{2} \log p\right) Y h_f. \end{aligned} \quad (7)$$

The speedup of parallel implementation is as follows:

$$T = \frac{\left(l^3 - l\right)/3}{l(n+p-1) + 1/2(n-1)n(2n-1)}. \quad (8)$$

The time required for overstepping is as follows:

$$N^1 = \sum_{k=0}^{n-1} \left[\frac{m-k}{p} l_c + l_{\text{actv}}^1 + l_{\text{merg}}^1 + p l_c\right], \quad (9)$$

where $l_c$ is one comparison operation time.

What is scientific computing? Roughly speaking, scientific computing refers to the entire process of using computers to reproduce, predict, and discover the laws of motion and evolution of the objective world. It includes processes such as establishing physical models, researching calculation methods, designing parallel algorithms, developing application programs, carrying out simulation calculations, and analyzing calculation results. With the research object, the focus must be on its main characteristics, grasping the main contradiction and establishing a physical model. The so-called physical model is a set of equations describing the research object and the initial boundary value conditions of the constraint equation set and the corresponding physical parameters. With a physical model, it is necessary to adopt calculation methods and algorithms that are compatible with the physical model to develop application programs. The so-called application program is, in a visual sense, a novel written in a computer language. For scientific computing, the commonly used computer languages are FORTRAN language and C language.

Visualization is a digital method. It is a tool for understanding and analyzing images and interpreting image information and creating images from complex parts. Transform information and symbols into geometric shapes or images so that researchers can view the symbols or digital results. Computer graphics represent the scientific principles, methods, and techniques of transforming information, transforming the results into images and using image processing techniques. The visualization of scientific computing enriches scientific research tools and helps to understand complex and profound problems. It has completely changed the way most people engage in scientific research and use technology [11].

Scientific computer visualization mainly involves the conversion of scientific data-digital values and images to graphics and visual images, that is, the conversion of scientific data to understandable data. On the other hand, research the application of imaging equipment in various physical and mechanical sciences. The visualization of scientific computing subjects mainly includes experience fields such as computer graphics, image processing, and computer projection. As shown in Figure 3, it is a classification diagram of visual chemistry subjects in scientific computing.

Compared with early computer visualization systems, the main feature of scientific computing visualization technology is three-dimensional visualization technology [12]. Table 2 shows the typical technology to realize the visualization system.

Traditional theoretical research is based on analytical methods, which play an important role in the establishment of scientific principles and systems, and can solve relatively simple problems, for example, linear problems, and balance problems. However, as the complexity of the problem increases, the limitations of theoretical research become more and more obvious. For many problems, such as strong nonlinear problems, nonequilibrium problems, and problems that occur in practical applications, traditional theoretical research has been powerless. Compared with

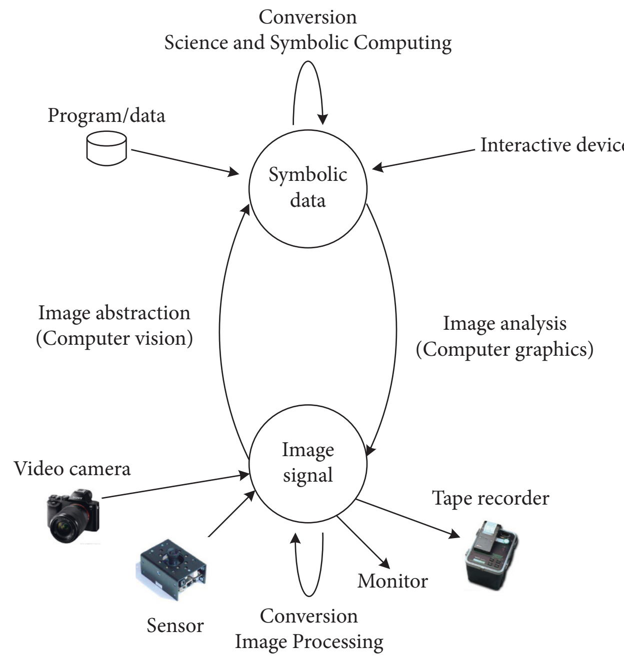


Figure 3: Scientific computing visual chemistry division classification map.

theoretical research, scientific computing can not only deal with linear problems and equilibrium problems, but more importantly, it can deal with strong nonlinear problems and nonequilibrium problems. It can apply scientific principles to solve more and more complex practical problems. Scientific computing is often referred to as a computer virtual experiment. Compared with experimental research, scientific computing has at least the following three characteristics: One is nondestructive, that is, scientific computing will not have a big impact on the environment, etc. This advantage enables scientific computing to undertake things that cannot be done in real experiments. For example, to study the destruction of tsunamis, earthquakes, and nuclear explosions, it is impossible for humans to carry out real experiments, but they can carry out scientific calculations and computer virtual experiments. The second is the whole process, the whole time and space diagnosis. In real experiments, no matter how many methods and instruments are used, the information about system evolution obtained is very limited. It is difficult to diagnose the whole process and the whole time and space. The information of the whole process and the whole time and space is very crucial for people to recognize, understand, and control the research object. Different from real experiments, scientific calculations can complete the whole process and the whole time and space diagnosis. As long as the relevant output program is added to the application, the researcher can obtain all the information about the development and evolution of the research object at any time and at any place when performing scientific calculations. This allows researchers to fully understand and meticulously understand the development and evolution of research objects. The third is that scientific calculations can be performed in a relatively low-cost manner, repeatedly and meticulously in a short period

Table 2: Typical technology of visualization system.

| Dimension | Scalar | Loss | Tensor | Multidimensional variables |
|---|---|---|---|---|
| 1D | Straight line drawing, histogram, bar graph | — | — | |
| 2D | Contour line, curved surface view, image display | Two-dimensional arrow | — | Combining scalar, loss, and tensor method |
| 3D | Isosurface, volume rendering, point cloud surface | 3D arrows, particle systems, streamlines | Tensor ellipse | |
| nD | Use multiple 1D, 2D or 3D views | | | |

of time, to obtain comprehensive and systematic information about the research object under various conditions.

*3.3. Innovation and Entrepreneurship.* Innovation and Entrepreneurship-innovative business activity based on specific points in the field of technological innovation and product innovation. Innovation is the epitome of innovation and entrepreneurship and entrepreneurship is the goal of innovation and entrepreneurship. Innovation and Entrepreneurship is a business based on innovation, which is different from Pure Innovation and Pure Entrepreneurship. Innovation emphasizes the spirit of innovation and innovation, whereas entrepreneurship emphasizes the pursuit of value through action. Thus, in the sense of innovation and entrepreneurship, innovation is the basis and condition of entrepreneurship, and entrepreneurship is the main part and continuation of innovation [13].

The essential difference between new ventures and traditional enterprises is that there are factors of innovation. Here, innovation includes not only technological innovation but also management innovation, knowledge innovation, technological innovation, and market innovation. In short, any activity that can add value to resources is innovation [14].

Innovative entrepreneurship is a new or partly innovative business created by entrepreneurs with individualized, unique thinking and business methods, combined with business models and methods in different fields of production, or new industries, new fields, or different characteristics of the same industry. Conceptually, innovation and entrepreneurship are not purely entrepreneurial activities or innovative work [15].

According to the relationship between the stage of undergraduate entrepreneurship and school work, undergraduate entrepreneurship can be divided into the following four forms: campus entrepreneurship, suspension of school entrepreneurship, graduation-based entrepreneurship, and postgraduation entrepreneurship. The first three types of undergraduate entrepreneurship are undergraduates who started their own businesses while studying at school, undergraduates who started their own businesses while studying abroad, and undergraduates who chose to start their own businesses without looking for a job when they graduated.

College students' innovation and entrepreneurship projects are widely distributed and have high knowledge content. Students have received higher education and have reached a certain level in terms of innovative thinking and knowledge. Some even obtained their own patents or started developing projects during their college years. After entering society, they can start and master their own Professional-related companies and will avoid detours on the path of entrepreneurship. The advantage of college students lies in their years of the learning experience at school, which can be turned into a direct source of capital. Investors are very concerned about the knowledge and technology mastered by college students, which can create huge profits, which is also one of the factors that they are willing to invest in college students' entrepreneurship. In addition, many entrepreneurial projects adapted to the market are available for reference. For example, some college students take their own areas of expertise and proficiency, individually or in partnership, to set up boutiques, daily necessities sales, etc., which all belong to the category of entrepreneurship [16].

College students' start-ups are helpful to the digestion and absorption of book knowledge. The weak sense of practice has caused college students who start their own businesses to stay in the initial stage of "talking on paper." College students at home and abroad have essential differences in entrepreneurial models. Because Chinese students have lived and studied on campus for a long time, their initial knowledge and understanding of society, especially market operations, business operations, entrepreneurial industries, and other fields, were not deep, and Chinese universities also lacked entrepreneurship and business management. However, training related to system theory and practice can acquire formal and commercial skills that can be mainly applied in practice. Secondly, due to the lack of social experience and information in the local student market, they do not have the ability to think carefully. They cannot foresee the dynamic changes that will occur during the entrepreneurial process and lack the ability to actively discover and solve problems [17].

The form of knowledge service enterprise is one of the main forms of college students' innovation and entrepreneurship. The biggest capital for college students is the knowledge system endowed by education for more than ten years. College students can flexibly use the knowledge they have mastered to start a business. For example, going to university as a tutor can not only work-study, experience life, but also increase social practice. This can not only make full use of their own knowledge reserves, but also accumulate an "intangible asset" for them to enter the society and play a role as a bridge for the future entrepreneurship in the home education industry. Therefore, the family education industry is very suitable as one of the forms of undergraduate entrepreneurship. Easy to get started, quick to get started, and low cost make the tutoring industry the first choice for some college students to start a business.

The main form of innovation and entrepreneurship for college students also includes the form of taking the student route. College students open some stores that mainly rely on students as their customer resources. Because of the same age and similarities in living habits and thoughts, it is easier to start a business, and it can attract the attention of student customers by relying on economic benefits. However, because students have fewer funds, you should fully consider your own costs when you start a business. Therefore, you should choose a place where the rent is slightly cheaper than you choose a store. Therefore, it needs to have strong social skills for promotion. In addition to posting advertisements on campus, you can also organize joint activities with school clubs to achieve the purpose of promoting yourself.

The increase in the number of graduates year by year leads to the risk of employment pressure. The employment project is the first project graduated. The steady increase in the number of university graduates in recent years has led to a sharp increase in employment. Assembling a large and much-needed education management team is a major challenge. The main leader of the college is responsible for employment projects, and it is obliged to refer to labor law issues. However, in the specific implementation process, key executives are often too busy at work and do not pay enough attention to employment and entrepreneurship. Other departments regard employment issues as career guidance and student management issues, and it is simply ignored. Figure 4 shows the distribution of undergraduate graduates in recent years.

The actual number of college students involved in entrepreneurship is relatively small. Although the data survey shows that college students have a very high expectation rate of owning entrepreneurship, in fact, very few are truly invested in the entrepreneurial process. The entrepreneurial ideals they understand are like dream bubbles, and there is a big gap between them and reality.

College students have insufficient entrepreneurial awareness. If college students want to start their own businesses and be successful, they must be distinguished from those of social workers. Because compared with social workers, they have weaknesses in a series of issues such as work experience, connections, funds, etc. Only by using their strengths and rich knowledge reserves can they take a path of entrepreneurship that belongs to their own technological innovation. But facts have proved that the entrepreneurial and innovative consciousness of our college students is relatively insufficient. Traditional industries such as catering and retail are still the first choice for most college student entrepreneurs to start their own businesses. Competitors in these industries are often social workers with decades of operating experience, so the result is predictable, and the success rate is very low.

The entrepreneurial project selected by the college student's new venture is a key indicator. Choosing a suitable entrepreneurial project can be said to be equivalent to half of

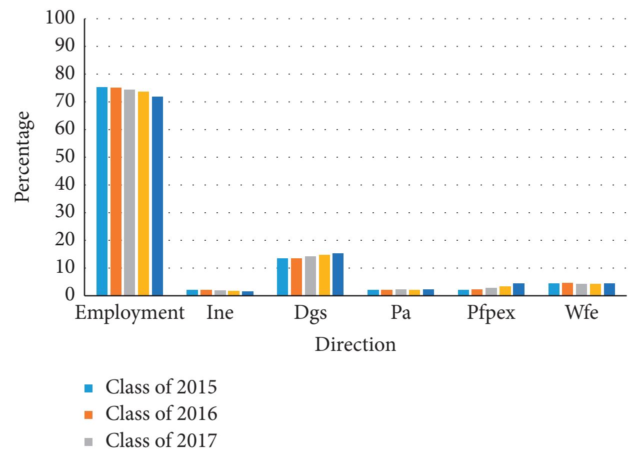


Figure 4: Distribution of undergraduate graduates in recent years. Ine: innovation and entrepreneurship. Dgs: domestic postgraduate. Pa: postgraduate study abroad. Pfpec: prepare for postgraduate entrance examination. Wfe: to be employed.

the success. Because college students have a less social experience, people often choose projects and choose entrepreneurial projects without goals, and the final result can be imagined. Therefore, you must choose a project that suits you so that you can have a direction and goal for entrepreneurship and stimulate your entrepreneurial potential and entrepreneurial enthusiasm. There are many problems and challenges in the process of starting a business, and good management methods play a very important role. It can help start-ups to succeed and mature, and it can do more with less.

## 4. Experiments of Scientific Computing System in Innovation and Entrepreneurship

Developing a WEB-based scientific computing system and specifically providing scientific computing services to apply the system. Users do not need to install any software, nor do they need to conduct special learning. They only need to use the WEB browser to log in to the system and complete the scientific computing tasks through the web page. The overall model of the system is shown in Figure 5.

The entire system is a typical three-tier architecture: the first layer is the client browser, through which users submit scientific calculation requests and display calculation results. The second layer is the WEB server, which is responsible for providing WEB services. After receiving the request, the HTTP connector of the WEB server analyzes the WEB program and resource corresponding to the request. The servlet is responsible for analyzing the scientific calculation request in the request and generating related calculation expressions. Passing the expression to be responsible for communicating with the calculation program, including starting and closing related calculation programs; pass the calculation expression to the mathematical software for calculation, obtain the calculation result of the mathematical software and return it to the service program. The service program is finally responsible for generating an HTML page

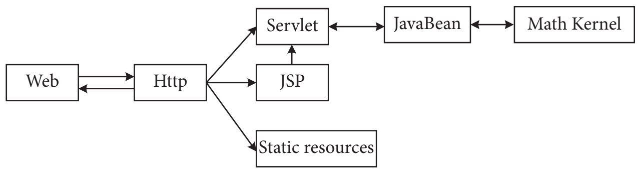


Figure 5: The overall model of the system.

containing the calculation result and returning it to the user. The third layer is mathematical software, responsible for scientific calculations [18].

High-performance scientific computers are a very important class of scientific computers. These applications mainly include nuclear explosion simulation, weather forecasting, and biological data processing. In a parallel high-performance system, the efficiency of the application is mainly determined by two factors: the degree of parallelism between nodes and the performance of a single node. The performance on a single node mainly depends on access to the optimized program memory and parallel deployment. This paper optimizes the single-machine performance of the scientific computing system, uses the optimized scientific and technological system to obtain data through Web services, and calculates the benefits and risks of innovation and entrepreneurship [19].

According to the different measured parameters, the parallel scalability model can be roughly divided into two categories: fixed performance and fixed resources.

The analysis of scalability is very important. Algorithm designers can use it to analyze the algorithm and select the optimal parallel algorithm to make full use of the increased processor resources. At the same time, it can also be used to estimate the best number of processors for the best speedup or other performance parameters. Manufacturers of parallel machines can use it to study the impact of hardware technology on performance. In addition, scalability also plays an important role in performance evaluation. A good scalability measurement method can reflect the matching degree of the algorithm and the machine combination.

The equal efficiency, equal speed, equal time, and equal average cost models all have fixed properties. This type of model is to fix a certain performance index and then study the scale of the problem scale randomizer's ability to scale so as to measure the scalability of the parallel system. At the same time, it can best reflect the changing law of the actual performance indicators of the system. Table 3 shows the measurement method of a fixed-performance scalable model.

The parallel matrix multiplication FOX algorithm is used to analyze the scalability on the MMP machine. Divide A, B, and C into $l \times l$ submatrices of the same size.

A-$m \times k$ matrix.

B-$k \times n$ matrix.

C-$m \times n$ matrix.

Taking $A_{4\times4}$, $B_{4\times4}$, and $l = 4$ as examples, the algorithm process is shown in Figures 6 and 7.

It can be seen from the above that the algorithm process can be divided into three parts: "broadcast, product, and move up." The product is the calculation part, and the other two are the communication part, so it is easy to measure the communication time of the algorithm [1]. Figure 8 shows the scalability test result of the FOX algorithm on the MPP machine used.

In the experiment, if the number of threads on each node is fixed at 1, then the calculation using commonly used nodes is equivalent to a normal cluster. The FOX algorithm adopts a mixed programming method to achieve higher performance than when MPI programming is used alone [20]. When using the same number of processors for calculations, in many cases, mixed programming can be used to reduce the amount of communication and the number of communications. In some cases, the communication overhead of message delivery has little or even negligible impact on performance. For example, the ratio of calculation time to total time is much greater than communication time. But when the calculation time is close to the communication time, the communication overhead between MPI processes will have a great impact on performance. So this puts forward higher requirements for programmers, and it is necessary to reduce the communication overhead between processes in the program as much as possible. When the mixed programming model is used to calculate this type of problem with a large communication overhead on the SMP cluster, the use of intranode calculation as much as possible will greatly improve the calculation performance [21]. As shown in Figure 9, the performance comparison of FOX improved algorithm on SMP cluster and ordinary cluster and the influence of MPI process communication on the performance of FOX improved algorithm.

The LM3D hybrid program was tested on a supercomputer, and the calculation amount of the program was changed only by changing the grid size. Table 4 shows the test results of the LM3D hybrid program.

Using the Web to collect relevant information on the innovation and entrepreneurship environment, calculate the risks of college students' innovation and entrepreneurship through the scientific computing system. Using the analytic hierarchy process to determine the index weight, the comprehensive evaluation of entrepreneurship is divided into four categories: excellent, good, fair, and poor. According to the characteristics of undergraduate entrepreneurs, the selected entrepreneurial projects should reduce risks as much as possible while giving full play to their advantages. Figure 10 shows the consistency index and the comprehensive evaluation level of innovation and entrepreneurship risk.

## 5. Discussion

Students can make full use of small start-up capital and short-term investment by choosing a suitable innovation and entrepreneurship direction. Chinese entrepreneurial students mainly use their own funds or family funds to start their businesses in the form of entrepreneurial funds. Most of these students' families are working-class families with

Table 3: Measurement method of the performance-fixed scalable model.

| Measurement method | Fixed performance indicators | Instruction |
|---|---|---|
| Equal efficiency | E | Parallel efficiency is fixed |
| Constant velocity | V | Average speed is fixed |
| Equal time | $t_p$ | Fixed parallel execution time |
| Equal average overhead | $t_o/p$ | Fixed average cost |

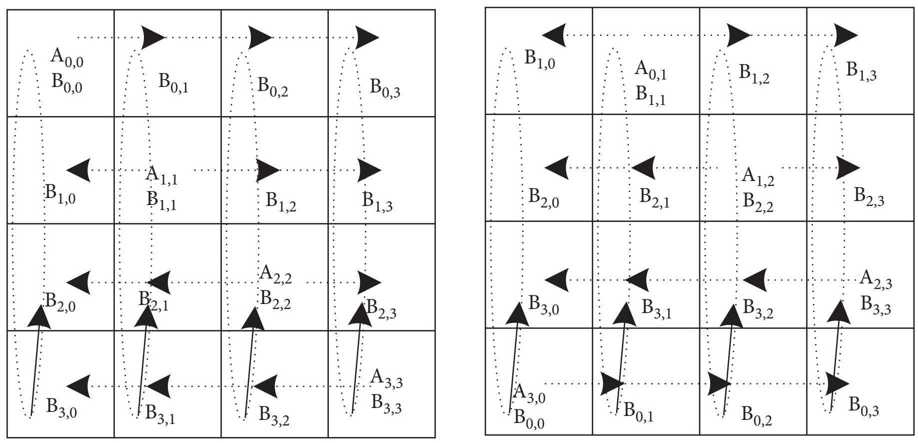


Figure 6: $A_{00}$, $A_{01}$ Algorithm process.

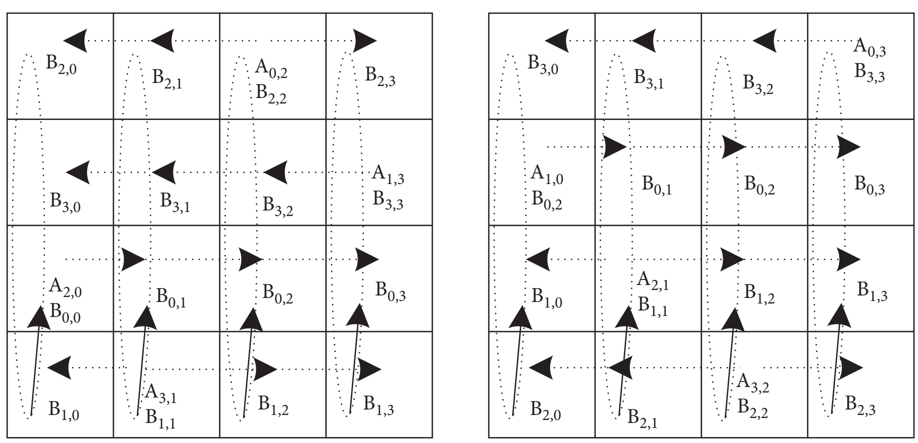


Figure 7: $A_{02}$, $A_{03}$ Algorithm process.

very little entrepreneurial funds. Self-employed students should first choose projects with a low initial investment and fast investment to ensure the flow of funds for normal business activities. The contractor should also avoid selecting projects with high safety requirements. In fact, it is difficult for small capital to solve the problem of slowing capital expenditures caused by rising securities. As the market changes again, the company may invest less and face the risk of bankruptcy [22, 23].

They choose projects that are in the growth stage and avoid new projects that have just been developed and old projects that are fully mature. A project can be divided into an initial stage, a growth stage, and a mature stage. Although the projects in the early stages are less competitive, they have no market foundation. Although the projects in the mature stage are stable, they lack objective profits. The entrepreneurial projects in the growth stage not only have lower entrepreneurial risks but also have relatively large profit margins. Undergraduate entrepreneurs are generally not old, get in touch with new things quickly, and easily choose projects that are in their early stages. Such projects are very risky and are not suitable for college student entrepreneurs who lack social experience. Therefore, entrepreneurial projects in the growth period are more suitable for college students to start their own businesses, and the probability of success will be much greater.

Facing the increasingly severe employment pressure, college graduates must first resolve their misunderstandings about innovation and entrepreneurship and have a correct understanding of innovation and entrepreneurship. We must integrate current development trends, actively participate in social practice, and improve professional skills.

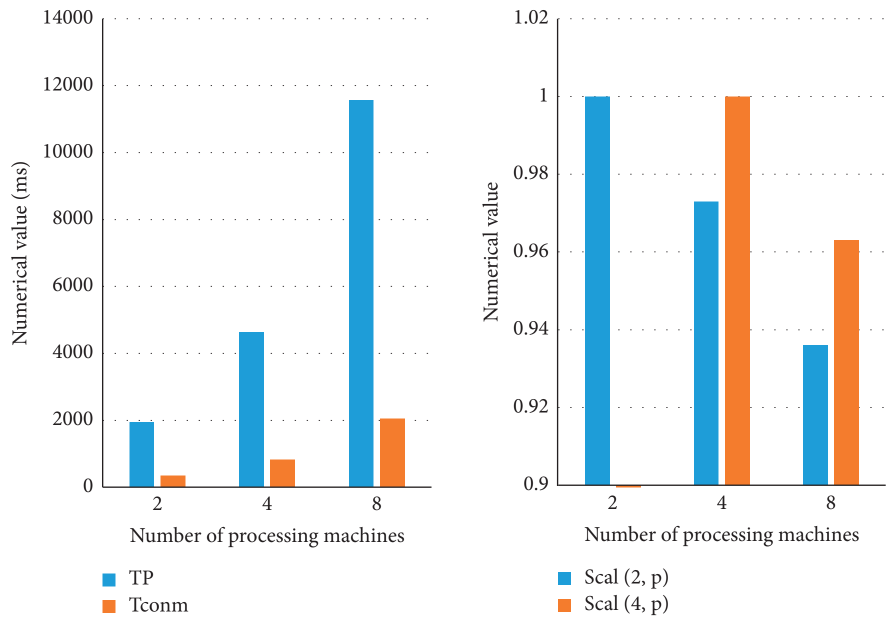


FIGURE 8: Scalability test results.

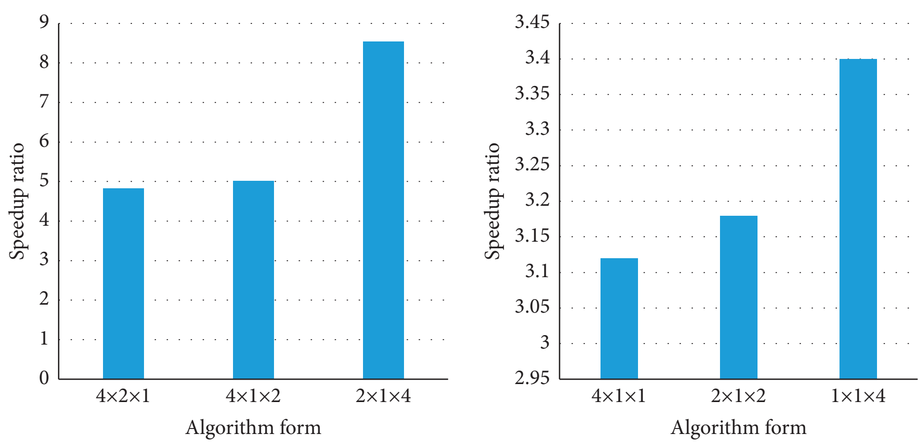


FIGURE 9: Improvement effect comparison chart.

TABLE 4: Test results of LM3D hybrid program on a supercomputer.

| Grid | Processor topology | Threads | Operation hours (s) |
|---|---|---|---|
| 30 × 30 × 40 | 1 × 2 × 2 | 1 | 0.325 |
| | | 2 | 0.195 |
| | | 4 | 0.174 |
| | | 8 | 0.126 |
| | | 16 | 0.211 |
| | 2 × 1 × 2 | 1 | 0.374 |
| | 2 × 2 × 2 | 1 | 0.162 |
| 60 × 30 × 40 | 2 × 1 × 2 | 1 | 0.801 |
| | | 2 | 0.603 |
| | | 4 | 0.394 |
| | | 8 | 0.282 |
| | | 16 | 0.416 |
| | 2 × 2 × 1 | 1 | 0.831 |
| | 2 × 2 × 2 | 1 | 0.346 |

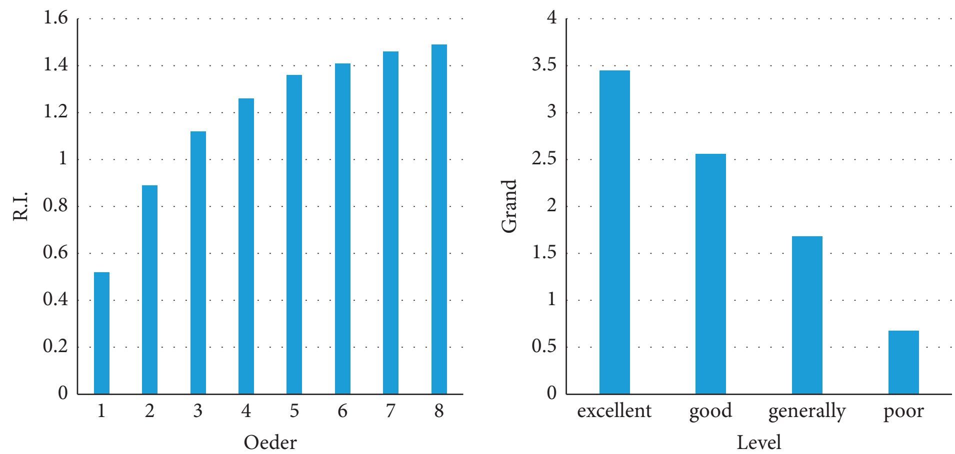


Figure 10: Comprehensive evaluation of innovation and entrepreneurship risk.

Exam-oriented education has been implemented in our country for a long time, and it is often unable to teach students a skill to develop wholeheartedly. Therefore, many graduates ignore innovation and entrepreneurship. With the development of science and technology, digital technology is changing people's lives, so innovation and entrepreneurship education should also keep pace with the times, using technology and information to study innovation and entrepreneurship [24].

## 6. Conclusion

With the development of economy and the progress of society, college students, as the most potential group, have higher quality and active innovation ability, and they should practice innovation. Innovation is the soul of social progress, and entrepreneurship is an important way to promote the social and economic development of our country and improve people's livelihood. Newly graduated college students every year are like fresh blood injected into the army of innovation and entrepreneurship, occupying an important weight. Moreover, innovation and entrepreneurship will also promote popular employment, enhance people's livelihood security, and help the country's development. This article introduces the concepts of Web and scientific computing and conducts research on the innovation and entrepreneurship of college students. The article develops a WEB-based scientific computing system, specifically providing scientific computing services to apply the system and optimize the stand-alone performance of the scientific computing system. This article starts a preliminary forecasting study. In view of the limited data sources and academic level, there are unavoidable omissions in the study. The analysis of the status quo analysis stage is not thorough enough, only showing the changes in relevant indicators and lacking internal judgment and analysis. The future research direction can apply the equal communication scalability model to practical problems and multilevel parallel scalability evaluation criteria.

## 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 no conflicts of interest.

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