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Research Article

Image Retrieval Technology of Smart Archives from the Perspective of National Reading

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In order to improve the image retrieval effect of smart archives, reduce retrieval time, and enhance retrieval performance, this paper proposes an image retrieval technology for smart archives from the perspective of national reading. According to the concept of nationwide reading and considering the internal and external influencing factors, mobile visual retrieval service for users of smart archives is provided, and the mobile visual retrieval model for users of smart archives is constructed by using a standardized structure and mixed structure. During the operation of the model, the image feature similarity of the wisdom archive is calculated, and the image is processed by the corresponding module, so as to realize the image retrieval technology research of the wisdom archive from the national reading perspective. The experimental results show that the designed technology has better retrieval effect, shorter time, and better performance.

1. Introduction

Reading is not only a habit but also a practice of life. With the advent of the era of microcommunication, reading, which shoulders the important mission of inheriting human civilization, is also facing unprecedented crises and challenges. In the context of the new era, China's national reading promotion work should also change new ideas, formulate new development strategies and development trends, and continue to be carried out continuously and effectively as a key cultural project to enhance the country's cultural soft power and comprehensive national strength. The advantages of smart archives in archive collection, archive management, and archive utilization are very prominent. As a direct embodiment of archive utilization, how to optimize the service quality and expand the service content has always been the research focus of scholars and all walks of life [1, 2]. Smart archives integrate RFID, Internet of Things, big data, cloud computing, intelligent devices, and other emerging technologies [3, 4]; break through the limitations of traditional physical libraries; optimize the service mode; and provide more novel and humanized services [5, 6]. In order to catch up with the times and provide users with faster, diversified, and high-quality retrieval services with the help of the development of the smart city, the image retrieval function of smart archives is studied from the perspective of national reading [7, 8].

Reference [9] uses a fast scanning method combined with digital image processing technology as the standard acquisition mode of the scanning electron microscope. An efficient and fast scanning method combined with digital image processing technology is proposed to replace the traditional slow scanning mode as the standard acquisition mode of the general scanning electron microscope. The SEM image obtained by this method has the same quality as the slow scanning image in terms of clarity and noise and can suppress the adverse effect of charging under full vacuum, which is a challenging problem in this field. Two problems need to be solved in the design of this method: one is to use the inverse filter to properly compensate the image quality based on the frequency characteristics of TV scanned images and the other is to design an accurate image

integration technology, whose position alignment is robust to noise, which involves using image montage technology and estimating the number of images required for integration. Reference [10] proposed an active contour image segmentation based on a region edge driven by region fuzzy energy and constructed an active contour line based on the region edge. The contour line is driven by mixed and local fuzzy region energies, which is used to segment images with high noise and uneven intensity. The energy functional is composed of region energy and edge energy. The region energy is composed of the mixed fuzzy region term and the local fuzzy region term. The purpose is to stimulate the initial contour to move to the accurate object boundary and prove the convexity of the algorithm to ensure that the segmentation result is independent of initialization. The mixed fuzzy region term can balance the importance of the target and background, while the local fuzzy region term combines spatial and local information, which can reduce the influence of intensity heterogeneity in a given image. Although the above research has made some progress, the research on image retrieval of smart archives is not sufficient; at present, the image retrieval effect of smart archives is not good, the retrieval time is too long, and the retrieval performance is weak. Therefore, the image retrieval technology of smart archives under the national reading vision is proposed. Experimental results show that the proposed technique has better retrieval effect, shorter retrieval time, and better retrieval performance.

2. Image Retrieval of Smart Archives from the Perspective of National Reading

2.1. Universal Reading. Reading is an important activity of human beings, an important way for the continuous inheritance and continuation of human civilization, and one of the important methods for human beings to enrich their spiritual life and improve their self-cultivation [11, 12]. In recent years, with the intensification of the reading crisis, national reading has received extensive attention again. With the popularization and promotion of national reading activities across the country, it has also become an important national cultural development strategy and an important means to enhance the national cultural soft power.

With the rapid development of science and technology, all kinds of new media continue to emerge and fill people's lives. With the popularization of the concept of "new media," the corresponding communication methods and characteristics are derived [13, 14]. Cultural communication scholars have pointed out that the use of new means of communication has brought profound changes to people's expression, expression content, social culture, and organization of social events. In this new era environment, traditional media and communication methods are experiencing unprecedented impact and challenges, and traditional reading forms are not an exception [15].

Personally speaking, reading is a manifestation of ability. However, with the acceleration of the pace of social life and the increase of life pressure, people are more and more inclined to shallow reading, utilitarian reading, entertainment reading, fragmented reading, and other reading methods. The traditional reading form based on reading books is undergoing severe challenges [16]. The above shows the importance and value of carrying out national reading promotion activities. In the era of microcommunication dominated by new media, it is necessary to further improve the National Reading Promotion Strategy in combination with the characteristics of the new era [17, 18]. At the same time, the development and popularization of national reading activities also need to establish a standardized and standardized theoretical system as a support, and the promotion of national reading needs to establish a complete and long-term operation mechanism as a guarantee. We should clarify the status and role of relevant government departments, the publishing industry, smart archives, and other organizations in the whole operation mechanism, pay attention to the publicity and promotion role of the media, and jointly explore the development and promotion strategies of national reading activities in combination with relevant theories.

2.2. Smart Archive User Mobile Visual Retrieval Service. The intelligent mobile archive visual search model is a new service mode in smart archives. It provides users with different needs by using the Internet plus intelligent terminal [19, 20]. The new features of the model not only are suitable for most users to participate in the utilization efficiently and effectively but also can provide corresponding resource retrieval services based on the personalized needs of different users.

Considering the internal and external factors, it is necessary and feasible to realize the mobile visual retrieval service of smart archive users according to service retrieval [21, 22]. In the mobile visual retrieval service program, a mobile visual retrieval service model for smart archive users under service retrieval is constructed based on workflow guidance [23]. The main components of the model are user interaction module, retrieval organization module, service selection module, and resource acquisition module.

Taking the mobile visual retrieval service of smart archive users as a process of demand collection task modeling task solving, the main steps of the mobile visual retrieval service are shown in Figure 1.

As shown in Figure 1, the workflow of the mobile visual retrieval service for users of the smart archive is as follows:

(i) *Step 1*: users upload wisdom archive images.

(ii) *Step 2*: smart archive image processing, including fuzzy image processing and light adjustment, etc. [24].

(iii) *Step 3*: smart archive image audit, including malicious image retrieval and advertising monitoring, to provide users with green and healthy resources.

(iv) *Step 4*: image semantic annotation of wisdom archive, including image object retrieval, image scene retrieval, and image instantiation representation.

(v) *Step 5*: diversified retrieval, including search by image and search by image mode [25, 26].

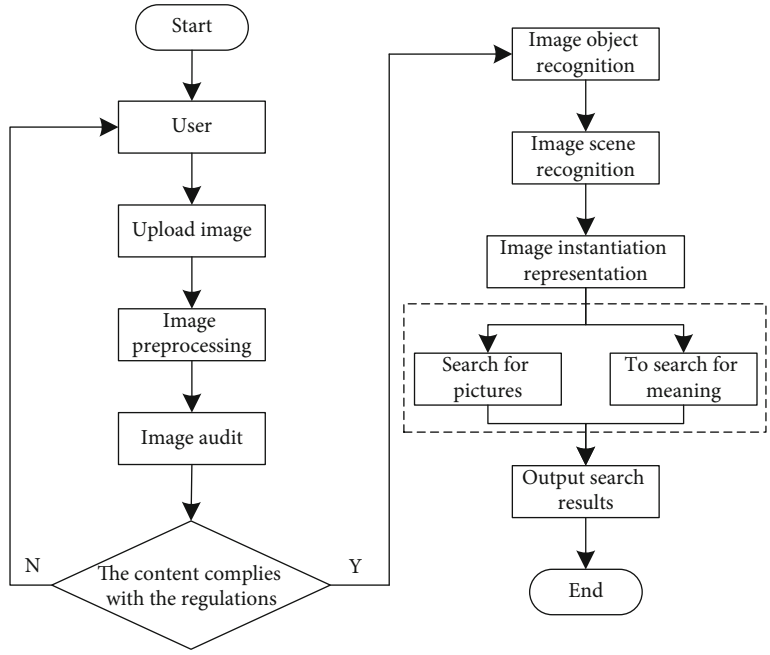

Figure 1: Workflow diagram of mobile visual retrieval service.

(vi) *Step 6*: the retrieval results show that in the continuous interaction program with users, the retrieval results are organized and optimized, and at the same time, they are arranged in order according to relevant procedures, so as to provide users with a relatively complete and accurate retrieval result.

2.3. Smart Archive User Mobile Visual Retrieval Model. Based on the needs of users, the workflow of mobile visual retrieval for smart archive users is determined according to the mobile visual retrieval service program from the perspective of national reading, and the specific service components are determined by service selection, so as to call relevant services for the corresponding operation according to the temporal relevance of the workflow.

The basic structure of the smart archive user mobile visual retrieval model includes several modes such as standardized structure and hybrid structure, which are different [27, 28]. In order to ensure that the visual resources of smart archive users are fully used to improve the basic performance of mobile visual retrieval, the model takes the standard structure as a template to construct the mobile visual retrieval service model structure of smart archive users under service retrieval. The main work bearer in the process of building the model is the server, which includes resource collection and storage, retrieval and selection of relevant technical services, and retrieval, so as to complete the mobile visual retrieval service [29, 30]. The mobile intelligent terminal only needs to get the visual target object and upload it to the server. After the server implements the retrieval and completes the mobile visual retrieval service, the retrieval results are fed back to the user. The structure of the smart archive user mobile visual retrieval model under service retrieval is shown in Figure 2.

It can be seen from Figure 2 that in the process of constructing the mobile vision retrieval model of smart archive users under service retrieval, it retrieves the retrieval targets that can meet the needs in various open service platforms based on mobile vision retrieval service programs [31, 32]. In the mobile vision retrieval service, the retrieval target is from open and free AI and resource platform to provide technical service data for the final retrieval. In service retrieval, local storage is implemented for relevant open service technical documents, technical services are described based on technical documents, and a service catalog is formed according to function classification, which is convenient to call at any time.

2.4. Calculate Image Feature Similarity of Smart Archives. Taking the fuzzy space of image features of smart archives as the limited range, the similarity of image features of smart archives is calculated. For the similarity of image features of smart archives, set it as X_{SD}, and formula (1) can be obtained:

$$X_{SD} = \frac{\sum_{i=1}^{n}(K_i, F_i)}{\sum_{i=1}^{g} H_i}. \tag{1}$$

In formula (1), n represents the weight coefficient of image texture feature of smart archives, g represents the friction coefficient, K_i represents the abscissa of the one-dimensional flattening distance of image information of smart archives, F_i represents the ordinate of one-dimensional flattening distance of image information of smart archives, and F_i represents the weight coefficient of the shape feature of the image of smart archives. The abscissa and ordinate of the one-dimensional leveling distance of the image information of the smart archives can

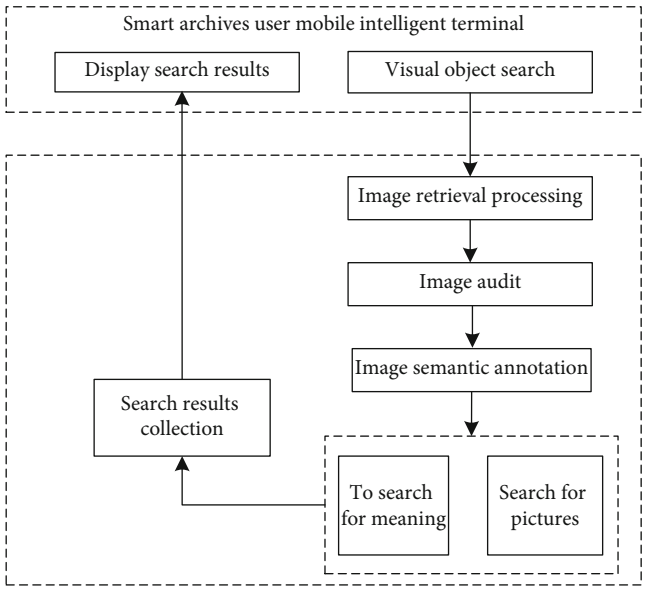

Figure 2: User mobile visual retrieval model of smart archives under service retrieval.

directly determine the specific point information of the image information of the smart archives in the fuzzy space, which is the fuzzy feature description of the image of the smart archives [33, 34]. Based on formula (1), calculate the basic features of the smart archive image and obtain the comprehensive information table of image feature similarity of smart archives, as shown in Table 1.

Combined with the information in Table 1, it can be seen that the larger the sequence number of the fuzzy feature value of the image of the smart archive, the higher the similarity, which is consistent with the fuzzy distance attribute. The key parameters affecting the fuzzy feature value of the image of the smart archive include the color, texture, shape, and other information of the image of the smart archive.

3. Realize the Image Retrieval Technology of Smart Archives from the Perspective of National Reading

Intelligent archive image retrieval technology represents the image feature retrieval of network intelligent archives, which belongs to multimodal retrieval. In the retrieval process, there is a certain logical correlation between the bottom features and the high-level semantics, which can be represented by the directed graph of image data. A piece of network news data contains multiple identifications. According to the modal data type of the image of the network intelligent archives, the identifications include the relationship set of network news text keywords, image scene features, character features, picture features, and text features [35]. Among them, the network news text keywords can reflect the retrieval needs of users. According to the intensity of users' needs, the keywords have an order list, and the image scene features represent the place where the network news occurs. According to the above image features, the directed graph theory model is used to describe the relevance of the image retrieval technology of the smart archives, so as to realize the image retrieval of the network smart archives [36]. The image features are analyzed in the database, and the image analysis is realized through preprocessing. The image retrieval process is shown in Figure 3.

As shown in Figure 3, the information load inside the image retrieval structure of the wisdom archive also begins to accumulate gradually until it completely matches the actual classification requirements of image resources in the wisdom archive. The retrieval structure is shown in Figure 4.

As shown in Figure 4, the directed graph theoretical model is defined according to the image feature identification of the network smart archives, which can be expressed as

$$M_{XY} = D_d \times B_{jh}. \tag{2}$$

In formula (2), D_d represents the vertex set and B_{jh} represents the edge set. The text keywords, image scene features, and relation sets of intelligent archive image retrieval are the vertices of the directed graph theoretical model, which are represented by O_p, and each O_p represents the image data features of network intelligent archives. The expression of intelligent archive image retrieval technology is

$$O_b = \frac{A}{B} \times O_p \times M_{XY}. \tag{3}$$

In formula (3), O_b represents the result of image retrieval technology of smart archives. According to this result, the semantic similarity between set A and set B is judged. If the semantic similarity between set A and set B is high, there is an indirect semantic relationship. The relationship between image features and data of network smart archives is established through the proposed directed graph theory model. The image retrieval of network smart archives can be realized based on the directed graph theory model.

After the analysis of the image characteristics of the network smart archives is completed, the image features, text features, scene features, image edge features, etc. of the image retrieval of the smart archives are retrieved. Network users perform similarity retrieval on the underlying features according to the retrieved keywords, use the directed graph theory model to sort the retrieval needs of users, and output the retrieval results, which are set as J_g. The image features existing in the results are selected according to the original retrieval conditions, and the graph feature datasets A and B are clustered by K-means. The retrieval result $J_g{}'$ is obtained under the directed graph theoretical model. The J_g and $J_g{}'$ are retrieved according to the image visual features. The retrieval result can be expressed by the following expression:

$$R_T = \frac{K \times J_g}{A \times J_g{}' + B \times J_g{}'}. \tag{4}$$

Table 1: Image feature similarity of smart archives.

Image information fuzzy feature numerical sequence number of smart archives	Fuzzy feature description state	Fuzzy distance attribute	Similarity	Related parameters
1	Good	Nonnegativity	0.275	Color, texture, shape
2	Good	Symmetry	0.326	Color, texture, shape
3	Good	Trigonometric inequality	0.498	Color, texture, shape

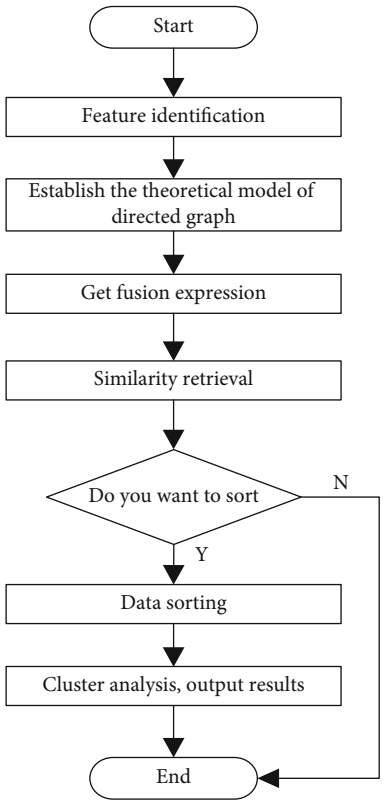

Figure 3: Flow chart of image retrieval of smart archives based on directed graph theory.

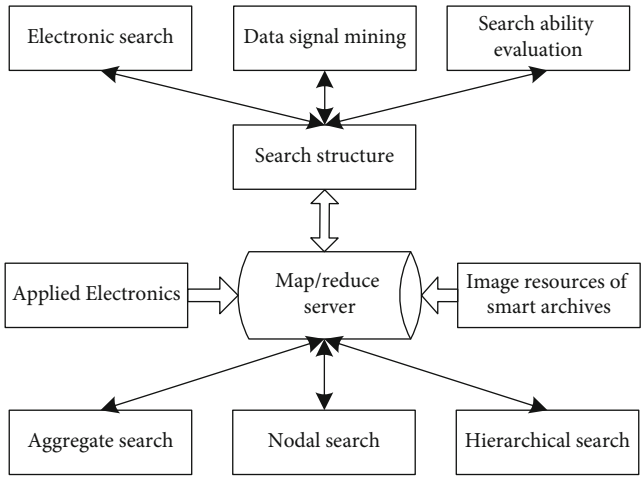

Figure 4: Search structure.

In formula (4), K represents the set of search results. Thus, the research on image retrieval technology of smart archives from the perspective of national reading is completed.

4. Experimental Analysis

In order to verify the effectiveness of the image retrieval technology of smart archives from the perspective of national reading, a test platform with the functions of visual feature processing and semantic information retrieval is built. At the same time, the image retrieval effect of smart archives is verified through the corresponding sample database, feature database, and semantic information database. During the construction of the test sample image library, the information resource collector is written according to Python to realize data acquisition, and a series of processing is carried out for the obtained data to adjust the image format and resolution. Finally, each image is encoded and configured with a unique encoding. The experimental environment is shown in Figure 5.

Verification was carried out in the experimental test environment shown in Figure 5. The development language was the C# programming language combined with Java language, and the development tools included Visual Studio and Eclipse development tools. In addition, the safety data analysis software and spatial distribution processing software are needed in the main control computer used in the experimental test to count and process the test results of the system. Image retrieval technology of the wisdom archive under the national reading horizon of this paper was used to retrieve two image sets of the wisdom archive, record the recall rate of image retrieval of the wisdom archive, and set them as the experimental group. The reference [9] technology and reference [10] technology were then used to retrieve the image sets of the two wisdom archives, and the recall rate of the image retrieval of wisdom archives was also recorded by the software the TRS software, which was set as the control group. Java language and the Web page of the server side are used as the server framework. After adjusting the overall framework, request processing is the collection task of the smart archive. The collected archive data is shown in Table 2.

Under the data of smart archives collected in Table 2, after adjusting the database of smart archives to meet the provisions of the agreement, prepare to use reference [9] technology, reference [10] technology, and retrieval technology of this paper for testing, call the same indicators, and compare the performance of the three technologies.

Figure 5: Experimental test environment.

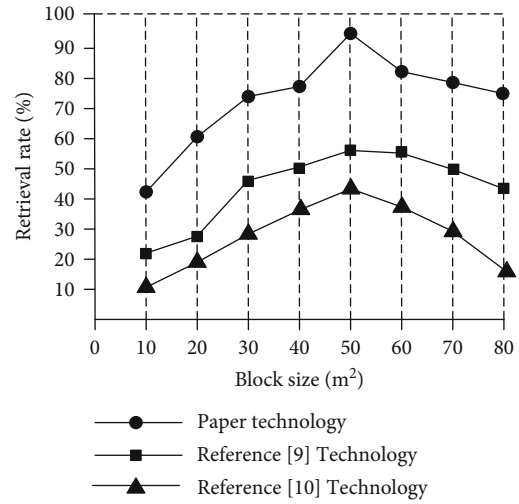

Figure 6: Experimental results of retrieval rate.

Table 2: Collected data of smart archives.

Dataset name	File content	Data size (M)
Dataset 1	Data dimension	11.5
Dataset 2	File names	7.6
Dataset 3	Identifier	3.5
Dataset 4	Coding format	4.5
Dataset 5	File date	7.2
Dataset 6	Proper noun	3.1
Dataset 7	Organization	4.2
Dataset 8	Record time	6.8
Dataset 9	Data structure	7.3
Dataset 10	File entity relationship	9.9

In the image retrieval of smart archives, the forms and angles are different, so it is relatively difficult to retrieve. Therefore, it is necessary to divide the images of smart archives into blocks to improve the retrieval rate. The calculation formula of retrieval rate is

$$S_{bl} = \frac{Y_a}{U_a} \times 100\%. \quad (5)$$

In formula (5), S_{bl} represents the retrieval rate, Y_a represents the number of face images retrieved, and U_a represents the number of overall images retrieved.

The reference [9] technology, reference [10] technology, and retrieval technology in this paper are used to retrieve face images at the same time. Formula (5) is used to calculate the experimental results of the retrieval rate, and the experimental results of the retrieval rate obtained are shown in Figure 6.

It can be seen from Figure 6 that when the number of blocks is 10~50 m^2, the retrieval rate shows an upward pattern, and when the block size is 50 m^2, the retrieval rate shows a peak. To achieve the highest, the image of smart archives can obtain the best retrieval effect. After the number of blocks decreased from 50 m^2, the number of searches showed a downward pattern. It can be seen that when the block size is 50 m^2, the retrieval effect is the best. The retrieval rate of the retrieval algorithm proposed in this paper is 95%, while the retrieval rate of the reference [9] retrieval technology is 57%, and the retrieval rate of the reference [10] retrieval technology is 45%. Therefore, the retrieval technology proposed in this paper can better use the matching block to fit the information. By weighing the two results of image segmentation and matching ability, it can realize data retrieval and improve the retrieval ability of the retrieval process.

After several experiments to determine the retrieval rate, the retrieval time is calculated, and the experimental results are shown in Table 3.

According to Table 3, the retrieval time of the technology proposed in this paper is only 1.61 s, which is significantly less than those of the technologies in reference [9] and reference [10], when retrieving images of the smart archive with the same amount of data. The reason for this phenomenon is that the retrieval technology proposed in this paper can retrieve the multimodal features of images into a unified system through the directed graph theory, quickly analyze the morphological patterns of different systems, sort the data according to the analysis phase diagram, and complete the information retrieval. Make statistics on the selected samples of multiple smart archives and their disclosure risks and risk levels, and the comparison results are shown in Table 4.

Through the comparison and statistics of the data in Table 4, it is found that there is an obvious deviation between the technology in reference [9] and the technology in reference [10] in terms of risk value and risk level, while the technical output value in this paper is close to the index setting value, and the difference is small, so the risk level evaluation result is more accurate.

To sum up, when the block size is 50 m^2, we retrieve the best effect; this paper puts forward the retrieval algorithm retrieval rate as 95%, the retrieval time spent only 1.61 s,

Table 3: Experimental results of retrieval time.

Features	Retrieval time (s)		
	Reference [9] technology	Reference [10] technology	Paper technology
Text features	6.58	5.55	1.33
Scene features	6.03	6.22	2.25
Character characteristics	7.29	7.52	1.55
Multimodal feature	8.14	8.02	1.30
The average	7.01	6.83	1.61

Table 4: Comparison results of disclosure risk and risk level.

Smart archive sample serial number		1	2	3
Indicator setting value	Value at risk	0.721	0.801	0.347
	Risk level	Highly controllable information disclosure risk	No user privacy disclosure risk	High uncontrollable leakage risk
Reference [9] technical output value	Value at risk	0.865	0.905	0.697
	Risk level	Controllable information disclosure risk	Highly controllable information disclosure risk	Intermediate uncontrollable leakage risk
Reference [10] technical output value	Value at risk	0.896	0.997	0.645
	Risk level	Controllable information disclosure risk	Highly controllable information disclosure risk	High uncontrollable leakage risk
Technical output value of this paper	Value at risk	0.722	0.806	0.345
	Risk level	Highly controllable information disclosure risk	No user privacy disclosure risk	High uncontrollable leakage risk

the output value and index set values approach deviation; with regard to the design of nationwide reading horizon, wisdom archives of image retrieval technology have good performance and are feasible in practical application.

5. Discussion and Analysis

(1) The smart archive service is user-oriented and needs to go out. Therefore, it is necessary to introduce various external forces to meet the requirements of the environment. The service of intelligent archives searches the Internet plus the transboundary mode, which can promote the transformation of traditional archival information service: the development and service of archival information resources will be transformed into a joint operation by fighting alone. The single platform operation of the library becomes a cross-platform collaboration. The single source of information has changed into a multichannel. Information services change from one-way to interactive. The service has changed from passive to active. Limited services become ubiquitous services. Make use of the integration advantages of coconstruction and sharing of information resources, the professional complementary advantages of cross-border cooperation, the self-media advantages of serving the interaction between host and object, and the comprehensive advantages of the role of technology platform resources to carry out multiadvantage management and supervision, so as to realize high-quality cross-border cooperation

(2) In the ubiquitous network environment, the smart archives should collect and delete information through the cloud platform, so as to become an information center. The establishment of the information center needs the requirements of the complete life chain of information from generation to reconstruction, such as Internet access, Internet of Things matching, capture of information collection tools and storage, and analysis and recreation of later resource integration. Collect and integrate the hub information resources of the center, combine the access standards and industry norms in various fields, and innovate management and technology to ensure the absolute security of information. On the premise of obtaining the consent of the main party, develop uniformly and realize sharing, form oppressive passive supervision through multiparty retrieval, and implement cross-border multiparty supervision from an external perspective

(3) The biggest feature of the smart archive service based on the Internet plus is the interconnection of multiple technologies, equipment and users, and archives. From archives to users, information is transmitted all the time. The realization of interconnection is the lifeblood of communication between smart archives and different users in various departments.

The timeliness and quality of communication depend on the realization of interconnection technology. Interconnection is manifested in the interactive communication between objects, between objects and networks, and between networks. Smart archive posts must be arranged within the framework of laws and regulations due to information security, and "dancing with chains" is the primary principle. For both front-line service posts and editing, research and editing posts have their specific job requirements, and randomness is unreasonable. The collection, sorting, security, and management of archives must be accurate to each file. Meticulous and cumbersome work cannot be avoided. Archivists should understand the particularity of their posts and clearly position themselves. The smart archive service needs to reflect on the concept, technology, and operation, reasonably formulate work development expectations on this basis, actively start from their own strength, and start from every small matter of doing a good job. Identify with the archival work, respect the archival industry, be in awe, and operate the archives as a lifelong career, so as to find and realize self-worth in the archives

6. Conclusions and Prospects

6.1. Conclusions. Effective conclusions are obtained through research, and the problems of poor image retrieval effect, long retrieval time, and weak retrieval performance of the current smart archive are solved. The specific contents are as follows:

(1) The designed technology can better use the matching block to fit the information. By weighing the two results of image segmentation and matching ability, it can realize data retrieval and improve the retrieval ability of the retrieval process

(2) From the perspective of national reading, the image retrieval technology of smart archives takes significantly less retrieval time

(3) The output value of this paper is close to the technical evaluation value, and the result is relatively accurate

6.2. Prospects. The image retrieval technology of smart archives is a wide-ranging research problem, which involves the organization of digital resources, feature extraction and description of visual resources, visual resource retrieval, and other key technologies. The research content is rich and the task is arduous. It will continue to be supplemented and improved in the future research work.

(1) Build a complete platform from front-end interactive web pages to back-end retrieval organization development and provide complete and optimized mobile visual retrieval services for smart archives. Build a rich resource ontology and establish semantic associations between resources, so as to provide an orderly and structured visual knowledge resource basis for image retrieval

(2) Expand the scope of service discovery and service selection and select the most appropriate image retrieval technology service according to the strategy of local optimization or global optimization. Carry out total quality management on the image retrieval organization of smart archives, pay attention to the security guarantee in service retrieval, improve the automation of semantic-based service retrieval, and evaluate and optimize the accuracy and breadth of visual retrieval results

(3) The semantic information of the image is extracted through the image annotation of the smart archives, the semantic information is segmented and screened by using natural language processing technology, and the ontology is further studied. The breadth and accuracy of the retrieval results need to be further evaluated and considered

Data Availability

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest

The authors declared that they have no conflicts of interest regarding this work.

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References

[1] N. Linh, Y. Kumeda, M. Matsushita, T. Hironiwa, and M. Furuta, "Application of gamma radiation for disinfection of fungi in a large volume of historical archives damaged by flood following typhoon Hagibis 2019, Japan: a case report," *Biocontrol Science*, vol. 26, no. 1, pp. 55–59, 2021.

[2] N. V. Glukhova, "Method for determining the measurement uncertainty of the detailing coefficients of the wavelet transform of image brightness profiles," *Measurement Techniques*, vol. 63, no. 3, pp. 177–183, 2020.

[3] Y. Sun, "Exploration and reflection on the construction of university archives management system under the background of information technology," in *International Conference on Application of Intelligent Systems in Multi-modal Information Analytics*, pp. 312–318, Springer, Cham, 2021.

[4] A. Ad, B. My, B. Oeo, B. Hk, A. Ms, and B. Hq, "Stable computation of higher order Charlier moments for signal and image

reconstruction," *Information Sciences*, vol. 521, no. 6, pp. 251–276, 2020.

[5] T. Owens and T. Padilla, "Digital sources and digital archives: historical evidence in the digital age," *International Journal of Digital Humanities*, vol. 4, no. 5, pp. 325–341, 2020.

[6] V. Monga, Y. Li, and Y. C. Eldar, "Algorithm unrolling: interpretable, efficient deep learning for signal and image processing," *IEEE Signal Processing Magazine*, vol. 38, no. 2, pp. 18–44, 2021.

[7] S. Kumar, J. Pradhan, and A. K. Pal, "Adaptive tetrolet based color, texture and shape feature extraction for content based image retrieval application," *Multimedia Tools and Applications*, vol. 80, no. 19, pp. 29017–29049, 2021.

[8] D. Williams and C. Wavell, "The impact of the school library resource centre on learning," *IASL Annual Conference Proceedings*, vol. 7, no. 11, pp. 803–806, 2021.

[9] E. Oho, K. Suzuki, and S. Yamazaki, "Applying fast scanning method coupled with digital image processing technology as standard acquisition mode for scanning electron microscopy," *Scanning*, vol. 2020, no. 6 article 4979431, 2020.

[10] J. Fang, H. Liu, L. Zhang, J. Liu, and H. Liu, "Region-edge-based active contours driven by hybrid and local fuzzy region-based energy for image segmentation," *Information Sciences*, vol. 546, no. 6, pp. 397–419, 2020.

[11] P. Moore, "Primary school children's interaction with library media," *Teacher Librarian*, vol. 27, no. 3, pp. 7–11, 2021.

[12] A. Fdm and B. Ss, "PSO image thresholding on images compressed via fuzzy transforms," *Information Sciences*, vol. 506, no. 1, pp. 308–324, 2020.

[13] A. Ewbank and J. Y. Kwon, "School library advocacy reference in the United States: a content analysis," in *IASL Annual Conference Proceedings*, pp. 1–12, Doha, Qatar, 2021.

[14] H. L. Wei and J. X. Wang, "Simulation research on edge sharpening enhancement of motion blurred digital image," *Computer Simulation*, vol. 37, no. 7, pp. 459–462, 2020.

[15] R. Uppal, "Quantum and dual-tree complex wavelet transform-based image watermarking," *International Journal of Modern Physics B*, vol. 34, no. 4, pp. 205–269, 2020.

[16] A. Maleki, "Why does library holding format really matter for book impact assessment?: Modelling the relationship between citations and altmetrics with print and electronic holdings," *Scientometrics*, vol. 127, no. 2, pp. 1129–1160, 2022.

[17] C. Zxab, C. Xwab, C. Cwb, C. Bmb, H. Zd, and Q. Labc, "Novel quaternion polar complex exponential transform and its application in color image zero-watermarking," *ScienceDirect Digital Signal Processing*, vol. 116, no. 9, article 103130, 2021.

[18] F. Tarsitano, C. Bruderer, K. Schawinski, and W. G. Hartley, "Image feature extraction and galaxy classification: a novel and efficient approach with automated machine learning," *Astrophysics of Galaxies*, vol. 511, no. 3, pp. 3330–3338, 2021.

[19] M. Hasan, Z. Ahmad, M. S. Leong, and L. M. Hee, "Automated harmonic signal removal technique using stochastic subspace-based image feature extraction," *Journal of Imaging*, vol. 6, no. 3, pp. 10–20, 2020.

[20] C. Tyab, C. Jma, B. Yma et al., "Privacy-preserving Krawtchouk moment feature extraction over encrypted image data," *ScienceDirect Information Sciences*, vol. 536, no. 10, pp. 244–262, 2020.

[21] S. Harris, C. Folkes, K. Tyrell, and D. Brown, "Nurturing customer service culture in an experience economy: employees' assessment of the UWI, mona library service model," *Library Management, ahead-of-print(ahead-of-print)*, vol. 41, no. 4/5, pp. 193–220, 2020.

[22] E. Saad and K. Hirakawa, "Improved photometric acceptance testing in image feature extraction tasks," *Journal of Electronic Imaging*, vol. 29, no. 4, pp. 1–10, 2020.

[23] R. Tamilkodi and G. R. Nesakumari, "Image retrieval system based on multi feature extraction and its performance assessment," *International Journal of Information Technology*, vol. 3, no. 1, pp. 1–13, 2021.

[24] K. Mun and C. Son, "Design of optimal blind watermarking technique based on MOEA/D," *IET Image Processing*, vol. 14, no. 16, pp. 4368–4375, 2020.

[25] U. Erkan, S. Enginolu, N. Dang, and H. L. Minh, "Adaptive frequency median filter for the salt and pepper denoising problem," *IET Image Processing*, vol. 14, no. 7, pp. 1291–1302, 2020.

[26] N. Wei, "Research on the algorithm of painting image style feature extraction based on intelligent vision," *Future Generation Computer Systems*, vol. 123, no. 24, pp. 196–200, 2021.

[27] R. Sun, J. Qian, R. H. Jose et al., "A flexible and efficient real-time orb-based full-hd image feature extraction accelerator," *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, vol. 28, no. 2, pp. 565–575, 2020.

[28] J. B. Croft, "Tolkien's library: an annotated checklist by Oronzo Cilli," *Tolkien Studies*, vol. 17, no. 1, pp. 203–208, 2020.

[29] V. A. Pimpalkhute, R. Pagea, A. Kotharib, K. Bhurchandic, and V. Kambled, "Digital image noise estimation using DWT coefficients," *IEEE Transactions on Image Processing*, vol. 30, no. 99, pp. 1962–1972, 2021.

[30] S. Sthlberg and F. Nasretdin, "Tatar easy to read books for language learning, developing reading skills and support for minority and endangered languages," *Tehlikedeki Diller Dergisi*, vol. 19, no. 11, pp. 347–377, 2021.

[31] R. Nayak, D. Patra, and B. Balabantaray, "Super-resolution image reconstruction using molecular docking," *IET Image Processing*, vol. 14, no. 12, pp. 2922–2936, 2020.

[32] R. K. Perry and J. M. Heraty, "Read between the lineata: a revision of the tattooed wasps, Zagrammosoma ashmead (hymenoptera: eulophidae), with descriptions of eleven new species," *Zootaxa*, vol. 4916, no. 1, pp. 1–108, 2021.

[33] T. M. Berhane, "Research on feature extraction method of indoor visual positioning image based on area division of foreground and background," *ISPRS International Journal of Geo-Information*, vol. 10, no. 6, pp. 402–410, 2021.

[34] C. J. Brownell and A. Rashid, "Reading beyond the book: examining a critical social educator's race & equity read aloud in an early childhood classroom," *The Critical Social Educator*, vol. 1, no. 1, pp. 1–10, 2021.

[35] T. R. Farshi and A. K. Ardabili, "A hybrid firefly and particle swarm optimization algorithm applied to multilevel image thresholding," *Multimedia Systems*, vol. 27, no. 1, pp. 125–142, 2021.

[36] S. H. Khaleefah, S. A. Mostafa, A. Mustapha, and M. F. Nasrudin, "Review of local binary pattern operators in image feature extraction," *Indonesian Journal of Electrical Engineering and Computer Science*, vol. 19, no. 1, pp. 23–31, 2020.