

Digital of Smart Library System

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Abstract

Smart library refers to a kind of intelligent building formed by applying intelligent technology to library construction. It is an organic combination and innovation of intelligent building and highly automated management digital library. Based on library service model of intelligent robots to fully serve the readers user-centric, relying on artificial intelligence technology, to provide wisdom for the library service, the author of artificial intelligence development needs of the times, from library management, consulting Q & A system of this study Liang Ge Put forward a new model of smart library services.

Keywords

Wisdom Library Automation Management multifunction.

1. Introduction

The times are constantly advancing, science and technology are constantly evolving, and the application of big data and artificial intelligence is also continuing to penetrate into our lives. In recent years, the application of artificial intelligence in libraries has also been popularized on a large scale. With the continuous progress and innovation of science and technology, the application of artificial intelligence in libraries has become more and more extensive. The birth of computers, the rise of the Internet, the development of the Internet of Things, and the rapid progress of big data have continuously contributed to the modernization of libraries. The 21st century is the era of artificial intelligence, and libraries will inevitably welcome the arrival of intelligent robots.

Smart library refers to a kind of intelligent building formed by applying intelligent technology to library construction. It is an organic combination and innovation of intelligent building and highly automated digital library. The smart library is a concept that is not limited by space, but can be actually perceived at the same time. Someone once said that smart libraries will realize smart services and management through the Internet of Things. In fact, they also include cloud computing and smart devices, which will transform our traditional library. As the era of artificial intelligence is approaching, we need to conduct certain research and thinking on the construction and development of smart libraries in order to respond to the transformational requirements of artificial intelligence for the construction of smart libraries.

2. Overall content

Based on library service model of intelligent robots to fully serve the readers user-centric, relying on artificial intelligence technology, to provide wisdom for the library service, the author of artificial intelligence development needs of the times, from library management, consulting Q & A system of this study Liang Ge A new model of smart library services is proposed, as shown in Figure

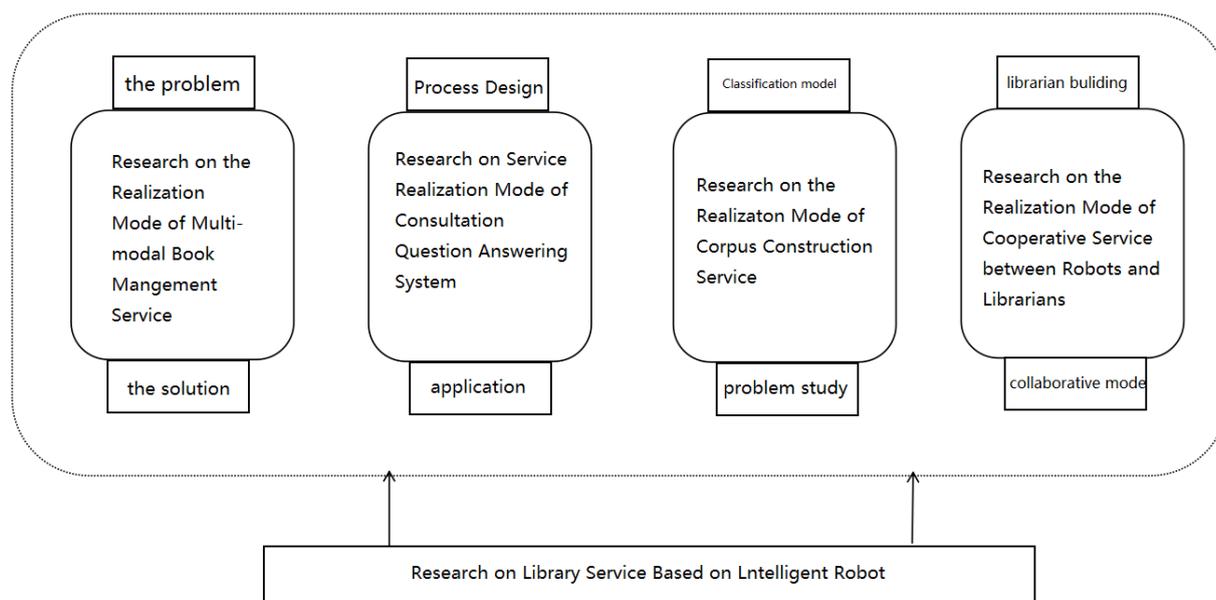


Figure 1 overall process design

3. Some functions

3.1. Issues related to book modalities

Different from the existing RFID book management system, the multi-modal intelligent book inventory robot book management system organically combines RFID's college perception technology and intelligent robot automation technology, which can be realized under the premise of existing basic settings without modification, namely It can realize fully automated book inventory and other collection operations, effectively manage library books, promote the modernization process of library management, and realize fully automated library management.

The book management system mainly solves the book management problems of the four major libraries, including: misplaced books, disordered discharge, irregular posture of books, horizontal placement, etc. that are not discharged as required, the environmental data where the books are located is incomplete, the book information is fuzzy, the positioning of the book inventory robot is not accurate.

3.2. Realization of Book Management Service

(1) Multi-modal book information feature recognition

Improve the accuracy of book information recognition with the help of UHF RFID perception technology and image recognition technology. Design an effective data analysis algorithm that can efficiently analyze the purpose of signal data, and at the same time can use image recognition technology to assist in identifying book information, and accurately classify the identified books to the correct shelf number and number of layers, and determine each shelf The relative arrangement order of the books in the layer realizes a high-precision book information identification mechanism.

The research on book information feature recognition technology based on multi-modality mainly cuts in from two aspects of signal perception and image perception, and conducts targeted research on book recognition and book positioning in the book inventory function.

Signal perception is to use the characteristic of RFID technology signal recognition to identify books according to the tag information transmitted in the signal. At the same time, it can also analyze and mine the signal strength characteristics and signal fragrance characteristics to

achieve the purpose of precise positioning of the map . Image perception is the use of image recognition technology to solve the problem of missed and overread books due to signal instability, and finally achieve the effect of reducing the misreading rate in the book recognition process.

3.3. Specific functions of the question answering system

(1) Problem acceptance and handling

Accepting the problem is the first step in dealing with the problem. Only by accepting the problem comprehensively and accurately can the problem be dealt with and the problem can be solved. Acceptance refers to the extent to which the intelligent consulting robot can accept readers' questions. The acceptance rate is the efficiency of the robot's acceptance of questions. It includes not only Chinese questions, but also English, French and other language questions. After accepting the question, it begins to deal with the question. Here it refers to the preprocessing of various questions raised by the reader in natural language. The preprocessing mainly includes semantic analysis, syntactic analysis, vocabulary decomposition, and keyword extraction.

Effectively categorize the questions raised by readers through preprocessing, and then find similar questions in the corpus through plural technology. When the system is designed, it is necessary to construct an effective restricted corpus in the automatic learning language when the system receives expected problems to prevent incidents like some university intelligent consulting robots being taught badly.

(2) Question classification and retrieval

Problem classification is to classify the problems stored in the system and all the keyword factors proposed by readers. It can use standard Chinese library classification, problem topic classification, time classification, location classification, person classification and other methods. Categorize the problem.

The problem retrieval not only uses traditional information retrieval theory, but also needs to use Internet information search technology to obtain the documents with the most general theory of the problem, and to sort the obtained documents according to the accuracy rate.

(3) Answer extraction and sorting.

Answer extraction extracts the corpus vocabulary from the keywords, title words and narrative words in the questions raised by the reader, as well as the unit words used in the permutation and combination vocabulary in the computer system, so as to provide basic elements for subsequent answer sorting.

Answer sorting is to sort the extracted keywords, narrative words and other corpus vocabulary elements using a variety of different sorting methods. The sorting methods include fixed sorting methods set by the system, overlapping sorting methods, and cross-combining sorting methods. The method also includes time sequence method, character sequence method, event sequence method, etc. The character sequence method can also be subdivided into different elements such as name, birth date, hometown, and achievement.

(4) Answer selection and feedback

After the library intelligent consulting robot receives various questions from readers, it needs to find the best answer from the corpus. Intelligent robots can further ask readers' questions, so as to continuously refine the reader's questions, so as to obtain more specific information. The intelligent robot selects the best answer according to the question elements in the corpus, and finally returns the best answer to the reader to meet the needs of the reader. At the same time, an answer feedback mechanism is established to collect questions from readers answered by intelligent robots, automatically add the collected reader feedback information to the corpus, effectively supplement the corpus, and establish the best answer

extraction template to facilitate subsequent readers to ask the same questions. It can provide more optimized corpus elements, and the feedback mechanism is of great significance to the long-term development of system construction.

(5) Answer statistics and storage

Answer statistics means that the intelligent consulting robot can use the program in the system to perform statistics on the questions raised by the readers and the questions answered by the system, and the statistics are classified and archived according to specific classification standards. Answer storage refers to the classification and archiving of readers' questions and system answers to the questions that have been classified and counted, forming a reader archive database and a system answering question database. These archived customers play an important role in the subsequent application of the corpus. In the process of subsequent readers raising corpus questions and the system answering corpus questions, the system can quickly retrieve the stored information, which can greatly save the time for the system to solve the problems raised by the readers. Can play a role in saving corpus space and optimizing corpus.

4. Summarize

Smart library refers to a kind of intelligent building formed by applying intelligent technology to library construction. It is an organic combination and innovation of intelligent building and highly automated digital library. This paper-based library service model of intelligent robots, artificial intelligence, combined with the development needs of the times, from library management, consulting answering system two proposed new model of wisdom aspects of library services.

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