

Research on Educational Resources Distribution and Scheduling Algorithm Based on Artificial Intelligence Technology

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Abstract: It is inevitable that artificial intelligence has entered all walks of life. The continuous progress of artificial intelligence technology has promoted its integration and application innovation with the education industry. The emerging information technology with artificial intelligence as its core not only helps to balance educational resources and improve teaching efficiency, but also gradually realizes personalized learning in the true sense. It can be said that artificial intelligence will become an important driving force for the breakthrough development of "Internet+Education". Artificial intelligence will make education management more forward-looking, make education management data-oriented, transparent and rational, and reconstruct education management supervision and correction system. The distribution of educational resources is influenced by political, economic, geographical and cultural factors. In addition, as far as the internal factors of educational ecosystem are concerned, the resource distribution mechanism of junior middle school education and higher education is also different. The distribution of educational resources is related to the educational resource management system, which is especially reflected in the supply of educational resources. Through the integration of educational and teaching management and artificial intelligence technology, the bondage of teaching time and space can be broken and the problems existing in educational and teaching management can be solved.

1. Introduction

Using artificial intelligence technology to cultivate talents and reform teaching methods can ensure the modernization and scientificization of teaching governance, the individuation and networking of education system, the fairness and effectiveness of education, and the higher quality of education and teaching [1]. The quantity, quality and rational distribution of vocational education resources in a country or region will have a profound impact on the development of vocational education. Putting forward the basic idea of optimizing the regional distribution of vocational education resources will be of great significance to further promote the balanced development of vocational education among regions in the future [2]. The application of intelligence plays a key role in effectively improving China's long-standing traditional educational concepts, updating teaching models and adjusting teaching methods. Based on artificial intelligence, it is guided by the strategic positioning of "striving to build a new talent training model under the condition of 'internet plus' and developing a new education service model based on the Internet" and guided by the goal of "organic combination of large-scale education and personalized training", which brings innovative and subversive development to the construction of modern online teaching platform [3]. Intelligence development is an important aspect of education. It is the content and purpose of education for students to exercise, cultivate and improve their intelligence in the process of learning knowledge and skills, just like drawing on a blank sheet of paper, changing or developing the original simple psychological structure of students and enabling them to acquire complex higher intelligence [4]. Artificial intelligence technology explores and imitates people's self-consciousness

and cognitive learning, etc., and helps people to have a deep understanding of self-mechanism. From this point of view, the educational management reform in the era of artificial intelligence is the inevitable result of historical development: artificial intelligence "originated" in education, which in turn was applied to all aspects of education and management education and teaching. Resource allocation and resource distribution are two concepts with similar connotations. However, resource distribution is often regarded as an ecological term, while resource allocation is often regarded as a personal capital. In addition, resource allocation often refers to the specific operation process of resource distribution [6]. Under the new historical conditions, the market economy has a certain impact on all aspects of the educational ecosystem, and the allocation of educational resources is the joint of the relationship between the market economy and education [7].

2. Method

2.1. Application of artificial intelligence technology in teach

Artificial intelligence is a branch of computer science, and its main research contents include robotics, language recognition, image recognition, natural language processing and expert system [8]. Artificial intelligence is the simulation of human consciousness and thinking process. Although it is not human intelligence, it can simulate human thinking process. At present, educational science and technology with artificial intelligence as its core begins to deeply integrate with the education industry from three aspects: data collection, speech recognition, image recognition, sensors, data processing, semantic recognition, big data, self-adaptation, cognitive computing, emotional computing, human-machine interface, AR/VR, robot, 3D printing, etc. With the development of more dimensions and magnitude of data collection and data convergence, more efficient data processing methods and more interactive man-machine interfaces, in the future, artificial intelligence will form a product evolution mode combining point with surface and a systematic and intelligent product application trend in the field of education. Artificial intelligence will constantly innovate and change the learning paradigm of traditional education and open a new education mode [9]. The Web service layer and its grid services extended by OGSi provide the infrastructure for the upper layer: architecture-based grid services. GGF is currently committed to defining grid-based services in fields such as program execution, data services and core services. Currently, the main grid service interfaces defined by OGSA are shown in Table 1.

Table 1 Interface of grid service

Interface	Operation	Description
Grid Service	Find Service Data	Query various information of grid service instances.
	Set Termination Time	And set the termination of the grid service instance space between
	Destroy	Terminate grid service instance
Notification Source	Subscribe To Notication	Register with the notification sender.
	Un Subscribe To Notication	Cancel registration
Notification Sink	Deliver Notification	Send messages asynchronously
Registry	Registry Service	Soft state registration of grid handle
	Un Registry Service	Unregistered grid service handle
Factory	Create Service	Create a new grid service instance.
Find By Primary Key	Find By Primary Key	Returns a grid service created according to a specific key value. handle
	Destroy By Primary Key	Revoke grid service instance created by specific key value
Handle Map	Find By Handle	Returns the grid associated with the grid service handle. Service instance

The application of artificial technology fusion mainly focuses on four directions: automatic homework correction, online answering of questions by taking photos, intelligent evaluation and

personalized learning. At present, the combination points are scattered, and most products are still in the exploration stage, but some products have been put into application and accepted market verification, and achieved remarkable results. The progress of semantic analysis technology makes it possible to automatically correct homework. Simple semantic grammar machines can automatically identify and correct mistakes, even put forward suggestions for revision, and automatically generate detailed learning reports for teachers according to the students' homework results. Intelligence evaluation refers to the test, analysis and evaluation of teaching/learning behaviors and data that can be digitized and standardized by using artificial intelligence technology, and it has been initially applied. Individualized learning refers to a learning paradigm based on reflecting students' personality differences and aiming at promoting students' personality development. Big data can describe each student's learning characteristics in detail and construct a complete portrait of students. Therefore, it can be combined with adaptive learning technology to create personalized adaptive learning experience and learning path for each student, and push differentiated learning content and curriculum planning suitable for each student. Driven by technologies such as mobile Internet, self-adaptation, big data, etc., artificial intelligence presents the characteristics of rapid, novel and accurate development. It can speed up the reform of online teaching methods, more effectively make up the platform defects, improve the platform functions and promote the platform teaching from "intelligent education" to "educational intelligence". Let learners change their learning time, place and content according to their needs, so that their learning time is more free and their learning space is no longer confined to a closed space, thus achieving ubiquitous learning and lifelong learning. More importantly, the explicit and implicit resources are organically integrated and automatically aggregated when the platform users need them, so as to improve the efficiency of teaching and learning.

2.2. Research on Educational Resources Distribution and Its Scheduling Algorithm

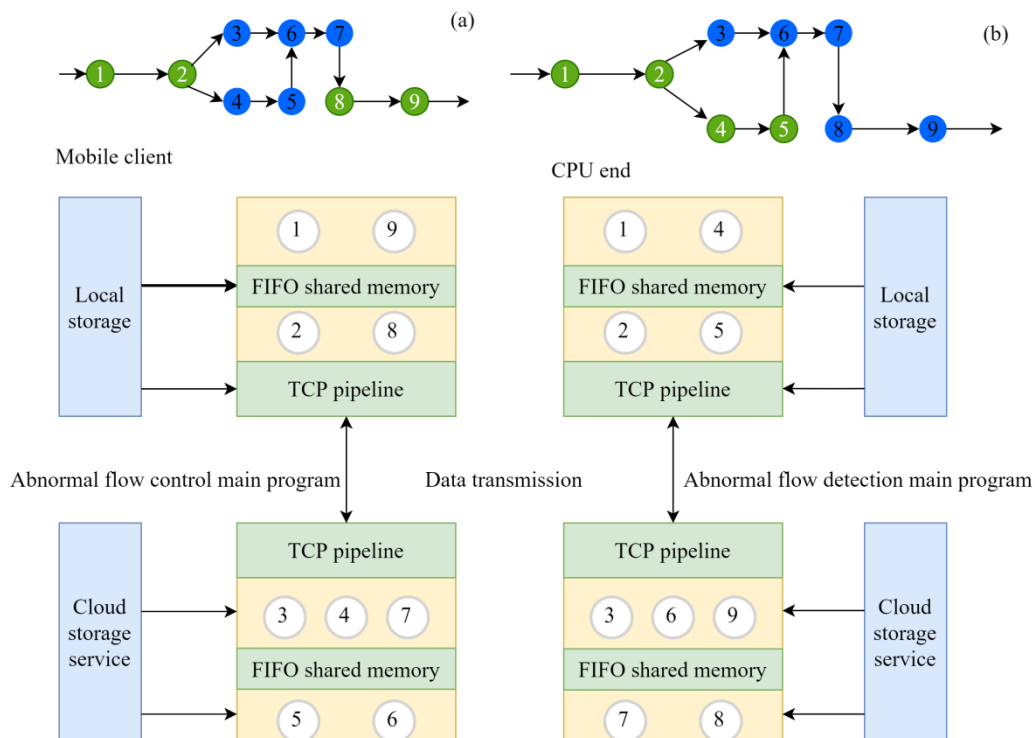


Figure 1 Design model of distributed structured storage for online education

The construction of educational resources can have four meanings: first, the construction of educational resources of material type; Second, the construction of online courses; Third, the evaluation of resource construction; Fourthly, the development of educational resource management system. Among these four levels, the construction of material education resources and online courses is the foundation, and is the key and core to be standardized. At present, resource construction mainly comes from two aspects: First, companies and research institutions specializing

in resource construction, such as inter-school communication, the source of the country, China Basic Network, China Education Star, etc. Second, teachers of first-line disciplines. In order to realize the design of online education system for college students, the author uses big data extended query technology to manage online education information for college students. By constructing a big data decision model and combining with the storage structure model for optimization analysis, the distributed structure storage design and adaptive scheduling of online education are realized. The model is shown in Figure 1.

It can be seen from the above that the information management of online educational resources for college students includes the management of physical resources, semantic information resources and computing resources, and finally the centralized storage model distribution of online educational resources data stream is obtained:

$$F(\lambda t_k^0) = p(T_1 + T_2 + \dots + T_n \leq \lambda t_k^0) \quad (1)$$

$$= \int \int \dots \int f(t_1, t_2, \dots, t_n) dt_1 dt_2 \dots dt_n$$

Software development of mobile education system based on B /S framework. Open API is adopted to realize resource allocation, deployment and adaptive scheduling. The online education resource management database is established under Cloud-P2P cloud platform. The host boot program of online education system is built through system interface and application module, and the system simulation analysis is carried out under MAT-LAB software development platform. Through B /S structure, the whole teaching resource scheduling management system is divided into two parts: foreground application and background database. In order to fully consider the cross-platform and universality, the system uses MySQL as the basis of database design, and the foreground application uses mixed programming of JSP, Servlet and JavaBeans to realize all data transmission. In the design of system structure, we adopt B /S three-tier structure based on Web browser, and plan to develop a distributed intelligent teaching resource scheduling management system, which provides an intelligent, interactive, open and universal campus management environment for school administrators and teachers and students.

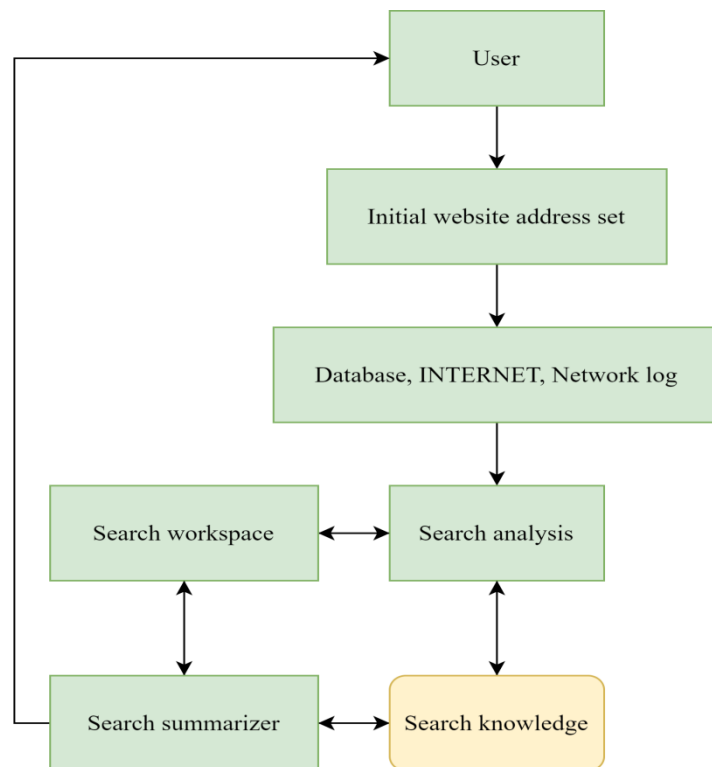


Figure 2 Main processing steps

The main processing steps taken by the artificial search algorithm are shown in Figure 2. In this new model, not only can the depth-first artificial intelligence search be carried out on the web pages

in the website, but also more and better search knowledge can be acquired through self-learning of its search process and results. In the design process of the new model, an effective new representation method of search knowledge is used, and in order to effectively describe the search path, the concept of "signpost" web page is introduced into the search path. The signpost web page can not only search out the existing web pages, but also play a positive guiding role in guiding the search path to determine the target web pages.

Individuality analysis system is used to analyze students' individual ability, so as to ensure students' subjectivity in education and teaching management.

3. Result analysis

By use that search knowledge representation method introduced above, and the specific knowledge represen by it, the depth-first heuristic search strategy is adopted, and the whole processing flow of each required target website is search out from a number of websites and educational resource databases designated first. In the process of searching, you can constantly improve your current search knowledge according to the completed search process and results, so that you can constantly improve your search ability. Part of the process from web page B to web page C is tested, and the experimental results are shown in Figure 3 and Figure 4.

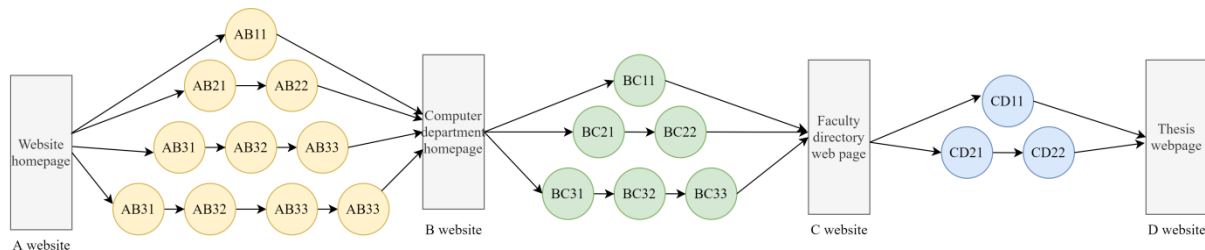


Figure 3 Experimental results

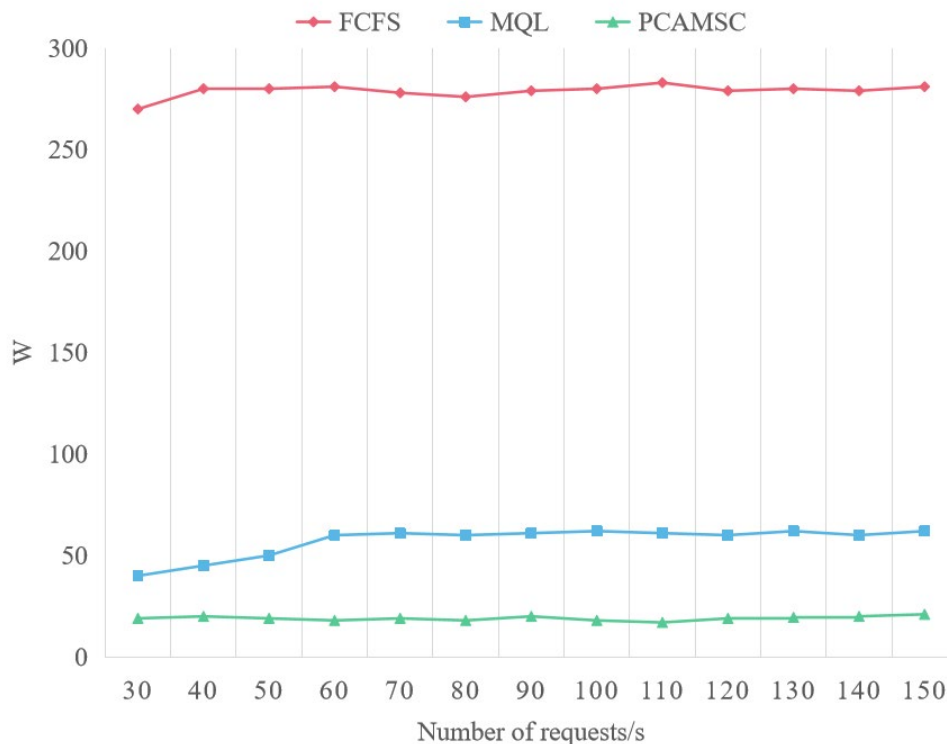


Figure 4 Comparison of average waiting time of users under different intensities

Figure 3 shows the basic characteristics of the internal access tendency of streaming media files, that is, the access frequency of the first block of the file is much higher than that of other blocks. Further research shows that when a user requests to access a video file, the possibility of stopping

the access operation is very small in the initial process of accessing the file buffer. As can be seen from Figure 4, many users don't access the whole file, and most of them access within 1 minute. There are two main reasons for this phenomenon: First, the characteristics of users' behavior. When users access a file, they usually only care about the beginning of the file. If users feel interested, they will continue to access it, otherwise they will stop accessing it or choose other video files; Secondly, for technical reasons, in order to avoid delay and jitter and ensure the playback quality, it is necessary to cache some data in the client. Therefore, if the buffer time is too long due to network congestion and other reasons, users may lose patience and stop accessing. In order to improve the on-demand performance of video to a greater extent, it is necessary to find out the bottleneck of the system and improve it to obtain the best quality.

4. Conclusion

Thanks to artificial intelligence, machines and people are gradually re-dividing and cooperating. The machine will give full play to the advantages of standardization and scale in a simple environment, and complete auxiliary teaching, simple answering, homework exercises, evaluation and correction, etc. Teachers focus on creative and humanistic contents such as instructional design, complex decision-making, and teamwork. The future education will be an era of cooperation between human beings and artificial intelligence. The key is to give full play to the different advantages of machines and human beings. On the one hand, we should use artificial intelligence to complete simple and repeated mental work in the process of education, on the other hand, we should also give full play to the greater advantages of human innovation, complex decision-making, emotional care and encouragement. In network teaching, there are obvious resources such as subject courses, teaching materials and teachers, and hidden resources such as platform environment, communication space, user system and evaluation mechanism are also worthy of attention. These hidden resources not only ensure the effective teaching, but also bring students ideal learning experience and gains in a subtle way. It is necessary to study the new educational model of "Internet+education" of artificial intelligence, which not only promotes the effective application of artificial intelligence to education and teaching, but also the construction of a new system of "Internet+education" of artificial intelligence, and it is also the realistic need of the innovation, transformation and development of school education and teaching.

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