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Digital Protection and Dissemination of Regional Culture Based on Digital Technology

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Abstract:

In order to improve the effects of regional culture protection and communication,this paper proposed a digital technology to be used in regional culture protection.The digital algorithm is carried out to improve the digital processing of regional culture, and also effectively analyze the digital transmission process, so as to improve the transmission range and effect of the regional culture. The digital protection of regional culture is mainly focused on two kinds of informations :two-dimensional information and three-dimensional information. The different dimensions information of text, picture and video is obtained, in the meantime the corresponding process is analyzed; and the digital resource database of regional culture is formed which is in line with the museum system to analyze the communication paths of regional culture. In combination with the actual communication situation of traditional culture, the comprehensive protection and communication concept of the regional culture is analyzed which will provide related references for the after research.

Keywords: Internet; Regional Culture; Digitalization; Protection; Communication

1.INTRODUCTION

In the context of the rapid economic and social development and the accelerated process of "globalization", from the perspective of discipline construction, our country is still in a period of exploration in the field of regional cultural protection and development with relatively few successful experiences and little theoretical achievements. The debate on protection and development is very lively, and no one has the upper hand. The general principles of effective protection, rational utilization, and sustainable development are very affirmed. However, the actual implementation of the protection and development of the heritage site has not yet been found the mode of operation that most people agree with [1]. As far as the theoretical construction of China's regional cultural protection and development is concerned, it is necessary to break through the traditional research framework based on the protection of cultural relics, but also to go beyond the simple application of foreign theories, and it must be feasible. Then, the study of cultural protection and development models in specific heritage sites is a powerful impetus for the exploration of regional cultural protection and development. To understand regional culture, we must first understand the concept and category of the region. There are also different understandings of regions from different angles [2]. Region is generally a geographical concept, which refers to a country or even a geographical location larger than a country. For example, China is a region and Northeast Asia is also a region: it can also refer to a region smaller than a country, such as a city, a district, township or town, or even smaller. The politics, economy and culture of human society are developed on the basis of regions. The characteristics of the region are its internal integrity, the objectivity and ambiguity of the space boundary, and the characteristics of self-contained system. The inherent integrity of the region is the embodiment of its own system. The objectivity and ambiguity of regional space boundaries refer to the objective existence of regional geography, but the exact boundary between regions is rarely seen. The region has an inner core boundary, and any demarcated region is a "spiritual concept composed of thinking" [3], and it is all hypothetical. And the region is also the unity of objectivity and subjectivity. The objective performance is the existence of objective differences in different regions, the visible objective boundary in the first level of geography, and the intuitive performance of the region is that the division of boundaries is subjective.

Regional culture refers to the geographical area occupied by different types of cultural patterns formed in the process of people's existence, which is also called cultural area. The concept of cultural area was put forward by cultural anthropologists with the purpose of distinguishing and studying the cultural differences in different areas. Cultural area refers to a unit with a unique unity function space in social, economic and political aspects, and a regional cultural complex with similar cultural characteristics. The digital work of regional cultural preservation, restoration and development requires a more complete guarantee, including more detailed research materials and documents. For this type of digital work, the current domestic related research is not systematic, but only a single technical research. Designers often use only limited materials and combine their own imaginations to

create designs, lacking a deep cultural basis. Regional cultural studies are two completely different studies from their conservation and restoration work. Research and conservation and restoration work are too isolated, and the sharing of resources between the two is not ideal. Before the design of the protection and restoration work, this research will conduct a certain in-depth study and excavation of the regional history and cultural context to which the regional culture belongs. It intends to improve the accuracy and completeness of the regional cultural display, and it is planned to form a creative theory centered on the excavation of regional culture and digital protection. In terms of regional cultural research, there are currently a large number of regional cultural research results from different perspectives at home and abroad for reference. Digital means to restore regional culture has now become a common basic means in the national cultural industry. There has been a certain accumulation of technology in this field, and there are many successful cases in the application for reference. The research of the former can directly provide powerful data and reference for the latter, but there is currently no practical theoretical data to connect between the two fields.

2.RELATED WORKS

The earliest researcher on foreign digital technology was an American, Claude Elwood Shannon (April 30, 1916-February 26, 2001), an American mathematician and founder of information theory. In 1924, Shannon in the United States proved the sampling theorem, also known as the Nyquist sampling theorem. In essence, the sampling theorem laid an important foundation for digital technology. In 1986, France made remarkable achievements in the use of digital technology to protect the culture of non-material regions, creating a historical precedent. In 1990, the "Digital Library Startup Plan" was implemented, which benefited from the American people's support for the digitalization of non-material regional culture [4]. Literature [5] proposed how to use multi-channel images to match the model cultural relics and then achieve visualization measures. UNESCO promotes the "Memory of the World" project. The digital development of non-material regional culture has been supported by countries around the world. At the same time, an advanced digital preservation method has been proposed to save lost documents day after day and year after year [6]. Literature [7] uses advanced digital technology to mobilize the enthusiasm of users and plays an important role in the restoration of regional culture. The "International Dunhuang Project" was formulated by the British Library. This project designed the existing materials in the library into a database format for the research of Dunhuang materials by relevant institutions in various countries [8]. The "American Memory" project has been successfully developed in the United States, and the regional culture of the United States for hundreds of years is fully displayed in this project [9]. Literature [10] uses an innovative system called motion capture, which belongs to the current research on digital technology. The three-dimensional reconstruction measures proposed in literature [11] were applied to the protection of intangible culture, to achieve the purpose of protecting the culture of intangible regions. "Memory of America" has uploaded nearly one hundred data databases on the network terminal, and nearly eight million related documents have used digital technology [12]. Literature [13] summarizes a market model that creates a digital archive of regional culture. Literature [14] applies traditional digital technology to modern digital education and teaching, and the final excellent results are obvious.

Research on the protection of digital cultural relics has been carried out, and some pioneering countries such as the United States have used digital technology to carry out this work. In history, the Louvre Digital Project is a famous example. Literature [15] carried out a digital exploration of "Virtual Kyoto", and the effect was remarkable. The above-mentioned digital technology is mainly applied to the restoration of non-material regional culture, and researchers have carried out technical research. However, we must strengthen the exploration of the technical application of non-material regional culture and the combination of deep cultural connotation.

The United States is a superpower, and its scientific and technological strength and economic strength far exceed those of other countries. Therefore, the U.S. government has a sufficient foundation for investment in the digital protection of regional culture. The "American Memory" program implemented by the United States will be used in all regional libraries across the country. Books related to American history are all digitized and open to the public [16]. The U.S. government not only digitizes regional culture itself, but also supports some commercial companies to do this. Commercial companies will certainly carry out some commercial activities in the process of digitizing regional culture, which is beneficial to the protection and dissemination of regional culture. The European Union countries have a long history and diverse ethnicities, creating a splendid regional culture. The protection work in EU countries is often set up by the government, and universities and scientific research

institutions carry out specific implementation [17]. Europe is the birthplace of modern universities, so it attaches great importance to the construction of digital heritage protection disciplines and the cultivation of talents. The European Union has established many international organizations, such as VAST (International Symposium on Virtual, Archeology and Document Heritage), VSMM (I Snow Virtual System and Multimedia Conference), CIPA (International Association for Architectural Photo Surveying and Mapping), EPOCn (European Initiative to Promote the Digitalization of Regional Culture) and other institutions have promoted the development of global regional cultural digitization [18]. Ordinary people in Japan have a strong enthusiasm for the protection of their own regional culture. The government only provides protection and support for national-level regional culture, and most of them are protected by Japanese non-governmental organizations themselves. The people's strong awareness of regional cultural protection has led to a large number of non-material regional cultural protection organizations, and they themselves funded digital protection work [19].

3.DIGITAL PROCESSING ALGORITHM OF REGIONAL CULTURE

Based on the operational principle of hash certification, through which, we can define a theory model of communication to carry out digital processing of regional culture through by the secure hash algorithm, the model is shown as figure 1.

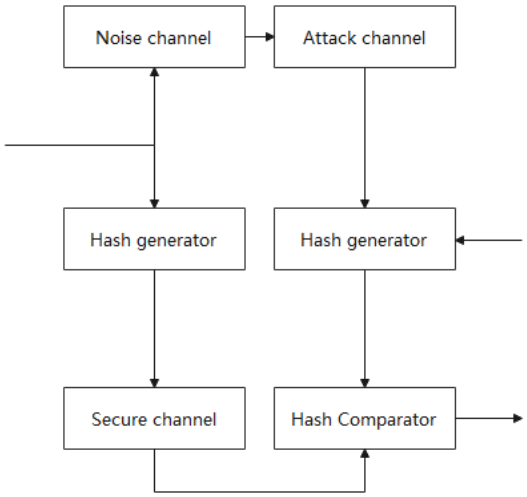


Figure 1 Theory Model of Communication of Hash Certification

As shown in Figure. 1, the theory model of communication of hash certification can be divided into three main components: source, channel, and receiver. Then theoretical analysis of each part is shown below.

The sending side of the object can be considered as the source side of hash certification. In the source side, the sender shall complete the generation of Hash Certification and sending operation of the certified object. The source is of the following instructions :

(1) Original Certification object -- In the communication models, multimedia certification objects can be assumed to be independent and equally distributed random variables, and all the certification objects belong to the set M.

(2) The Key k-- The additional information that is used in the certification system to increase hash security performance.

(3) The hash certification generator H-- certification object I, the security of hash is protected by the key k, and then the hash certification code v is obtained. The construction algorithm can be expressed as the following formula:

$$v = H(I,k) \quad (1)$$

(4) Certification Perception Hash V--is the certification information generated by the certification object using the hash generator.

There are two kinds of channels in the hash certification model, one is the public channel to sent certified object, the other one is the secure channels to realize the transmission of certified hash. It is generally considered that the public channels are composed of noisy channels and attack channels.

(1) Noisy Channels-- In order to simplify the analysis, all the noise interference in the certification system that will not effect processing and transmission(such as compression, filtering, noise addition, resampling, format conversion, etc.) is divided into noisy channels , and it is represented as one transfer process, and the certification object I is represented by X after passing through the noise channel[20]:

$$I \to x \quad (2)$$

(2) Attack Channels--The attack channel describes the potential link where the certification object may suffer a malicious attack in the transmission. It is an unknown process without any conditional constraints that has an impact on the results obtained by the certification system. It is represented as a transfer process:

$$x \to y \quad (3)$$

(3)Secure Channels--The secure channel describes the link in which the certification perception hash signal remains constant in the transmission

At the receiver of the model, the receiver needs to generate a detection hash of the received detected object and compare it to the received certification hash to determine the content authenticity of the detected object.

(1) Detection Object $\hat{I}$ --The signal that was eventually received.

(2) The Key k--the same Key k applied by source side is used to detect hash.

(3) Hash Detection Generator--Detection object $\hat{I}$,the Key k is used to keep the hash security, and the detection hash code V is obtained, the construction algorithm is the following formula:

$$\hat{v} = H\left(\hat{I}, k\right) \quad (4)$$

(4) Detection Hash $\hat{v}$ --Detection information generated by the detection object using the hash generator[21].

(5) Certification Result m--the multimedia certification m result is obtained by calculating the difference between the certification hash code and the detection hash code.

$$m = D\left(v, \hat{v}\right) \quad (5)$$

Where, the function D is the hash distance function. If $\forall \beta \in R$ is the judgment threshold for authenticity certification , R is the real number set, when m ≤ β, the certification object is trusted; when m> β, the certification object content is not trusted.

In the process of certification, the perception hash has the following properties:

(1) The Uniqueness of Perception Hash -- is also called collision resistance, which means that any two multimedia objects with different visual / auditory perceptual qualities have different perceptual hashes. The uniqueness of perception hash can be expressed by the probabilistic form below:

Set $\forall I_{\text{dlff}} \in M$., I_{dlff} and I are multimedia objects with different visual/auditory perception quality from , for a given minimum threshold $\omega \in [0,1]$, the probability of different perceptual hash codes generated by I_{dlff} and I shall make the inequality hold[22]:

$$P\left(H\left(I,K\right) \neq H\left(I_{dlff},K\right)\right) \geq 1\text{-}\omega \quad (6)$$

P represents probability, so as the following inequalities.

(2) Perception Hash Unidirectionality-- It is easily for multimedia objects to generate the perceptual hash, but it is extremely difficult to calculate the original multimedia object from the specified perception hash.The unidirectionality of certified hash can be expressed in probabilistic form as follows:

If a multimedia object I has a perception hash code V, it is difficult to calculate the original multimedia object I, so the generation process is irreversible. For the given threshold value q. the probability to use perception hash code V to calculate the original object I shall make the following inequality hold:

$$P\left(H\left(I,K\right)=v\right)\approx\frac{1}{2^q}\square\ 1,\ \forall v\in\{0,1)^q \quad (7)$$

(3) Perception Hash Security — --It relies mainly on key security that protects hashes.

In a perceptual hash-based certification, it is necessary to prevent an attack from computing the certification hash code using the intercepted certification object. If an attack has the ability to construct the certification code, it may construct a pseudo-certification object while keeping the certification code unchanged and trick the detector into reaching an incorrect certification conclusion. To prevent this "pseudo-certification" situation, the perceived hash key is required to have sufficient security. Currently, in perceptual hashes, obtaining the key to reconstruct hash is based on statistical analysis. That is, the attack conducts statistical analysis of the large number of intercepted multimedia objects and certified hash codes, to find the law of hash generation and estimate the system key. If the hash code is sensitive to changes of key in the construction of the perception hash, it is very difficult to estimate the key using statistical analysis. That is, the better the hash construction algorithm key sensitivity, the harder the attacker is to obtain the system key, the better the perceived hash security. The probability of perception hash security can be expressed as followed[23]:

Set $\forall k_1,k_2,\ k_1\neq k_2,\text{and}k_1,k_2\in K$ as the key space, then there are differences between the certification perception hash k 1and k2 constructed by multimedia I, the probability of differences shall make the inequality holds:

$$P\left(H\left(I,K_1\right)=H\left(I,K_2\right)\right)\approx\frac{1}{2^q}\square\ 1 \quad (8)$$

(4) Perception Hash Robustness -- the performance possessed by perception hash which has very little impact on the generated hash when an operation that does not affect the content. This operation may be caused by transmission processes such as channel noise, resampling, also it may caused by men, such as filtering, impaired compression, adding noise, data format transformation, etc. For the robustness of the certified hash can be expressed in probabilistic form as follows:

Set $\forall I_{ident}\in M$, I_{ident} and I are multimedia objects with different visual/auditory perception quality from , for a given minimum threshold $\theta_1\in[0,1]$, , the probability of different perceptual hash codes generated by I_{ident} and I shall make the inequality hold:

$$P\left(H\left(I,K\right)=H\left(I_{ident},K\right)\right)\geq 1\text{-}\theta_1 \quad (9)$$

(5) Perception Hash Sensitivity --means that the hash has such performance that hash is changed rapidly when the operation that affects the content occurs. The sensitivity of certification can be expressed in the probability form as follows:

Set $\forall I_{ident} \in M$, I_{ident} and I are the multimedia data generated after tampering, I_{ident} is changed compared with I.for a given minimum threshold $\theta_2 \in [0,1]$, ; the change probability of and perception hash generated by I_{ident} and perception hash generated by I shall make the inequality holds:

$$P\left(H\left(I,K\right) \neq H\left(I_{tamper},K\right)\right) \geq 1\text{-}\theta_2 \quad (10)$$

Based on the above analysis, the mathematical expressions of uniqueness and sensitivity of perception hash and is very similar. In fact, the uniqueness and sensitivity of perception hash stands for the differentiation ability of multiply content in different levels. The uniqueness stands for the differentiation of different certification hash codes with different content. The sensitivity reflects the hash changes when the multimedia changes occur. In order to demonstrate the relationships between uniqueness and sensitivity, the multimedia space model is built up for analysis, as figure 2.

In figure 2, the multimedia objects are considered as the points Ii. In the media space, there is a region CI(Ii) exists around Ii ,in which the content of all the points is similar with that of Ii. Outside of the region CI(Ii), there is a region CV(Ii), in which all the points are given by the changed Ii.All the points has been changed compared with Ii.

The uniqueness of perception hash is related with the differentiation between the content of media CI(Ii), such as the differentiation between the content of CI(Ii)and CI(Ii). However the perception hash sensitivity is related with the differentiation between CI(Ii)and CV(Ii). It is obvious that the key factors to judge whether the content of media is tampered in the system is hash sensitivity. The stronger the hash sensitivity, the better the change ability the system has to detect content tampering.

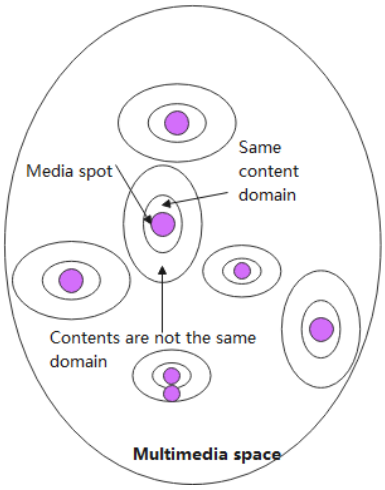


Figure 2 Multimedia Space Model

For perception hash certification, the hash performance determines whether the certification system can accurately achieve content certification. Certification accuracy is a key issue, and studying the conditions related to the accuracy of the certification system is a prerequisite for the design of the certification schemes. Next, this paper analyzes the impact of the performance of the perception hash on the certification accuracy.

In order to simplify the analysis of the accuracy of the certification systems, this paper introduces the concept of perceptual hash certification space. In certification, the perception hash function is regarded as a mapping from the multimedia space M to the perception hash space C that can be expressed as:

$$H : M \times K \rightarrow C \quad (11)$$

the formula, K stands for key space.

The perception hash space C includes perception hash code sets Θ and distance functions $d(\cdot,\cdot)$, which is expressed as (Θ, d).If the multimedia object I generates a perception hash v,namely v=H (I, k). The perception hash space corresponding to the multimedia space CI (I) containing I invariant content can be expressed as:

$$RD(v)=\{v'\,|\,v'=H(I',k),I'\in CI(I)\} \quad (12)$$

In hash space, the certification space I is consists of the media space CI(x) with unchanged content and the media space CV(x) with changed content. Which is called ND(v); it can be expressed as:

$$ND(v)=\{v'\,|\,v'=H(I',k),I'\in CI(x)\cup(x)\} \quad (13)$$

In most perceptual hash certification systems, the certification results are judged by computing the distance between the certification hash and the detection hash. If there is a point ρ exists in the hash space $d(\cdot,\cdot)$, then we take ρ as the the radius of the hash certification, so the trusted space AD(v) can be defined as follows:

$$AD(v)=\{v'\,|\,\mathrm{d}(v',v)\le\rho\} \quad (14)$$

In certification, if the distance from the detected hash to the certified hash is less than the certification radius, so we can determine that the certification object is trust-worthy. The mapping relationship between the multimedia space and the perception hash space C is shown in Figure 3.

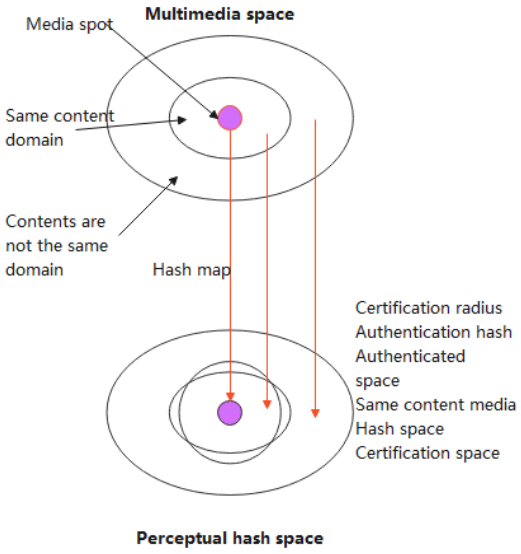


Figure 3. The Certification Space Model of Perception Hash

To analyze the certification accuracy of the certification system, the following two assumptions are given:

Z0 the media object is trustworthy

Z1 the media object is untrustworthy

According the two assumptions, it can be defined that there are two kinds of false probability:(False negative probability, Pfn and False positive probability,Pfp.

False negative probability(Pfn) stands for the probability when the trustworthy object is certified as untrustworthy; false positive probability,Pfp stands for the probability when the untrustworthy object is certified as trustworthy.Those two probabilities can be expressed by the two equalities as follows:

$$P_{fn}(I) = \Pr\left(d(v',v) > \rho \mid Z_0\right) = \frac{\left|RD(v) - AD(v) \cap RD(v)\right|}{\left|RD(v)\right|} = 1 - \frac{\left|AD(v) \cap RD(v)\right|}{\left|RD(v)\right|} \quad (15)$$

$$P_{fp}(I) = \Pr\left(d(v',v) \le \rho \mid Z_1\right) = \frac{\left|AD(v) - AD(v) \cap RD(v)\right|}{\left|ND(v) - RD(v)\right|} \quad (16)$$

Based on the space certification theory and the two false probabilities, the robustness R(I)and sensitivity S(I) of the hash certification system can of media I can be defined as follows:

$$R(I) = \frac{\left|AD\left(H(I,k)\right) \cap RD\left(H(I,k)\right)\right|}{\left|RD\left(H(I,k)\right)\right|} \quad (17)$$

$$S(I) = \frac{\left|ND(v) - RD(v)\right| - \left|AD(v) - AD(v) \cap RD(v)\right|}{\left|ND(v) - RD(v)\right|} = \frac{\left|ND(v) - RD(v)\right| \cup AD(v)}{\left|ND(v) - RD(v)\right|} = \frac{\left|AD\left(H(I,k)\right) - RD\left(H(I,k)\right) \cup AD\left(H(I,k)\right)\right|}{\left|ND\left(H(I,k)\right) - RD\left(H(I,k)\right)\right|} \quad (18)$$

The relations between both the robustness and sensitivity of the certification system and the false probability can be shown below:

$$R(I) = 1 - P_{fn}\left(H(I,k)\right)$$

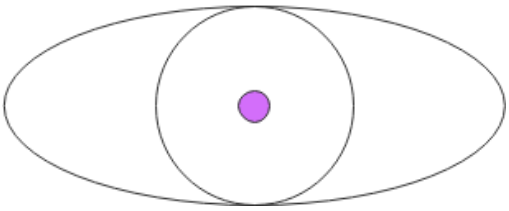
$$S(I) = 1 - P_{fp}\left(H(I,k)\right) \quad (19)$$

That is, the robustness and sensitivity of the certification system can be analyzed by false negative probability, Pfn and false positive probability,Pfp. The certification system is more robust when the probability of the false negative probability, Pfnis lower, and the better the sensitivity of false positive probability,Pfp.is .The better the robustness and sensitivity of the certification system, the better the accuracy of the certification.

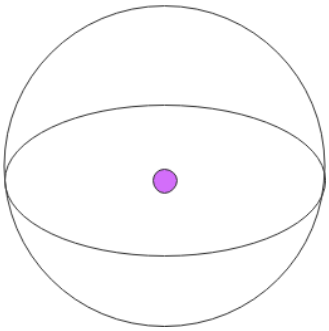
But in the practical design of certification system, it is difficult to meet the certification system with good robustness and sensitivity in the same time, which means false negative probability, Pfn and false positive probability exist always. It is because that the certification space RD(v) can't formed as a round space.While since the adoption of the same certification radius ρ,AD (v) is always a spherical space. When the certification system has optimal robustness, the system will not obtain the best sensitivity and vice versa.

If AD (v) is a subspace of RD (v), as shown in Figure 4 (a), the certification system will obtain the best sensitivity of S (x) =1, while the system robustness is $\left|AD\left(H(x,k)\right)\right| / \left|RD\left(H(x,k)\right)\right|$. If RD (v) is a subspace of AD (v), as shown in Figure 4 (b), the certification system will obtain the best robustness of R (x) =1 with a system sensitivity of

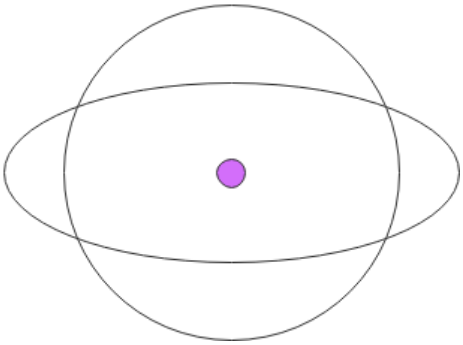
$$\left|ND(H(x,k)-AD(H(x,k))\right|/\left|ND(H(x,k)-RD(H(x,k))\right|$$



(a)Relationship 1



(b)Relationship 2



(c)Relationship 3

Figure 4 Robustness and Raution Relationship

Considering the integrated performance of the perception hash certification system, usually the relations between AD (v) and RD (v) is shown in Figure 4 (c), which can't achieve the optimal robustness and sensitivity at the same time. Based on the current needs of regional culture, the method proposed in this paper can basically meet the actual needs.

4.THE DIGITAL PROTECTION AND DISSEMINATION OF REGIONAL CULTURE

The digital protection information of regional culture includes two-dimensional information and three-dimensional information. Two-dimensional information protection means the digitization and computer archiving of text pictures and other information . Three-dimensional information protection means the audio and video recording of language art and non-language art . From the application status of digital protection technology, it can be mainly divided into the following categories: digital records (text, pictures, audio, video, etc.); reproduction of virtual cultural sites; reconstruction of cultural activities.

The protection of some regional cultures may include the simultaneous application of the above-mentioned types of protection technologies. After the text is collected, it needs to be digitally entered. There are two main forms. The first is bitmapped text. Simply put, it is the text in the picture format formed after the original book is photographed or scanned. The essence is an image. The text formed by the pixels. The advantage of bitmapped text is that readers can see the original text very intuitively and realistically. This method retains the original author's creative style and original author's personality. Through the bitmapped text, the author's strokes, structure and composition can be seen intuitively, so the books or calligraphy works handwritten by the ancients are very well preserved. So that later generations can read and learn. The second type is vectorized text, which is the text storage format commonly used in computers. Vector, as its name suggests, is all digital format. It is true text digitization. Since vectorized text is completely digital, the form of text arrangement and combination is also completely Defined by mathematical functions, the final display is also displayed by the computer based on a series of numerical operations. Therefore, vectorized text can easily change the display mode of the

text, such as the text in WORD, we can easily change the original text from Times New Roman to Hei, Microsoft Yahei, etc. Such changes will not destroy the original Data, just add some other algorithms on the basis of the original data. In addition, because the vectorized text is entirely in digital form, no matter how many times it is magnified, the display effect of a single text is the same, and once the bitmap is magnified, there will be obvious particles. The modification of the bitmap is a kind of destruction of the original data. The method cannot be restored once modified.

The collection of picture materials is divided into collection of pictures and on-site shooting. For the pictures that already exist, we can directly collect them through multiple channels. If the relevant website exists, we can copy them directly. If copyright issues are to be taken into account, You need to contact the person in charge of the website to purchase in a reasonable way. The pictures previously taken in the local library can be copied without loss. Save these acquired picture materials in the database of intangible regional culture. Of course, there are still many photos that cannot be obtained directly. We need to use a scanner or digital camera to wait to get the first-hand information on the spot. Compared with text, in the information age, people generally prefer to read pictures, and pictures give people more information. For example, it is reported that the trains in Bangladesh are very congested, and the newspapers use words to describe how many people are, not as good as photojournalists. A picture of is more convincing, so it is really worth a thousand words. In the protection of the intangible regional culture of Shengshan Island, the publicity of pictures is more effective than words.

There are many ways to obtain audio-visual materials. Depending on their source, they are generally downloaded from music CDs, or downloaded from relevant networks, or ripped. We can use a voice recorder to collect on-site, and then send the recording file to the computer, or use the original voice recorder function of the computer and plug in the microphone JxL to record the audio directly. For interview-style audio collection, because the interviewee has not been prepared beforehand, there will be a large number of errors in the content, which requires a lot of editing work in the later stage. In addition, interview-style recording is mainly for obtaining text, so there is no requirement for collection equipment. High, ordinary voice recorders can do the job. For performance-style audio collection, because the final result is a music file, it depends on the music to impress the viewer, so professional recording equipment should be used, and if necessary, it should be collected in the recording studio.

The acquisition of high-frequency materials usually requires acquisition equipment, such as a video camera, camera or video recorder, etc. It also requires a video capture card, a dedicated signal line, connect the external equipment to the computer, and cooperate with the corresponding tool software to finally form a system. The task of obtaining video information. Many valuable video materials need to be shot on the spot to turn the intangible cultural heritage from abstract text into an intuitive audio-visual experience, so that the audience can perceive the intangible cultural heritage more intimately and directly, thereby deepening the impression of the intangible cultural heritage in people's minds and triggering people's protection desire. Shooting videos at the scene, transforming intangible cultural heritage from abstract text to intuitive visual experience, requires a lot of valuable information to make the audience's perception of the intangible regional culture more cordial and direct, thereby enhancing the intangible cultural heritage among the people. The sensational impressions of people's desire for the protection of non-material regional culture. There are many ways to process video, mainly including three: video editing, video synthesis, and video compression. Video editing is to cut the previously recorded video material, and delete to make different scenes appear in a reasonable order. Video merging refers to adding transition effects, adding background music and narration. Compression is a step to facilitate storage after the completion of various processes.

As a visitor, he can't sense the existence of the database. You can only see the user interface. Every action in the user interface will mobilize the database and application program in the background to complete it. Figure 5 below is the structural system of the entire digital resource library.

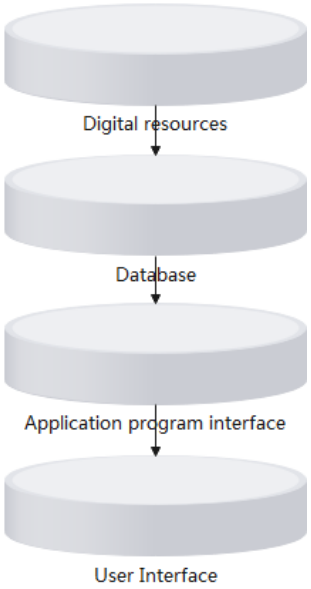


Figure 5.Digital Resource Library

The System Structure of the Entire Digital Virtual Museum of Regional Culture is Shown in Figure 6.

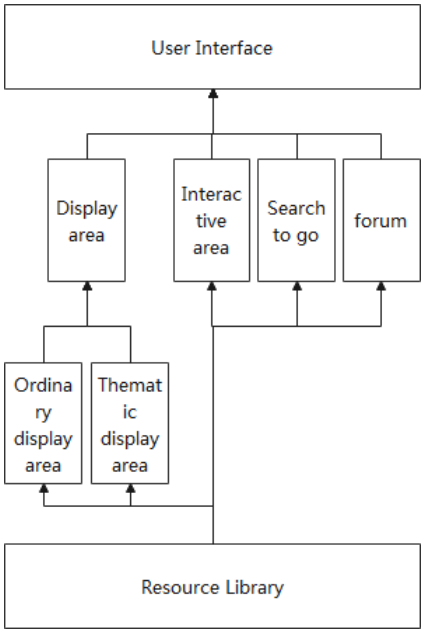


Figure6 system of Digital Virtual Museum of Regional Culture

Combined with the actual social situation, it is easy to find out that the operation mechanism of the digital protection mode of regional culture is a hierarchical, structured and networked complex process through deepened analysis. The overall system operation is related with many fields and every aspects. The system is composed of many factors and processes of feedback. By using the partially relevant knowledge of the system dynamics theory, we can find out that the operation mechanism of the digital protection mode of regional culture is a inputting and outputting system.The main protected body, hard environment and soft environment constitute a complete flowchart. When we are analyzing the model, we shall mainly pay our attention to the digital protection force, in order to improve the operation efficiency of the overall system through artificial intervention and regulation. The operation mechanism of the digital protection mode of regional culture is shown as below:

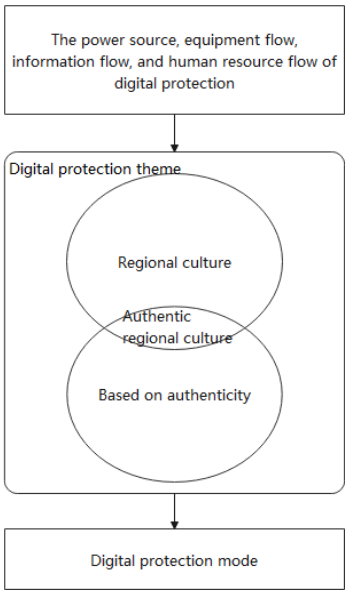


Figure 7. Mechanism Diagram of Regional Cultural Digital Protection Operation

5.CONCLUSION

The digital communication proposed in this paper is about using the form of virtualization to spread traditional culture , through which the regional culture has been shown to us in a vivid way. Also a corresponding scheme with operable process has been established to make the key interactive parts, to attract the those teenage users who know little about regional culture or some adult audiences. From a point of view, it is an extension of database communication. In this vivid way, regional culture is expanded from the scope of expertise to the public. In addition, it is also the most optional way to cut in the regional cultural database, which is in line with people's rational cognitive leap. The digital communication in regional culture will be the most important way to protect traditional culture with the continuous improvement of digital technology, and along with which the protection measures shall be improved gradually in the future.

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