Research on the Function of Intelligent Service Platform of Library Based on Computer

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Abstract. The development of library is gradual, and every major change is accompanied by the innovation and progress of science and technology. With the formal proposal of the concept of Internet of Things and its rapid spread to the whole world, in the library field, following the composite library and digital library, the intelligent library based on information technology, which is marked by digitalization, networking and intelligence is coming into people's vision. So, this paper will lead you to explore the functions of intelligent library service platform based on computer.

Keywords: Computer, Library, Intelligent Service Platform, Function

1. Introduction
At present, some libraries at home and abroad have tried some functions of smart library, providing smart library services through Internet of Things technology and radio frequency identification (RFID) [1]. For example, Taipei Municipal Library has built an unattended smart library using radio frequency identification (RFID) technology, which realizes user identity verification through sensing devices. Self-service borrowing and returning machines assist users to complete unattended borrowing and returning operations. Shanghai Library took the lead in developing mobile service of mobile phone library. And so on. Intelligent library combines perception intelligence with library service intelligence. The library not only provides resource service, but also creates a harmonious knowledge ecological environment for users through the integration of people and knowledge, and provides higher level intelligence service.

2. The integration of wisdom library and computer internet
The integration of intelligent library and computer Internet benefits from the similarities of the two concepts, both on the basis of resource-centered, emphasizing the concept of user-centered.

First of all, the wisdom library and computer Internet are user-centered, pay attention to the personalized needs of users. The production and service of computer Internet are mainly arranged according to the individual needs of users. Similar to the computer Internet, the intelligent library focuses on the information activities of readers, and provides active personalized services to meet the professional, professional, information and scientific research needs of different readers. Intelligent analysis and prediction of the information that readers really need and timely supply.

Secondly, the wisdom library and the computer Internet are constantly reconstructing the structure to meet the needs of the development of the times. Computer Internet Ring
Through the continuous reorganization and remodeling of the social economy and cultural structure under the environment, the production, management and sales structure of enterprises and even the consumption structure of consumers have undergone subversive changes, and have acquired new forces in the transformation. Under the influence of the computer Internet, with the change of library service concept and technology, the intelligent library will break the traditional management and service mode and reshape the whole operation structure of the library. It emphasizes the subjectivity and participation of readers to adapt to the change of reader information acquisition mode in the era of computer Internet.

Finally, the intelligent library and the computer Internet adopt the development mode of open ecology and connect everything, and open all industries, objects and technologies that are conducive to enhancing the quality of service [2]. In the computer Internet environment, various industries and links are open to each other, which is conducive to forming competition and promoting innovation. Intelligent library also aggregates resources, services, readers and activities in the same open space, dynamically and randomly according to the needs of readers to provide the corresponding information services, thus showing the characteristics of high aggregation of information, high openness of space, high self-help of service, high participation of readers, and becomes a of intelligent mode which integrates resource integration, service integration and personality customization. Combining the concept of intelligent library and computer internet not only has the characteristics of "innovation drive ", "remolding structure ", " respecting human nature ", " open ecology" and "connecting everything ", but also integrates the integration of information resources, the transformation of spatial layout and the wisdom of service. With the help of the computer Internet, the service level of the wisdom library will be significantly improved.

3. The integration of intelligent library and computer internet in technology

Intelligent library integrates computer Internet technology, continuously develops mobile information services, eliminates time and space barriers between library and readers, organically integrates library and Internet of things, cloud computing, big data mining, semantic technology, positioning technology and other cutting-edge technologies, so that all kinds of library services are supported by integrated new information technology (including mobile terminal technology, intelligent perception technology, communication technology, artificial intelligence, pervasive computing, etc.). Thus, digital library, cloud library, mobile library and physical library are deeply integrated and intelligent interconnected [3,4]. For example, by transforming the software and hardware, upgrading the access control system and business system of the library, realizing the card-free borrowing of the library; by analyzing the number, specialty and type of documents borrowed by the readers collected by the Internet of things system based on the RFID, pushing the suitable documents for the readers; by collecting the data of the time, frequency and location of the readers through the positioning technology, pushing the personalized customization service for the readers at the right time; By analyzing the behavior of readers in electronic resource database platform, network academic community, library SNS platform, combining with readers' academic achievements, academic background, academic circle, searching, processing and pushing suitable academic information for readers. Intelligent library service in computer Internet environment is an organic combination and innovation of self-service and personalized service. It is based on cloud computing technology and intelligent equipment to realize the connection of books and books, and the connection of book people. Everyone is connected [5] each other. The intelligent library provides the intelligent service for the reader, brings the time space no boundary, brings the reader thought no boundary.

4. Design of intelligent library service platform based on computer internet

The intelligent library service platform designed in this paper focuses on closely combining the concept of computer Internet, using new technology to improve the reader service level of the library, making the reader service intelligent, innovative and universal, and greatly improving the reader's service experience and feeling.
4.1. Application interface of service platform
To meet the needs of all kinds of readers, the intelligent library service platform is compatible with web pages, public numbers, WeChat Mini Program, APP and other platforms. The platform is interconnected. Readers can log in using PC machines, smartphones or tablets, and update the data in real time.

4.2. User identity and permission of service platform
The user rights of the intelligent library service platform are divided into "ordinary readers ", "subject librarians" and "system administrators ". Ordinary readers can enjoy the personalized service provided by the service platform by perfecting personal information and adding interest labels after binding personal library card on the service platform. According to the big data analysis of the service platform, the "subject librarian" provides personalized service for different types of readers and provides subject consultation. "Subject librarian" can reply, delete and block the advice published by readers on the service platform, understand the feedback of readers in time and eliminate bad information. The "system administrator" carries on the backstage maintenance, the module management, the structure management and so on in the background, according to the library actual situation, carries on the customization operation, carries on the addition, the deletion, the closing and the opening to the function and so on.

4.3. Module design of service platform
The intelligent library service platform based on computer Internet includes four modules: intelligent service, intelligent borrowing, reading promotion and value-added service. The details in each module are shown in figure 1.

Figure 1. Smart library service platform

5. Intelligent service
The intelligent entry module includes two ways: brushing face and scanning code. The first is to brush your face into the museum. By upgrading the original gate of the library, adding the brush face scanning equipment, adding the AI face recognition database, face recognition terminal and control management software, the face recognition technology is used to realize the brush face into the library. After the successful collection, the reader can automatically track the face through the camera of the access control system. Upload the photo to the AI cloud server for face feature comparison, compare the successful face binding reader number, thus opening the access control system. By using the AI face recognition technology, the face features can be extracted accurately. Face recognition can not be copied, copied, recognized quickly, the operation is simple and convenient, and there is no need to carry the reader's card or contact the equipment, which is both hygienic and safe. The second is to sweep the code into the museum. Readers can use the bar code or QR code provided by the mobile phone through the function of "scanning code into the library "(the QR code has certain timeliness) to identify the gate screen. After
the system recognition is successful, the gate can be opened and easily entered by the mobile phone. This function is similar to subway passengers through the "cloud gate" scanning QR code into the station.

In the intelligent book collection module, the library introduces the available bibliographic data of the successful bidder into the book collection platform in advance, checks the bibliography with the library collection, and optimizes it twice through the subjects, years and publishing houses set in advance, and then optimizes it three times according to the data of the reader's borrowing ranking, retrieval ranking, recommendation and purchase ranking. Finally, a relatively small bibliography is generated by the librarian. In addition, the service platform can also provide librarians with supplementary basis according to the information of readers looking for books, newspaper shortage, recommendation purchase, borrowing heat and so on. Librarians can directly generate orders to the corresponding librarians according to the pre-set priorities. This method can greatly reduce the workload of librarians, improve the quality of book selection and improve the borrowing rate of books.

In the intelligent discovery module, the library pre-deploys multiple Bluetooth device points of intelligent discovery, and sets the information and frequency of push in the background. The service platform intelligently pushes the relevant information of the reader's area according to the reader's location and personal interest label. As long as the reader turns on the Bluetooth of the mobile phone, he can receive the corresponding push information in the corresponding position, such as self-help photocopier usage guide, new book entry, library latest notice, special topic recommendation and so on.

In the intelligent seating module, the library sets up a Bluetooth device for managing seat check-in in each library. After the reader has successfully booked the seat through the intelligent seating module, the reader confirms the seat on the service platform when entering the library. Mobile phone check-in, check-out, can achieve intelligent management of seat information. When using Bluetooth positioning technology to realize mobile phone reservation, readers can also inquire about the use of library seats in real time, avoid the rush hour flow of people in time, and improve the utilization rate of library seats, as shown in figure 2.

The intelligent consultation module can automatically deal with the common problems of readers and establish a quick and effective communication mode between library and readers based on natural language. By summarizing the common questions and answers of readers, the intelligent word-breaking technology is used to connect the questions with the answers intelligently.

6. Smart borrowing

6.1. Phone borrowing
After the reader finds the book in the library, he can scan the bar code of the library with his mobile phone to complete the self-help borrowing of the book, and then go to the library service desk for the book demagnetization procedure. Mobile phone borrowing books can solve the queuing phenomenon in the peak period of library service desk borrowing, reduce the workload of librarians and reduce readers' dependence on borrowing equipment.

6.2. Book lending
By scanning the bookholder's book to lend the QR code, the book borrower will transfer the book to the borrower's name after obtaining the consent of the bookholder, and realize the book loan online. The borrower does not need to go to the library to go through the relevant formalities. The priority of the loan, the number of times the loan can be set by the administrator in the background.

6.3. Book allocation
The book allocation module is mainly used to meet the readers' demand for closed library or library. After the reader chooses the allocation destination in the book allocation module, the library can transfer the book to the destination library or library and notify the reader according to the actual situation of the book, so as to optimize the layout of the collection and improve the utilization rate of the book.
6.4. Read it fast
First read for the fast module to open JingDong, Dangdang and other online book purchase platform, according to the library's own rules in the service platform to display the online book purchase platform books, book purchase fees paid by the library to the online book purchase platform. After completing the online purchase application, the reader has the right to borrow the book first, as shown in figure 2.

Figure 2. "Read Fast "process

| Readership | Conservator |
|------------|-------------|
| Initiation of Application | Review and approval to form a procurement bibliography |
| View processing and procurement progress | Place an order |
| Priority loans | Book to library, send out reminder |

6.5. Basic services
The basic service module includes library collection inquiry, book renewal, book reservation, book recommendation, book review, book collection, information announcement and message reminder. Among them, the built-in message reminder function can push the information of book expiration, reservation, looking for books, recommending books to the library, seat reservation and so on to the reader. Readers can choose to remind the way for mail, public number reminders, SMS and so on.

7. Reading promotion
The precision promotion module carries on the data analysis according to the reader's interest label, the reading behavior, the borrowing history, the retrieval history, the recommendation purchase history and so on, and combines the library general entry situation, the borrowing hot spot and so on big data information, regularly automatically pushes the reader may be interested in the literature resources. This module can provide readers with required bibliography, authoritative bibliography, selected bibliography, professional bibliography and other multi-dimensional book lists, so as to effectively promote the promotion of reading, improve the book borrowing rate and the amount of recommended purchase, and improve the current situation of the decline of paper book borrowing volume year by year.

The training module is divided into two parts: study and examination. Readers use the library VR panoramic, micro-video and other ways to understand the library layout and service items, learn the use of intelligent equipment guide and document resources retrieval methods. After the reader completes the self-study to participate in the entrance examination, after the examination passes, the service platform automatically activates and opens the reader account, the reader may formally use the library each kind of service function. The entrance training module links the study examination with the reader's authority, so that the reader can learn independently and have certain constraints, as shown in figure 3. This approach allows readers to use debris time, anywhere, online, multiple times to learn, free of space and time constraints. The examination in the form of similar games can greatly improve the reader's fun of answering questions and make the library training more novel and interesting.
Figure 3. "Entry training" process

The lecture reservation module is divided into two types. For a definite lecture, the reader needs to register in advance, and the library decides whether to increase the number of lectures after counting the number of applicants; the other is an appointment lecture, the library publishes lecture information, the reader makes an appointment within the specified time, the library counts the number of appointments, if the number of speakers is reached, the lecture is held, and the lecture is cancelled. After listening to the lecture, readers can score the effect of the lecture and provide a good reference for the library so that the next lecture can be carried out pertinently [6]. Grading system can not only improve the efficiency of lectures, but also reduce the waste of resources.

In the reference module, the library can provide readers with scientific and technological novelty search, search, thematic retrieval, document transmission and other services [7,8].

The digital resource module provides the entrance of all kinds of digital resources such as electronic books, periodicals, newspapers and so on, so that readers can easily access all kinds of digital resources through the service platform.

8. Value added service
Readers fill out all kinds of questionnaires generated by the library in the background on the service platform. The library carries on the statistics and the analysis to the questionnaire result, carries on the empirical research, carries on the targeted service [9-11].

When the reader can not find the book on the shelf, he can submit the application on the service platform, and the librarian will continue to look for the book for the reader. After the book is found, the librarian sends a notice to the reader through the service platform. Reading

People can query the progress of looking for books in real time, greatly saving the time to find books.

Readers who meet the requirements of sending books apply for delivery service in the service platform. The librarian accepts the request after receiving the application in the background, prints the distribution form, and degausses the book. After the librarian changes the book borrowing status, make an appointment with the reader to arrange the delivery of the book.

Readers can timely repair facilities or equipment through the service platform. Librarians can reduce the response time of equipment maintenance and improve working efficiency.

Through the service platform, readers feedback the information of incorrect or incomplete bibliography to the library, and correct the bibliographic information after the librarian reviews it.

The books read by readers in the library do not need to be put back on the bookshelf. When the librarian is on the shelf, he can scan the bar code of the book with the handheld laser scanning device while receiving the book, and record the reading quantity of the book on the service platform. Through the statistical analysis of the reading quantity in the library, the corresponding reading report is generated [12].
The functions on the service platform are directly connected with the librarian. The librarian can handle the reader's service request anytime and anywhere by using the librarian management module to realize the mobile office.

9. Conclusion

The American scholar Skolimovsky once said, "There is plenty of information, but where is all our wisdom?" Perhaps the fast-growing smart library could give him the answer. Smart library injects new vitality into the library field, brings new vision and new hope, and also brings new experience and satisfaction to readers. With the rapid development of RFID and other Internet of Things technologies and cloud computing technologies, the development prospect of smart library must be very great, and its functions will be more and more perfect.

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