

# Design of College Online Resource Sharing and Practice Platform Assisted by Opensource Public Cloud Big Data

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**Abstract:**The educational resource sharing platform is designed and developed with open source tools such as Spark computing engine, Hive data warehouse, MySQL database, InfluxDB timing library and Akka toolkit. Combined with the characteristics of private cloud computing technology, it gives full play to the advantages of cloud computing, which can save investment costs, provide secure storage and improve the level of resource sharing in the construction of information platforms. Design and implement an educational resource sharing scheme; implement a resource search algorithm based on a complex network-based resource search model; design and implement the platform's resource processing module, blog module, circle module, user management module, etc.

**Keywords:** College Online, Resource Sharing, Practice Platform, Opensource Public Cloud

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## 1. INTRODUCTION

The rapid development of Internet technology has brought impetus to the innovation of teaching modes and learning methods [1]. Shared learning has become a development trend. How to do a good job in the co-construction and sharing of learning resources has become a topic of widespread concern from all walks of life. In order to maintain the extension performance of learning [2], learners select the learning resources they need from any resource storage medium at any time period and position, which makes the resource formation non-static under certain conditions [3], which can meet the dynamic formation and optimization process. Learning is an individual behavior generated in a specific environment, and a huge number of learning resources serve as the basic guarantee for different groups of people to learn [4].

On February 25, 2015, Premier Li Keqiang chaired an executive meeting of the State Council and proposed the "dual engine" idea of "mass entrepreneurship and innovation" [5]. And the space for self-employment, so that the spirit of innovation, creation and independent development can be carried forward in the whole society [6]. At the third session of the 12th National People's Congress on March 5, 2015, Premier Li Keqiang first proposed the "Internet +" action plan in the government work report. Its core is [7]: vigorously promote the combination of mobile Internet + cloud computing, big data, Internet of Things, etc. with modern manufacturing, industry 4.0, etc. [8]

It can be clearly understood that the overall architecture of the cloud computing platform is composed of multiple resource management platforms and an operation control platform [9]. In the process of designing the cloud computing resource sharing platform, it mainly includes three parts: network resource module, storage resource module [10], and computing resource module. In the process of designing the computing resource module, we mainly focus on the virtual machine access process and application process [11], which fully demonstrates that through the effective application of the cloud computing resource sharing platform, the stability and utilization of the corresponding computing resources can be obtained. further improvement [12]. Big data external services include commercial data service provision and government

public service provision. In terms of commercial data service provision, such as providing RTB [13] data application services for mobile Internet advertising owners, providing credit reporting services for banks, and providing tourist source cluster analysis data for scenic spots. service etc. [14]

In terms of government public service provision, it provides the government with location-based big data service applications [15] including real-time road condition analysis, urban planning and emergency response support, public safety and management, etc. At the same time, the rapid development of agricultural big data is also regarded by many enterprises as a [16] Broaden market opportunities. Solum, founded in 2009, is a company in the United States dedicated to providing farmers with precision agricultural services through agricultural [17] big data. Solum mainly provides farmers with software and hardware services for soil analysis, helping farmers to easily obtain soil sample data and conduct real-time analysis [18]. The company achieves the goal of increasing output and reducing production costs by providing farmers with precision fertilization solutions [19].

Combined with the development direction of educational informatization, this paper conducts a detailed study on the current popular cloud computing technology, and on the basis of the existing learning platform in colleges and universities, makes the design and implementation of a learning resource sharing platform based on cloud computing in colleges and universities [20]. Based on this research, the user unit can effectively reduce the investment in hardware server and software resources and only need to focus on the development and production of learning resources, which will greatly improve the work efficiency of the user unit [21]. If universities can share the learning resources of other schools, so that digital resources can be shared to the greatest extent and fully reused, the purpose of saving software and hardware costs and maintenance costs can be achieved. FREE is the abbreviation of Federal RegistryforEducationalExcellence , Federal Quality [22] Educational Resources, is an organization created and maintained by the U.S. federal government, public and private groups to facilitate the search for digital education and learning resources. Orange Business Services of France Telecom's communication solutions department, on the one hand [23].

## 2. THE PROPOSED METHODOLOGY

### 2.1 The Open Source Public Cloud Big Data Assistance

This platform mainly includes public information module, learning resource module, group class module and user information module. The main functions of each module are as follows: The public information module can send out the events or notices that have occurred on the website in the recent period, and can upload the photos of the group or collective learning or activities, so that users can know it at the first time; learning resources The module can realize resource sharing operation, and at the same time add text descriptions to the shared resources, shorten the time for teachers and students to query information, and improve the learning effect.

The group class module realizes the flexibility of establishing a group and adding study groups, and can participate in the group study and discussion; the user information module realizes the establishment, control and maintenance of basic data of group members, support information improvement and photo addition functions. Another design concept of the public innovation and entrepreneurship information service platform for college students is to penetrate from the depth of education, and to pay attention to depth, that is, "theoretical teaching→experimental teaching→innovative training→enterprise practice→employment→entrepreneurship". In order to effectively connect theory and practice teaching, the curriculum system should meet the requirements of college students' innovation and entrepreneurship. Courses can be developed based on work process and enterprise projects, courses are set with work tasks as reference points, and teaching content is organized with projects as reference points. . Google's search engine currently has the most users, and there are many other applications, such as: mail processing, document processing and enterprise-level products GAE, etc. The services they provide are timely and need to provide massive databases. The company proposed a scheme of using cheap computers to work together, which effectively solved and dealt with the problems of timeliness and massive data storage, and later gradually developed into Google cloud computing technology.

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### 2.2 The Online Resource Sharing Platform for Colleges And Universities

Bootstrap is one of the front-end organizational structures, Html, CSS and JavaScript are more flexible than the traditional front-end organizational structure, which makes the development of Web terminals faster. JQuery, as one of the non-heavyweight JavaScript libraries with good compatibility, and Volley, as one of the open-source organizational frameworks for network operations in the Android environment, greatly simplifies network operations.

The XUtils framework is similar to the Hibernate framework in the Java environment. It is the ORM COBJECT Relation Mapping temporal relationship mapping framework in the Android development environment, which can further

simplify database operations. When responding to larger information, the time required is longer, and the response time corresponding to the amount of information is also longer. Compared with the distributed resource sharing platform, the cloud computing shared resource platform has a shorter response and feedback time to information. This is because in the distributed resource sharing platform, all modules are concentrated in the same server. The request for calling related data is mainly based on the transformation time. The design and implementation of the system is to facilitate the learning of teachers and students in colleges and universities, and to provide a platform for the two to facilitate learning and communication.

Therefore, as long as they can access the Internet when they use it, there is no need to install any software to operate it anytime, anywhere. The registrant performs a series of operations such as browsing and accessing on the browser as the client. The login of users of the learning resource sharing platform has the function of authentication. Each login (except tourists) needs to register and log in according to the corresponding method, and send the required request through the web terminal to enter the login interface. Down to the load balancer to manage and allocate all available resources. Proxy server: responsible for connecting other components of Swift together. For each request, it will locate the account, container or object information associated with the request on the ring, and forward according to this information; the proxy server provides a public API structure, which can be extended horizontally. Object server: It is a simple binary storage server that can store, download, and delete objects stored on the local device.

### 2.3 The Online Resource Sharing and Practice Platform for Colleges and Universities

The crowdfunding process of the college student innovation and entrepreneurship information service platform requires the participation of three parties: fundraisers (college students who have creative projects and need innovation and entrepreneurship funds), investors (the vast number of Internet users who have participated in the crowdfunding, and they are based on their own interests. Provide investment in the fundraiser's innovative and entrepreneurial projects, and get a certain return after meeting the agreed conditions) and crowdfunding platform (a platform for matching innovative and entrepreneurial college students and investors, in the cloud computing shared resource platform, the location of each module It mainly focuses on the corresponding virtual machine, so that the time consumed by each module calling each other can be greatly reduced. At the same time, the problem of mutual interference of each module can be effectively solved in the separately deployed virtual machine mode, so that the utilization rate of related resources has been further improved.

From the results of the time consumed by the distributed resource sharing platform and the cloud computing resource sharing platform for OA document access, it can be seen that the distributed resource sharing platform takes a long time to access OA documents. Each school stores learning resources separately, and resource sharing is difficult to achieve, so educational resources cannot be reused. The unbalanced development of resource sharing technology makes it impossible for colleges and universities to form a unified resource construction standard and resource exchange platform, and resources cannot be allocated centrally. Because

the database interface standards between universities cannot be unified, it is difficult to realize data exchange with each other. In general, the learning platforms of traditional colleges and universities carry out a lot of repetitive work, and there is a lot of unnecessary waste of resources and investment. The emergence of cloud computing will break the limitations of traditional university learning platforms. It can integrate effective resources and build a public resource information database that can be used by teachers and students. Users can access the system and obtain resources.

### 3. CONCLUSIONS

As a new form of resource utilization, cloud computing has been widely used in many fields and achieved good results. In this paper, a private cloud storage space is created, and the open source architecture is used to achieve the goal of calling and using the OpenStack API. Build a development environment, realize the communication module between the platform and the cloud storage system, and implement a resource sharing scheme in the resource processing module: users can search If you do not have permission, you need to apply to the resource owner, and you can download it only after the application is allowed; users can also share resources with circles or people in circles.

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