A Innovation Method of Big Data for University Library Service and Development

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Abstract: In the age of Internet big data, the formation and storage of complex data greatly affect library services. How to use big data technology to effectively excavate and identify data information contained in user behaviors and further innovate library services has become a development trend of the Internet big data university library. This paper uses the Internet big data technology, combines the optimization advantages of intelligent algorithm, and applies this technology to university library services. The simulation proves that this method effectively solves the problems of the complex library information managementand improves the service efficiency of university library.

Keywords: Internet, big data, library, mathematical model, distributed storage technology, CRRDT protocol.

1. Introduction

The relevant departments and local governments and all kinds of enterprises are paying great attention to the application of the big data of the Internet (Keshavarz and Toloo, 2015). The Ministry of science and technology has included a large number of data storage service systems and a large number of data processing within the scope of the key technology (Kao, 2013; Yan and Wei, 2000). The Ministry of education is also working on the research of big data (Yuan, Bi and Moriguichi, 2010). Currently, it has provided effective support for university construction of applied research platform for massive data management.

Through the analysis of large data, the library has always played the role of collecting and utilizing all kinds of data, knowledge and literature (Tone and Tsutsui, 2010). The library store data is large, mainly the text data of non structural characteristics, and has formed a wide range of data sources, the structure types are different, every year is growing rapidly (Cook and Seiford, 2009). In addition, the library also contains a lot of real user information, so there is significant commonality between library data and big data. It is the focus of library development and innovation to excavate literature knowledge and user data by using big data and technology (Ferrier, Kerstens and Eeckaut, 2016). In practice, the library has tried to try to analyze the large data of the reader and designed the reading to the bill service (Deshpande, 2016). With the rapid development and integration of Internet and big data technology, intelligent technology represented by new hardware and machine learning has been gradually applied in various industries (Linh, Nanseki and Chomei, 2015). The library takes the intelligent application as the main means of service innovation. In terms of practical operation, a large number of libraries have effectively changed traditional service methods by using new hardware technology (Lampe and Hilgers, 2015). For example, Guangdong Foshan library adopts NFC technology to urge students to use cell phone to read and write books directly.

In the theoretical analysis, the problem of information overload many scholars combined with large data environment research library retrieval system, access to the user search behavior is characterized by big data, build synchronous changes to user preferences to adapt the retrieval model, multi user choice literature retrieval results predict the probability, perfect order.

2. The Service Innovation Strategy of University Library under the Big Internet Data

2.1 Reform the purchasing environment and promote the construction of resources

2.1.1 Carrying out the way of decision making of students

The traditional resource construction is that the purchasing personnel of the library determine the purchase plan with their own knowledge and work experience. A part of the library will simply investigate the student situation, or a comprehensive reference book will be recommended. The final result is that in many libraries, some self - purchased books are usually not borrowed in 5 years. The use of large data on the Internet can be observed at any time to the needs of the users, and the construction of the library's subject resources must also be realized through the decision making of the students. PDA is a kind of literature to break the traditional procurement process, the students from the last stage of literature circulation into the originating, by students with their own needs, decided to buy the underlying library and booksellers can cooperate with the specific standard of service object clear book, booksellers provides MARC records, library on the service

transformation, promote students the Museum of CPAC query and decide whether to buy, after paying to the library.

2.1.2 Implementation of paper electrosynchronization

In 2013, the sales of electronic books were reduced year by year by state publishers, and the decline trend of paper book sales was stopped. People found the advantages and disadvantages of the two, formed their own market, and can complement each other at the same time. At the right time, paper synchronization is launched, which is to re process paper contents, to fully display the contents of books, audio, video, etc., and even to search and edit by APP. After that, the mobile Internet is used to spread and popularize.

2.2 Perfecting the circulation environment of books and promoting the work of borrowing and reading books

2.2.1 Introduction of RFID library management system based on Internet of things technology

At present, the university library has always used the traditional way of borrowing and returning. The student needs the staff to provide the book service on the scene, which causes the students to return the books when they are not able to borrow them. On the one hand, it has greatly influenced the students to borrow books quickly, on the other hand, spent the manpower of the library. At the same time, it takes a lot of energy and less efficiency to make use of the bookshelves and books. These all have an impact on the provision of humanized services to the library. To this end, the library can introduce the RFID system. RFID is a wireless RFID technology, and it is the main approach to the application of the Internet of things in the library. The function of RFID library management system is to automatically borrow, locate and check books quickly. By introducing the RFID system, the library can automatically manage the books. Students can get rid of the dependence on the administrators, and the independent loan is not restricted. It is very convenient to borrow books and improve the circulation of books.

2.2.2 Research and develop mobile loan system to provide book home service

At present, all the books need to be borrowed from the library in person. In response to the current Internet + logistics, people can use logistics express delivery in all aspects of people's life. People only need to click on the mobile phone screen to get the commodity door service. Therefore, the library can arrange staff by the introduction of RFID system and streamline the library door activities. In the technical aspect, the mobile client can be effectively developed through the library integrated system, and the remote library service can be obtained.

2.2.3 Using mobile platform to organize electronic books recommendation

At present, library books are recommended only around paper books. A large number of electronic books are unable to be applied scientifically because of the lack of good promotion channels. Therefore, it is necessary for the library to do a good job of recommending electronic books. First, the library can popularize and apply the mobile library APP, and try to propagate the online book reading function. After that, a good book is recommended with the help of the mobile library platform. Secondly, we use WeChat, micro-blog and other online social networking platforms to recommend various thematic books, and provide download links, so that e-books can not only be spread quickly through social platforms, but also can be downloaded in time.

2.3 Promoting precision database training

In order to effectively improve the level of database training, the library should strive to provide accurate training. The library uses an online survey platform to carry out a comprehensive survey, fully understand the training needs of the students and further develop the training plan. First of all, it is necessary to actively investigate the training content required by the students. Secondly, we should investigate the students' time and see what the students have in their spare time. At the same time, understand the training methods that students need. After the end of the survey, the survey results were arranged to design training time and to inform everyone, including the time, location and content of the training.

2.4 Use social networks to strengthen contact with students

At present, the library and the students mainly use the questionnaire, the information source contact of the library, the network rumors and so on. This part of the way can not be timely feedback and solve the problems raised by the students, and the information exchange between the information officer, the students and the librarians has a certain deviation. In the Internet of things + environment, people mainly use social networks to communicate, especially the love of young people. Therefore, the library should actively construct its own social network platform and carry out communication and communication with the students. First, there are many social networks that are currently used by WeChat and micro-blog. The library should apply the above

platform scientifically, build the official micro-blog and WeChat of the library itself, publicize and popularize among the students, arrange appropriate librarians to interact with students, and understand the students' problems in time. Secondly, a new knowledge social platform is set up. We use mobile library APP, WeChat platform, library OPAC, database platform and other social networks to communicate and share information in real time.

2.5   Using large data to analyze the individual needs of students

Although library officials take the initiative to communicate with students, they can grasp certain needs, but Librarians' own reasons will not lead to thorough understanding, and on the other hand, they will not cause timely response. The use of large data analysis can not only effectively grasp the user's personalized needs, but also can advance the prediction in advance. To carry out personalized analysis of big data, library officials must collect students' data, including students' identity, learning and information behavior. After that, collate and sum up this part of the data. Librarians use large data analysis tools such as Storm, Apache Drill, HPCC and other data analysis tools to collect and collect data. Finally, the results of the analysis are based on the personalized service.

3.   The Distributed Storage Technology

The basic data shared by the application system is all put into the unified data storage pool, and the unified data storage pool is provided to provide the corresponding service. Distributed storage technology frame is shown as Figure 1.
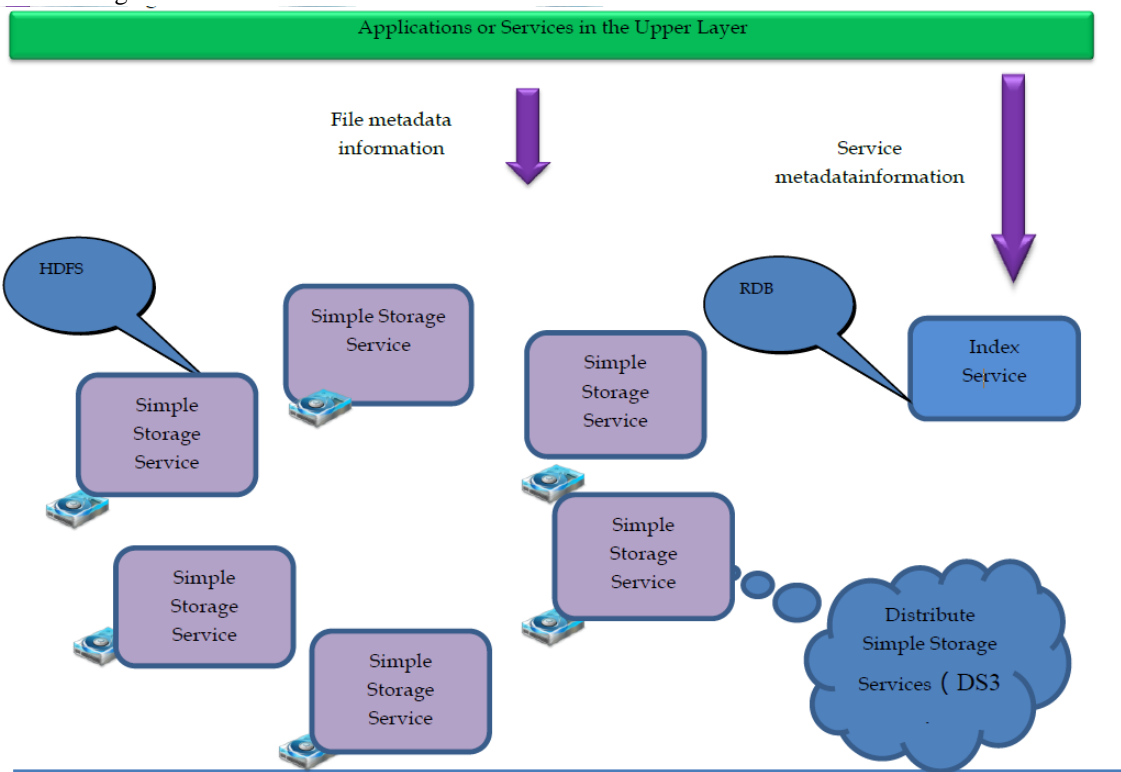

Figure 1. Distributed storage technology frame

4.   Conclusion

Library service is a reflection of the value of the center, but also the significance of its existence, technology in the process of library service in the development of the development and progress of society are providing a new impetus for the long time, the library service that can always grasp the good opportunity of development, and effectively meet the growing cultural needs of users. With the advent of the era of Internet big data, libraries not only have development opportunities, but also face severe challenges. Developing and applying technology, integrating data processing, training and managing talents are all problems that the library cannot avoid in the era of Internet big data. Nowadays, libraries not only need to face big data entry threshold, but also need to deal with risks brought by management in the increasingly fierce market competition environment. Therefore, based on the development of the Internet big data era, we must highly recognize the current development situation and innovate the university library service through the Internet big data.

References

[1]. E Keshavarz, & M Toloo. (2015). Efficiency Status of A Feasible Solution in the Multi-Objective Integer Linear Programming Problems: A DEA Methodology. Applied Mathematical Modelling, 39(12), 3236-3247

[2]. C Kao. (2013). Dynamic Data Envelopment Analysis: A Relational Analysis. European Journal of Operational Research, 227(2), 325-330

[3]. Z Yuan, J Bi, &Y Moriguichi. (2010). The Cicular Economy: A New Development Strategy in China. Journal of Industrial Ecology, 10(2) , 4-8.

[4]. K Tone, &M Tsutsui. (2010). Dynamic DEA: A Slacks-based Measure Approach. Omega, 38(4), 145-156.

[5]. WD Cook, &LM Seiford. (2009). Data envelopment analysis (DEA) - Thirty years on. European Journal of Operational Research, 92(1), 1-17.

[6]. GD Ferrier, K Kerstens, & PV Eeckaut. (2016). Radial and Nonradial Technical Efficiency Measures on a DEA Reference Technology: A Comparison Using US Banking Data. Core Discussion Papers, 60(4), 449-479.

[7]. TT Linh, T Nanseki, & Y Chomei. (2015). Productive Efficiency of Crop Farms in Viet Nam: A DEA with a Smooth Bootstrap Application. Journal of Agricultural Science, 7(5), 121-130.

[8]. HW Lampe, & D Hilgers. (2015). Trajectories of Efficiency Measurement: A Bibliometric Analysis of DEA and SFA. European Journal of Operational Research, 240(1), 1-21.

[9]. Y Deshpande. (2016). A Montanari Sparse PCA via Covariance Thresholding. Journal of Machine Learning Research, 17(1), 4913-4953.

[10]. Yan H, &Wei Q L. (2000). A Method of Transferring Cones of Intersection-form to Cones of Sum-Form and Its Applications in DEA Model. International J of System Science,31(5), 629-638.