

# Research on the Service of Special Collections of University Libraries Empowered by Intelligent Media

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**Abstract:** In the era of homogenization of digital resources, special collection resources are the most characteristic and personalized resource system in all kinds of resource systems of university libraries. The complexity and particularity of special collection resources in terms of collection form, expression form, and service form, as well as the current situation of "valuing collection over utilization" and the weak radiation of promotion services, are not in line with their functional value. There is an urgent need for creative transformation and innovative development. With the development of the era of intelligent media and the application of technology, the construction and service of special collection resources in libraries are facing the test of transformation and innovation. Digital humanities and intelligent media empowerment bring new opportunities for the construction of special collection resources in colleges and universities. Through artificial intelligence, VR technology, AR technology and other intelligent media to drive the construction of knowledge system, let the special collection resources "live", from the perspective of resource construction, space reconstruction and perceptual experience, let the special collection be revitalized in the era of intelligent media. Libraries need to continuously expand their new media services, integrate technology, resources and networks into the construction and services of special collections, further effectively innovate the functions of special collection resources and unleash social value, achieve leapfrog development of library intelligent media empowerment and special collection construction and services, and achieve the co-creation of cultural special collection services and user value in intelligent media libraries.

**Keywords:** The Age of Intelligent Media, Intelligent Media Technology, Construction of Special Collections, Special Collection Service

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## 1. Introduction

The innovative development of digital humanities and the upgrading of cultural industry have brought great opportunities and injected new vitality into the development of libraries, which are facing changes in open access, resource form and dissemination and utilization.

In the era of homogenization of digital resources in colleges and universities, special collection resources are the resource system that can best reflect the characteristics, personalization and branding of libraries [1], and its service mode with distinct personality, diverse forms and unique connotation is the most helpful to realize, enrich and extend the functions of libraries, highlighting the value of humanistic center of libraries. In recent years, the work of special collection resources has been paid more attention by university libraries,

and its construction scope has expanded from traditional rare books and historical documents to include subject characteristics, local characteristics, historical celebrities and the connotation of school spirit [2]. At the same time, with the development and wide application of modern information technology, new media technology and artificial intelligence technology, the intelligent media empowerment under the background of digital humanities not only enriches the connotation of special collection resources construction, but also innovates and rebuilds the service space and service connotation mode, which brings new opportunities for the construction and service of special collection resources in Colleges and universities, excavates, activates and displays them. Enhance core competitiveness.

The Opinions on Implementing the Project for the Inheritance and Development of Chinese Excellent

Traditional Culture promulgated by the State in 2017 pointed out that traditional culture should be "creatively transformed and innovatively developed", "innovatively expressed" and "implemented the project of new media dissemination of Chinese culture" in modern society, and put forward the comprehensive use of various carriers for digital preservation and dissemination. We should give full play to the role of public cultural institutions such as libraries. In 2022, State issued Opinions on Promoting the Work of Ancient Books in the New Era, which clearly put forward that textualization, digitalization and intellectualization should be taken as the means of transforming and utilizing the collection of ancient books in the new era, and that the construction of knowledge system should be driven by intelligent media such as artificial intelligence and VR technology, so as to make the collection of ancient books "live". This has pointed out the direction for the construction and service of special collection resources in Colleges and universities, which also have the characteristics of cultural inheritance and collection value.

## 2. Special Collection Connotation and Construction Significance

### 2.1. Connotation of Special Collection

According to the ARL (American Research Libraries Association) description of special collections, special collections include archives and manuscripts without copies, unique or rare books, as well as precious materials closely related to the history of an institution in a certain era, the culture of a certain region, a special figure, and the characteristics of a certain discipline. Although domestic scholars have different research perspectives, some focus on forms and carriers, some focus on the process of knowledge organization, and some focus on publicity, display and service, they do have a unified understanding of the important position of special collection resources in university libraries. Regardless of the continuous development and expansion of the concept and form of expression of special collection resources, its core word "special" has not changed, which is an important manifestation of the cultural heritage, discipline characteristics and humanistic value of libraries and universities. In the era of more and more commercialized and homogeneous digital resources in university libraries, only special collection resources can better reflect the cultural significance and core value of library existence [3].

### 2.2. Significance of Special Collection Construction

Special collection is a unique label of a library, which reflects its core competitiveness and endows it with unique and important role and significance [4]. First, it is conducive to highlighting the humanistic spirit of the library. Special collection resources are the humanistic spirit, excellent tradition and cultural accumulation formed in the development of colleges and universities, and are the characteristics and highlights of university libraries in establishing service concepts and creating personalized,

professional and characteristic service needs. Two, we should constantly promote cultural inheritance and innovation. Special collection resources are the unique historical accumulation formed in the growth and development of each university, which embodies the interpretation, inheritance and innovation of a campus cultural spirit. The third is to provide academic support for university teaching and research. As a historical document of discipline development and scientific research, university special collection resources are conducive to the evaluation and research of universities, precise discipline development goals, promote the construction of characteristic disciplines, and highlight and enhance the value of academic characteristic [2]. Fourth, it is conducive to improving the social influence of libraries. Special collection resources are not only the display of university library's personality, but also the brand of competitiveness. Through the creation of sharing influence and promoting service influence, the promotion of industry status and the improvement of social influence can be realized [5].

## 3. Difficulties in the Construction and Service of Special Collection Resources

Because of the uniqueness of special collection resources, they are more likely to encounter some limitations and difficulties in the process of collection and collation, knowledge organization and service display. Only by carrying out construction, service and promotion more consciously and innovatively than other resources, can special collection resources play their value and role. Whether it is traditional special collections such as ancient books, rare books, manuscripts, special prints, or modern characteristic collections [3] which can reflect disciplines, special topics, regional and even historical and cultural characteristics, they have their own characteristics and difficulties compared with ordinary documents.

### 3.1. Characteristics of Bent

Due to the preciousness and particularity of special collection resources, a considerable part of the contents need to be managed in closed shelves, and their shelving methods are complex and unique, which can not be sorted out according to the book classification of ordinary stacks, which to some extent reduces the interest of readers in exploring resources at will. Even if the bookshelves are marked with clear signs, or the reading room has a small number of open-shelf resources, it is still difficult for users to find the required resources quickly and accurately without the help of librarians.

### 3.2. Safety Features

In view of the unique value and importance of special collection resources, their collection security requirements are higher than other documents, which easily leads to the formation of some librarians' psychology and concepts that are not conducive to promoting and expanding the use of

resources. Some librarians believe that in order to better protect resources objectively and reduce the occurrence of literature security problems, the borrowing and use of special collection resources should be reduced. Some librarians even think that lack of understanding and use barriers of users will make them naturally have a kind of awe, which is a good thing to some extent.

### **3.3. Preservation Characteristics**

The particularity and complexity of special collection resources limit and affect the exploration and utilization of users to varying degrees. Some of the rare books collected for a long time have special binding, exquisite form, or important content or edition value, which require strict rules of use and constant humidity and temperature preservation conditions, which easily limits their use to a very small number of researchers who specialize in a certain field and conduct in-depth research. At the same time, the types of modern special collection resources are increasing, and in order to improve the digital scale of special collection resources, the way of simplifying Meta Data field disclosure is adopted, which makes the information incomplete in the process of user retrieval.

### **3.4. Concept Characteristics**

Whether it is the complexity and particularity of the collection, form and service of special collection resources, or the subjective concept of reducing the use of special collection resources, it will lead to the user's unfamiliarity with special collection resources and the corresponding avoidance and passive use [3]. The current situation of "emphasizing storage and neglecting use" and the weak radiation of extension services are not in line with its functional value, but also with the requirements of the era of rapid technological development. The urgency and inevitability of "creative transformation" and "innovative development" are more prominent. How to solve this problem and how to realize the value of innovation can be said. Under the background of digital humanities, the construction and service of intelligent media enabling special collection resources is the mission and requirement entrusted by the times.

## **4. Connotation and Characteristics of the Age of Intelligent Media**

The so-called "intelligent media", that is, intelligent (intelligent) media, is a new intelligent media ecosystem from traditional media to new media, all-media and financial media. It is a combination of artificial intelligence and media, a new integration and collision of artificial intelligence and media, and an important scene content in the field of cross-media development of artificial intelligence in China. With the development of mobile communication technology and intelligent terminal technology, the Internet of Things, cloud computing, virtual augmented reality, intelligent hardware and big data technologies continue to penetrate into the media

industry, and the new media revolution linked by technology has led to the media form, scene application and user experience [6]. Promote the integration and generalization of media price. The era of intelligent media has obvious characteristics:

### **4.1. Pan-Media**

Everything is connected, and everything is a medium. With the rise of Internet of Things, sensors and other technologies, the connection in the era of intelligent media is not only between content and content, between people and things, but also between things and things. The media of objects has become the trend of the times, all objects can become media for information transmission, the perception of the material world is more timely and comprehensive, and it is more intelligent to control and manage the material world.

### **4.2. Scenarization**

Accurately depict the portrait to achieve scene distribution. In the era of intelligent media, sensors, LBS, mobile terminals and big data provide technical support for scenario thinking. The media collects and analyzes the data of different scenes through big data technology, selects the appropriate dissemination content and dissemination entrance, and then uses the algorithm to recommend the precise delivery of information, and integrates the information flow, service flow and emotional flow into the scene to realize the scene dissemination.

### **4.3. On-the-Spot**

Provide immersive experience and create virtual reality. In the era of intelligent media, VR, AR and other technologies break the boundary between virtual and reality, provide the audience with a comprehensive simulation experience with high immersion and strong sense of presence, create super-real scenes, and focus on the promotion of news experience.

### **4.4. Embodied**

Man-machine symbiosis, man-machine integration. In the era of intelligent media, the collision between man and machine will bring about new changes in the media industry, which will become a new feature. The collaboration between the two has become a new news business model, which is widely used in the news production process and feedback link. Human intelligence is constantly poured into the machine, and the machine will extend human intelligence to a greater extent, give full play to their respective advantages, and achieve benign symbiosis.

## **5. Intelligent Media Enabling Special Collection Resources Construction and Service Trend Characteristics**

Supported by intelligent technology and based on

sustainable and diversified service modes, intelligent media forms a media ecosystem matching information and user intelligence, which has the characteristics of intelligence, intelligence and think tank. Under the background of the era of intelligent media, the service situation provides a variety of service channels for university libraries, and artificial intelligence technology provides strong technical support, especially aiming at the content characteristics of special collection resources, the Complexity and particularity of collection and display methods and services [6], so as to comprehensively enhance the interaction of special collection literature services and comprehensively enhance the user perception of special collections. "Creative transformation" and "innovative development" are of positive significance in the service of special Tibetan resources.

### 5.1. *Intelligentization*

Through the evolution and application of intelligent technology, a new feeling of content dissemination and service experience of special collection resources has been created, and the intelligent characteristics of content production, storage performance and dissemination form of special collection resources have been formed day by day. Virtual digital information technology accelerates the diversification of special collection reading carriers, the presence of reading experience, and the sensing of human-information interaction [8]. With the gradual adoption of AR special collection resource construction, the barriers of time and space will be broken through between special collection collection and users and content. Readers can see virtual GIFs only by applying relevant pattern scanning applications, and interact instantly through touch sensing, and complete "seamless switching" between different scenes with the help of information technology.

### 5.2. *Scenarization*

With the support of cloud computing, Internet of Things, smart media, big data, geographic location services (LBS) and other technology applications, online and offline special collection resources and application services can be connected, and users can quickly enter a variety of fragmented scenarios and obtain an unprecedented "sense of presence" and "sense of participation" [3]. As Robert Scoble predicted in his book «The Coming Age of Scenarios», the five elements of scenarios are now available, mobile devices, social media, big data, sensors and positioning systems. Scenarios have become another core element of media after content, form and social networking [9]. The era of scenarios has arrived.

### 5.3. *Sharing*

At present, a new information-based intelligent production and dissemination mode composed of dialogue, sharing, participation, collaboration and other elements has been formed, and intelligent media is gradually integrating the three independent processes of production, consumption and sharing in the content chain of special collection resources construction, so that readers can have the triple identities of

content producers, consumers and sharers at the same time. Resource system, collection space and even the process of reading promotion have begun to move towards sharing, that is, to share the content resources originally belonging to individuals or parts through the network and intelligent devices. Users can not only obtain and consume information through reading, but also share content through intelligent media, cloud collaboration and other channels to leverage the driving force and value of use.

## 6. **Practical Exploration of Intelligent Media Enabling Special Collection Service**

Recently, the Ministry of Science and Technology and other six ministries jointly issued guidance on accelerating scenario innovation, promoting the open integration of artificial intelligence technology and industry, promoting the application of scenario innovation, resource wisdom governance and opening, encouraging universities and other cultural and educational institutions to introduce industry scenario resources, and actively exploring scenario innovation practices. In this context, the cross-media intelligent technology of artificial intelligence industry is a good practical exploration in the intelligent management of library resources and the application of scenarios. In the era of intelligent media, based on the basic situation of libraries, starting from the concept of "people-oriented" of libraries, with the help of advanced intelligent media technology, closely around the core concept of "integration of technology, perception of needs, activation of knowledge, service to society" [10], actively expand the value orientation of special collection resources. Library special collection services under the intelligent media environment can effectively perceive the situational needs of users, at the same time, through cloud computing, big data, complex scene active perception, dynamic perception, multimedia autonomous learning and other cross-media intelligent technologies to achieve resource integration and penetration, and provide more suitable, convenient and efficient new media services [11].

### 6.1. *Intelligent Media Enabling Special Collection Resources Construction*

First of all, the integration of intelligent media technology for special collection content processing and construction. Under the background of the era of intelligent media, artificial intelligence technology, represented by in-depth learning, automatic translation and image recognition, has developed rapidly. It carries out artistic processing and cultural content display according to the types of special collections, uses big data technology to mine connotations and hot spots, and reconstructs content packaging through the collection and mining of characteristic culture. [12] Secondly, we should integrate intelligent media technology to innovate the form of special collection service. In the era of intelligent media, special collection services can integrate virtual simulation,

augmented reality, image synthesis, speech synthesis and automatic translation technologies into their cultural content and service forms, build virtual exhibition halls and provide mobile services according to the characteristics of special collection resources. Thirdly, it integrates intelligent media technology to develop special collection service platform. The service of special collection resources can combine the media habits of users, use the mobile thinking of intelligent media to excavate and display special collections and disseminate culture, combine the conventional application of Wechat public numbers, short videos and artificial intelligence technology applications, provide users with diversified special collection resources with the help of intelligent media platform, and meet users' audio-visual experience and interactive needs through the design of intelligent media services [13].

### **6.2. Intelligent Media Enabling Special Collection Space Reconstruction**

In the era of intelligent media, library special collection services can introduce the concept of Information Commons (IC), advocate user needs as the first criterion, not only consider the shelving and security of collections, but also combine physical collections with virtual collections. The special collection space is only the physical space of the collection, which has evolved into a diversified, complex and intelligent cultural resource sharing space [14]. For example, holographic projection technology (front Projected Holographic Display) and augmented reality technology (Augmented Reality Technique) are used to collect or exhibit resources, get rid of the traditional protection structure, and integrate the real and virtual. Construct the reader experience scene, improve the accessibility and availability of special collection resources, and become an intelligent cross-media and cross-platform linkage of special collection culture sharing space. In the future, the construction of special collection space can adapt to the new context of intelligent media technology, and try to bring more diversified innovations and attempts. The "virtual reality special collection space" of real-time scene and induction interaction will be realized, and the cultural sharing and immersion experience of special collection will be within reach.

### **6.3. Smart Media Enabling Special Collection Cultural Perception Service Experience**

Compared with other resource systems, special collection resources have higher requirements for cultural perception, which puts forward expectations and requirements for the service of special collection resources in the era of intellectual media. First, intelligent media technology can be used to design the perception of special collection services. The key of perception design is to place the user in the context of special collection cultural services through simple interface and process, beautiful and clear images and videos, clear semantics and sound, input the user's cultural request information through image, voice, gesture, action and other magnetic recognition technologies, and output the information in combination with

automatic synthesis, translation and voice interaction [15]. Secondly, through the technology of intelligent media and the concept of differentiated design, the creative display of special collection services is carried out. With the continuous innovation and upgrading of the application scenarios of artificial intelligence technology, various special collection institutions continue to adopt advanced design models and application technologies, and regard the innovation of special collection culture perception service as the inherent requirement of shaping the brand characteristics of institutions and enhancing service value. Thirdly, intelligent service presentation is carried out in combination with user sensory interaction. According to the needs of users, the supply and service exchange of adaptive special collection resources, combined with in-depth learning technology, is moving towards the direction of "chatting with users about culture", making the wisdom service of special collection culture an important part of the construction of intelligent libraries.

## **7. Conclusion**

Under the background of the era of intellectual media, the communication situation of all things as media has created opportunities for the construction of special collections in Colleges and universities. Libraries need to constantly expand their new media services, integrate technology, resources and networks into the construction and service of special collections, further effectively innovate the functions of special collection resources and give full play to their social values, and realize the leap-forward development of the construction and service of library intellectual media enabling special collections. To realize the co-creation of cultural special collection service and user value of intelligent media library.

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