

## Research Article

# Digitally Protecting and Disseminating the Intangible Cultural Heritage in Information Technology Era

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This paper studies the digital protection and dissemination of digital information based on intangible cultural heritage. The “digital era” is an important milestone, and there is no problem with the development of martial arts heritage. First, this paper explains that the development of the current martial arts heritage is not without drawbacks, for example, ecological marginalization and imperfect development. Then, the author of this study determined the benefits of combining incomplete martial arts technology with digital technology, and took the digital protection of Xingyi boxing as an example to explore its practice and specialize in digital protection. Then, the problems and procedures in digital protection are studied. Finally, with Xingyi boxing as an experiment, this form leads to separation. The experimental results show that, according to the full understanding of the status quo of nondigital defense culture, the protection measures to improve digital protection are put forward: determining the digital distribution process and writing models, completing knowledge presentation view, document creation, multimedia interactive platform development, and digital technology protection of public heritage, without any problems.

## 1. Introduction

An unhealthy culture is an important sign of the prosperity of human life. Intangible cultural heritage is an important feature for a country to identify itself. Preserving cultural heritage does not have to be popular. On May 20, 2006, the State Council issued an announcement, announcing the first batch of state-level cultural relic protection units, and the first announcement of 518 state-level cultural relics was not included in the list. The Ministry of Science and Technology also supports the National Natural Science Foundation and its research activities. The emergence and use of digital information provides an easier way to prevent illegal culture. With the development of science and technology today, it begins to change rapidly: on the one hand, international trade and media has changed through the progress of science and technology. Technology causes environmental damage to nonexistent and unsustainable heritage surrounded by new choices or death. On the other hand, the development of information technology, represented by information technology, modern communication, and virtual reality, has changed the way we protect culture, with laws and

nonprofit laws providing ample space for dissemination, storage, display of nonessentials, income, and culture; quickly gaining the international recognition, Chinese culture is very good. In recent years, great attention has been paid to the digital protection of cultural heritage. The introduction of various policies and regulations and the use and application of professional resources have provided support for the prevention of illegal cultivation. However, different scholars study the importance of cultural heritage and digital conservation from different starting points, leading to many issues such as the law of valuable recovery and even digital conservation being taken into account [1]. It enables scholars to distinguish between the needs of culture and the needs of efficiency.

At present, the research on digital conservation of heritage resources generally focuses on three aspects: basic research, professional research, and applied research. The basic research generally focuses on the theoretical principles and principles of the digitalization of intangible cultural heritage in order to provide theoretical support for the practice of intangible culture. The professional research focuses on the technology involved in the digitization of

intangible cultural heritage and provides support for it. The applied research only focuses on the complete application of nondigital application resources (such as database and APP system) [2]. For example, the transformation of intangible cultural heritage, reproduction, and recovery into digital form can be shared and renewable, from a new angle to define, keep it in new ways, and use it in the new requirements [3].

The rest of this paper is organized as follows: in Section 2, the literature review for this study is presented; in Section 3, the proposed methodology for digital protection and dissemination of intangible cultural heritage is presented; in Section 4, the case analysis about various experimental results is presented; and in Section 5, the conclusion of this study is presented.

## 2. Literature Review

According to Liu, from the current research on the digital protection of illegal cultural heritage, there are still some problems in digital protection and dissemination and in important characteristics of intangible cultural heritage [4]. Zeng and Dong studied the digitalization of intangible cultural heritage, the digitalization of intangible cultural heritage protection, or the digitalization of heritage and living species. In particular, the use of technology raises higher requirements: Can technology improve and partially replace the legacy processes of property such as nonverbal assets, self-expression, and understanding? Can information technology repair or reconstruct the cultural and cultural meaning of incomplete technology? Can technology provide future research and decision-making for the protection and improvement of intangible assets? As shown in Figure 1, problems encountered in the digitalization of intangible cultural heritage can be intuitively explained [5].

To address these issues, it is important to consider digital data and conduct more rigorous research to address the impact of digitization on information technology protection and dissemination. On the contrary, research shows that digitalization of intangible cultural heritage refers to unresolved problems in the practice, protection, and inheritance of intangible culture in the context of existing digital knowledge [6]. For example, can digitization address the accuracy and precision of capital investment? On the contrary, from the perspective of digital technology of cultural heritage, is there any research and technological development to solve the above problems? What issues need to be cracked? What new procedures and standards can promote the protection and preservation of cultural heritage? In recent years, Xie and other scientists have done a lot of research on the digitalization of nonmetallic heritage. These studies provide macro and micro insights and conduct in-depth studies on digitalization theory, digital technology, and issues involved in platform design and development, laying a foundation for effective research on the digital protection of intangible assets [7]. Guo and others are trying to develop the digital protection of cultural heritage. On the basis of observing the good culture of digital heritage protection, the improvement of digital protection and the

ability to use digital technology of national defense equipment are implemented. The assets include technology, infrastructure, technology management, technology scene, technology visibility, communication, and support [8].

Zhao focused on data design and explored theoretical issues of database design, bringing the legacy that could not be based on critical research, and discussed theoretical issues of inheritance failure through the perception of distributed database data and core metadata [9]. Liu et al. discussed the concept of nondigitalization of heritage from the aspects of information perception, digital literature dissemination, and nondigitalization characteristics, involving the three dimensions of coding, abstraction, and diffusion of data source theory, and analyzed the problems of intelligence, semantics, and expression to solve the problem of showing false cultural heritage. These studies have taken into account both the whole and the parts, explored digital protection from various levels and angles, and laid a theoretical foundation for many future thematic studies [10]. Zhou et al. believed that libraries and archives are important cultural protection and preservation centers, and the role they play in the digital protection of cultural heritage is not important. As a result, the learning circle also discussed the relationship between libraries, archives, and digital conservation, and provided advocacy and tips on how to make libraries and information centers play an important role in the digital protection of cultural heritage [11]. Monga discussed the use of methods, and protected libraries and data stored in digital protection by protecting unusable property resources, the use of network resources, data collection, digital development, resource utilization, advertising and education, and providing access to libraries and archives [12].

## 3. Proposed Method

The use of digital resources and governance models can play an important role in protecting intangible assets. By applying the benefits of modeling, digital resource and management models can not only be used uncompromising for heritage production and conservation, but also play an important role in supporting the publication of digital conservation of untrusted heritage [13]. The digitalization of intangible cultural heritage, based on its efficiency and protection ability, has become an important part of cultural conservation without compromise.

At the same time, the digital preservation of unreliable heritage has also aroused interest. As shown in Figure 2, a large number of textbooks have been published, showing a positive growth trend. By 2014, the number of nondigital cultural protection-related data reached 108, a new high. As shown in Figure 3, activities are themed as “digitalization of intangible cultural heritage.”

As shown in Figure 4, while the digital protection of intangible cultural heritage attracts students, the storage space and resources in the digital protection of intangible insect cultural heritage are also very rich, which also play an important role in cultural research. The artistic value of intangible cultural heritage also shows that both national development and scientific research are paying more

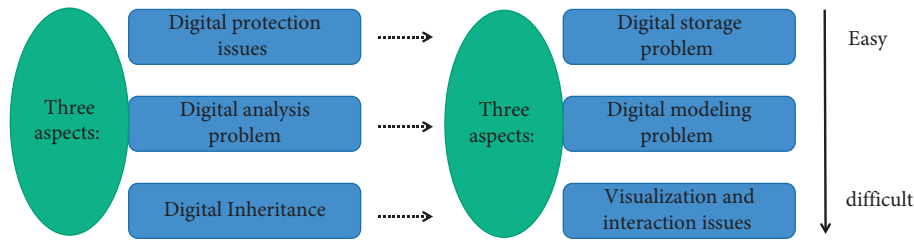


FIGURE 1: Intangible cultural heritage digitization.

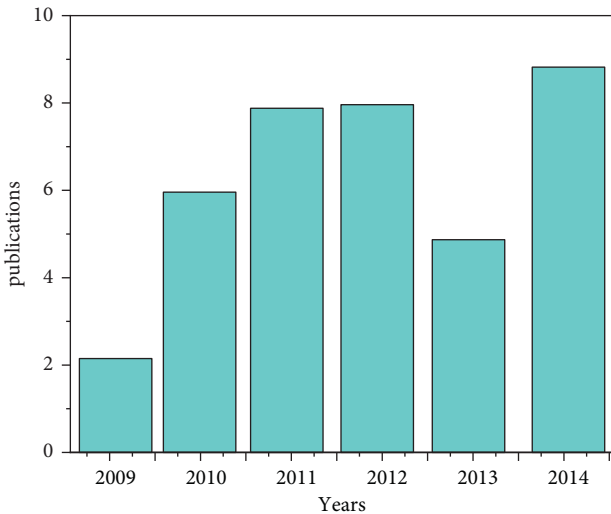


FIGURE 2: Digitization of intangible cultural heritage (distribution map of the number of NSFC projects).

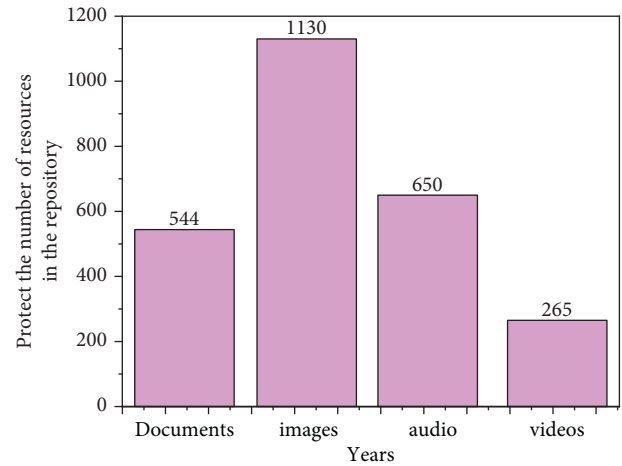


FIGURE 4: Statistics of warehousing resources for the digital protection of intangible cultural heritage.

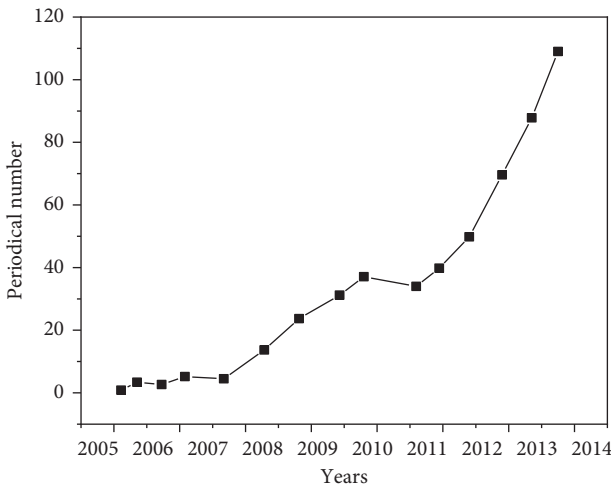


FIGURE 3: Academic development trend curve of intangible cultural heritage journals.

attention to digital protection in low-income areas. It can be seen that both people and education attach importance to the use of digital heritage, and digital protection has become a new field of cultural protection, which is related to nontraditional rights.

Until now, the goal of digital protection has been to make the technology more stable. Digitalization of intangible cultural heritage is not only the basis of intangible

cultural heritage research, but also an important premise of traditional protection of intangible cultural heritage. Among them, noncultural heritage is the key to digital protection. Federal and territory governments have always attached great importance to heritage development. National and national intangible cultural heritage databases cover intangible cultural heritage census database, intangible cultural heritage project resource database, intangible cultural heritage thematic resource database, scientific research database, and public database, which can meet the needs of different users. Each city, state, and municipality has developed a range of illegal heritage and local features. Table 1 is the statistical data of noncultural new forms of Chinese public museums at that time. Table 2 summarizes the new types of noncultural relics in Chinese public museums.

In the era of cloud computing and big data, digitalization and information sharing cannot become the culture of the big Internet era. The collection and utilization of a large number of cultural data and information will become an important cultural foundation and innovation platform. The effective use of its basic information will become a link between the needs of modern people and history and culture. On the one hand, the digital protection of intangible assets depends on the continuous exploration of digital technical means, which is an important factor for the digital protection of the place. On the other hand, digital conservation should be an important part of protecting unprotected culture and heritage. The miracle is the weakness of its growth and prosperity. For

TABLE 1: New data of intangible cultural heritage of China Folk Art Museum.

China Folk Art Museum	Quantity	Nature
Clothing Museum	2429	Newly added
Paper-cutting Museum	3558	Newly added
Facebook Tube	2447	Newly added
Shadow play hall	2254	Newly added

TABLE 2: Updated data of intangible cultural heritage in China.

Category	Quantity
Bronze ware	3330
Jade article	1208
Ceramic ware	5014
Lacquerware	2524

nondigital heritage, this work is more demanding and demanding of skills. Digital skills of intangible cultural heritage require cultural and scientific knowledge. They need to be well-versed not only in computer science, design, and communication technology, but also in cultural heritage to complete all the remaining nondigital capabilities on their own. Table 3 shows the personnel composition of heritage protection capacity of some cities in the region.

The digital protection of unsustainable heritage is a labor-intensive task that requires a team of highly skilled developers. Not only must they be able to produce strong data, but they must also have knowledge of the nonprofit culture and be able to manage it well. According to the current scarce application and development needs of digital heritage protection and the actual situation of low efficiency and lax control of regional cultural protection, the training of professionals in the protection of illegal cultural heritage should be intensified, and the skills and training of the protection of illegal cultural heritage should be expanded. The protection of noncultural environment by staff is the key force of the digital protection of cultural heritage.

*3.1. Knowledge Management Model of Intangible Cultural Heritage.* The ontology-based knowledge management model can effectively solve the problems of knowledge acquisition, storage, sharing, retrieval, and reuse. The ontology-based intangible cultural heritage knowledge management model mainly includes four levels: metadata layer, ontology layer, association layer, and application layer. Figure 5 presents a complete intangible cultural heritage semantic resource description and management model.

In this model, metadata defines the meaning of data and is the description of data. Metadata standards can comprehensively record the content and external characteristics of intangible cultural heritage digital resources, while the concepts, relationships, and attributes in domain ontology need to be standardized and described by metadata [13]. However, metadata cannot solve the heterogeneity and semantics of resource description, so it is necessary to map intangible cultural heritage

metadata by constructing a knowledge ontology model to realize the semantic interoperability between different metadata. Although the basic semantics of intangible cultural heritage resources established through the ontology layer reveals the explicit relationship of resources, it cannot communicate with other resources and relevant external information, and cannot be directly browsed and accessed by users [14]. Therefore, the ontology needs to be organized in the form of associated data to form a unified whole of organic connection. The associated data layer can associate intangible cultural heritage knowledge units at the semantic level by establishing connections between ontologies in different fields, so as to provide the basis for other semantic interoperability applications such as knowledge retrieval, browsing, and visualization [16].

The “nonproductive” attitude in the name of intangible cultural heritage confirms its recording behavior: intangible cultural heritage is a statement and document subject engaged in a special form. The existence of unproven property is separate from the carrier’s property, or it costs more than the carrier to ship the goods. The original environment of intangible cultural heritage can be said to be a special carrier, carrying a special form of cultural heritage. From a data perspective, immaterial assets are data generated in a nondata publishing environment. While environmental performance data are great, it faces the challenge of changing the way we live in our new environment. At the operational level, the use of modern media to report historical and cultural falsehoods needs to maintain its original characteristics in a new environment [17].

Intangible cultural heritage is an important part of spiritual civilization. The application of intangible cultural heritage semantic resource description and management model can demonstrate the feasibility of the model through specific intangible cultural heritage application examples. Taking the intangible cultural heritage of “fur stitching technology” as an example [18], fur stitching technology itself has high historical value, cultural value, and artistic value. In the fur stitching technology, the knife drawing process is an important process for the stitching of fur fabrics. This process refers to cutting a certain number of knives on the fur material according to a certain angle, and rearranging the cut sliver according to a certain size, so as to change its length and shape to meet the needs of garment stitching. The process is divided into general knife drawing process, diagonal knife drawing process, knife dividing process, knife drawing deformation process, wool pouring knife drawing process, double-sided knife drawing process, etc. With the progress of science and technology, there is an urgent need to promote the integration of traditional fur industry and modern science and technology. There is an urgent need to carry out digital construction of traditional knife drawing technology to meet the technical needs of innovative design of fur clothing. The knife drawing process can change the length and shape of fur, and its basic principle can be deduced by the mathematical formula [19].

The fur treated by the knife drawing process is rearranged into a parallelogram with increased length. Suppose the original width of fur  $AC = BD = EF = h$ , the cutting width of top  $AH = h$ , the cutting angle  $\angle ACH = c$ , the number of drawn knives  $n$ , and the wrong knife amount  $KH = k$ . According to the cosine theorem (1):

TABLE 3: Personnel composition of intangible cultural heritage protection institutions in some urban areas.

Company	Total number of personnel	Junior college or below	Undergraduate	Graduate and above
Museum of Zhuang Autonomous Region	125	49	41	35
National Museum	214	84	95	35
Intangible cultural heritage protection center	22	11	5	6
Guilin Intangible Cultural Heritage Protection Center	6	5	0	1
Baise Intangible Cultural Heritage Protection Center	5	1	4	2
Youjiang District Cultural Center	9	6	3	2
Tianlin County Cultural Center	9	6	2	1

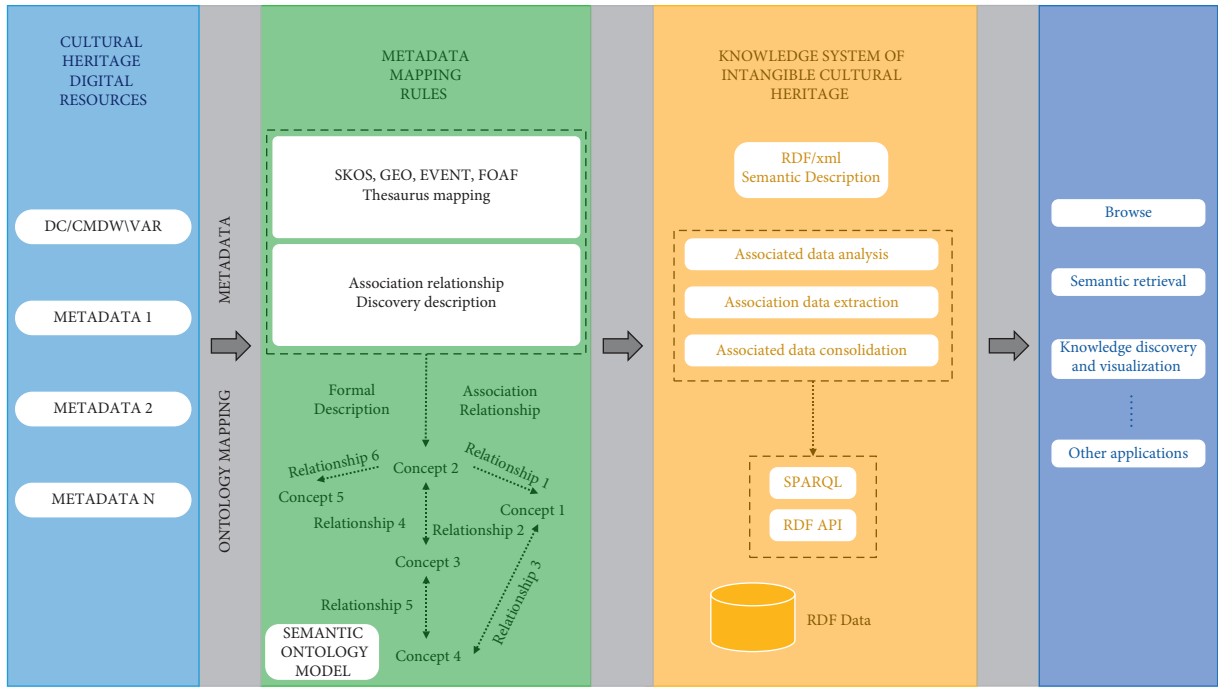


FIGURE 5: Description and management model of intangible cultural heritage semantic resources.

$$AK^2 = AH^2 + KH^2 - 2AH \cdot KH \cdot \cos(180^\circ - \theta) \quad (1)$$

$$= h^2 + k^2 + 2h \cdot k \cdot \cos \theta,$$

$$AK = \sqrt{h^2 + k^2 + 2h \cdot k \cdot \cos \theta}, \quad (2)$$

where  $h = w / \tan \theta$ , then

$$AK = \sqrt{k^2 + \left(\frac{w}{\tan \theta}\right)^2 + 2 \cos \theta \cdot k \cdot \left(\frac{w}{\tan \theta}\right)}. \quad (3)$$

If the fur strips are rearranged and assembled after cutting, the side length of the fur is given by the following equation:

$$AE = n \cdot AK, \quad (4)$$

$$AE = CF = n \cdot \sqrt{k^2 + \left(\frac{w}{\tan \theta}\right)^2 + 2 \cos \theta \cdot k \cdot \left(\frac{w}{\tan \theta}\right)}. \quad (5)$$

According to the Pythagorean theorem  $CH = \sqrt{w^2 + h^2}$ .

$$CK = CH + KH \sqrt{w^2 + h^2} + k = EB, \quad (6)$$

$$FG = EJ = \left(\sqrt{w^2 + h^2} + k\right) \cdot \sin \theta.$$

The maximum usable length of fur after splicing is given by the following equation:

$$CG = \sqrt{CF^2} + FG^2. \quad (7)$$

Through mathematical derivation, the equations of the side length of the fur treated by the knife closing process and the usable length of the fur after splicing are constructed. After the partial differential derivation of the equation, combined with the shape of fur and setting the boundary conditions, the parameters such as the angle of cutting oblique line, the number of cutting knives, the amount of dislocation, and the width of fur can be calculated, so as to maximize the utilization rate of fur. Therefore, it is conducive to the establishment of mathematical model of fur

drawing and splicing technology [20]. With the establishment of mathematical model, in the process of realizing the digital protection of intangible cultural heritage, the construction of database is also needed to further improve the actual effect of digital protection and dissemination of intangible cultural heritage. On the premise of establishing the digital model database, the classification of Nanjing Lukou traditional fur-making process after recording according to key words is mainly as follows:

- (1) Processing technology of fur raw materials: saltpeter, bleaching, and dyeing (bleaching, monochrome bleaching and dyeing, and gradient bleaching and dyeing), spray dyeing, printing, wool layer treatment, etc.
- (2) Basic fur-making process: fixing materials, matching leather, opening leather, nailing leather, cutting leather, sewing leather, setting treatment, etc.
- (3) Conventional production process of fur: design, paper pattern, sample clothing, sample, board repair, material calculation, basic material production, garment making, ironing, lining, hand sewing, finishing, etc.
- (4) Fur fabric splicing process: knife drawing process, "leather adding" process, "original cutting" process, "half cutting" process, "flower inlaying" process, etc.
- (5) Special processes of fur materials: wave process, tassel process, scarf process, hollowing process, bricklaying process, twisting process, stretching process, interphase process, weaving process, inlay process, double-sided process, fish scale process, mesh process, convex process, pore process, etc.
- (6) Composite technology: fur leather technology, fur knitting technology, fur trimming technology, and fur jewelry technology.

The structural design of fur clothing should not only consider the characteristics of leather sheets, but also perfectly show the temperament, fashion trend, and body shape characteristics of the wearer through the change of structural design [21]. The digitization of the extraction process helps to improve the utilization rate of leather sheets. It is necessary to comprehensively calculate the parameters such as the angle of the cutting oblique line, the number of cutting knives, the amount of dislocation, and the width of the pimp, so as to better meet the needs of the inheritance and protection of the process. The construction of the process database is conducive to the inheritance and development of fur-making skills, expand the design ideas, integrate advanced technology, and grasp the clothing psychology of consumers.

*Digital Protection and Broadcast Resources.* Without resorting to digital information and digital resource management standards to achieve the protection of equipment research, property is priceless. In this way, more research can be used to reduce the impact of multiple human or noncritical goals on the inefficiency of heritage in order to achieve the benefits and protection of intangible cultural heritage [7].

*3.2. Overview of Wushu Intangible Cultural Heritage.* The analysis and statistics of the national intangible cultural heritage list of Wushu are shown in Table 4.

It can be seen from Table 4 that the national-level projects of Wushu intangible cultural heritage are distributed in the central and southern regions of Shanxi Province, including Fenghuo meteor, sheep scratching competition, Xinyi boxing, Xingyi boxing, and back winding boxing. There are a large number of National Wushu intangible cultural heritage. At present, there are inheritors and protection units of corresponding projects in all regions.

As can be seen from Table 5, at present, there are few representative inheritors of national representative Wushu projects, and most of them live in the Jinzhong area. It can be seen that the project foundation in the Jinzhong area is good, while the projects in other areas need to be developed. In general, the martial arts project should also be developed continuously and deeply, so as to breed more excellent inheritors of intangible cultural heritage, which can add strength to the protection of intangible cultural heritage of martial arts [22].

According to the traditional folk customs and administrative division of the province, it is divided into northern Shanxi, central Shanxi, southern Shanxi, and southeastern Shanxi. After collecting and summarizing, Table 6 summarizes the spatial distribution characteristics and quantity of Wushu intangible cultural heritage.

It can be seen from Table 6 that the regions where the intangible cultural heritage of Wushu is located are uneven, and there are more in central Shanxi than in southeast Shanxi. Jinzhong has the largest number of martial arts intangible cultural heritage. This is closely related to the economic and cultural development of the Jinzhong area. The Jinzhong area is rich in silk and coal mines. During the Ming and Qing dynasties, most businessmen circulated their goods to other places, forming a local unique Shanxi Merchant Culture. Since ancient times, it has a superior geographical location and environment, and there are a large number of long-term preserved martial intangible cultural heritage.

At present, the inheritance and development of Wushu is not optimistic and full of difficulties. On the one hand, the development space of Wushu has changed, and on the other hand, the reduction in inheritors has also increased the difficulty of inheriting Wushu intangible cultural heritage [23].

Wushu has the characteristics of dynamics and variability. The same type of boxing is practiced by different boxers. Due to personal physical conditions, comprehension, and teacher inheritance, the style and charm are more or less different, so the current Wushu is quite different from that of many years ago. As early as the last century, the protection of intangible cultural heritage began. The preservation process mainly adopts the methods of book recording, recording, and so on. This also makes many precious resources preserved and recorded, which provides a real record for the protection of Wushu intangible cultural heritage. However, with the advent of the new era of the 21st century, the progress of science and technology, and the

TABLE 4: National list of martial arts intangible cultural heritage.

Project	Item number	Reporting region or unit
Wind/fire meteor	VI-52	Taiyuan
Scratch sheep race	VI-41	Xinzhong
Xinyi boxing (second batch)	VI-29	Jinzhong
Xinyi boxing (the third batch)	VI-29	Qi County
Xingyi boxing	VI-26	Taigu

TABLE 5: Representative inheritors of representative projects of national intangible cultural heritage.

Full name	Xinyi boxing	Item number	Declaration area
Liang Xiaofeng	Xingyi boxing	VI-29	Jinzhong
Guang Hua Song	Xinyi boxing	VI-26	Taigu County
Mu Jinqiao	Wind/fire meteor	VI-29	Qi County
Jia Tiancang	Scratch sheep race	VI-52	Taiyuan

TABLE 6: Spatial distribution characteristics and quantity of Wushu intangible cultural heritage.

Region	National level	Provincial level	Municipal level	Total
Jinbei	1	1	2	5
Jinzhong	4	14	13	33
Jindongnan	0	2	1	5
Jinnan	2	9	7	10
Total	7	18	25	54

rapid development of the times, such preservation means are not suitable for development and preservation. When a large number of martial arts image materials are preserved, higher requirements are put forward for their storage and recording. Hand-drawn records, book records, and other ways will face the dilemma of disappearance and damage if they are old. Therefore, it is the most urgent thing to quickly find a more effective way of protection. Martial arts intangible cultural heritage urgently needs to be properly placed.

The digitization of Wushu intangible cultural heritage is based on information technology, using some digital operation means to collect and digitize Wushu intangible cultural heritage resources, so as to achieve sharing, and provide basic guarantee for the restoration and display of Wushu intangible cultural heritage. The digital products formed are more communicable and efficient. The propagation rate is very high, which greatly facilitates people's access and learning. The application of digitization has shortened the distance between a variety of intangible cultural heritage and people, provided more efficient communication, widened the platform and space, and then promoted the dissemination of Wushu intangible cultural heritage.

#### 4. Case Analysis

Xingyi boxing has developed for more than 400 years, but the development is slow, the number of people practicing is

less and less, and the martial arts atmosphere is weakened. According to the investigation and research, especially in the youth stage, the number of people practicing Xingyi boxing is small, and most of the people in the practice stage are the elderly. There are a large number of people practicing at this stage, which is inseparable from the characteristics of Xingyi boxing. It can promote the metabolism of the body, can maintain the body and mind, and has a strong health preservation function. The high unity of form and meaning can promote physical and mental pleasure and health improvement. However, the majority of elderly practitioners are not a good phenomenon, because the lack of successor strength will lead to the phenomenon of no successor, which is a great challenge to the inheritance of Xingyi boxing.

The survey shows that Xingyi boxing practitioners have changed the phenomenon of more men than women, and the number of women has increased, indicating that the custom of "passing on men but not women" of Xingyi boxing has gradually faded. Most women also join the practice team. In traditional Wushu practice, gender discrimination has not intensified with the development of society, and the proportion is more coordinated. The reason is that with the improvement of people's living standards, men's family responsibilities increase and they do not have more time to participate in practice. The lack of inheritors of Xingyi boxing is a common phenomenon. Most teenagers are committed to their studies and lack the inheritance of the development of traditional Wushu, which leads to the phenomenon that Xingyi boxing has no successors from time to time, which is unfavorable to the development of Xingyi boxing and the protection of archival resources. Xingyi boxing can be roughly divided into nongovernmental organizations and governmental organizations. Spontaneous organizations are generally nongovernmental Wushu associations. They will also have their own time and place of activities, but they are not fixed and uncertain. The activities organized by the government will have a fixed time and place, and the government will also provide some activity funds and hold some competitions.

The digital protection of Xingyi boxing can greatly broaden the protection path of Xingyi boxing. No matter what kind of background and form of expression, it can be spread and displayed, and can display diversified Wushu. Digitization is a new form of intangible cultural heritage protection, which follows the trend of the digital era and gives full play to the maximum display effect. Different people practicing Xingyi boxing will show different shapes and forms, so it is also a big challenge for digital protection. However, the digital inclusiveness can just adapt to the diversification of Xing Yi Quan. No matter how many forms of Xing Yi Quan, it can be collected, stored, and processed according to the information, and finally build a database for sharing.

Digital technology is of great significance for the digital protection of Xingyi boxing archive resources. It has the characteristics of strong protection, strong effectiveness, fast update speed, and wide dissemination. This has a great effect on the effective record and rapid development of Xingyi boxing. With the changes of the times, the development of

Xingyi boxing can also keep up with the pace of society. However, the combination of digital technology and Xingyi boxing archive resources is low, the digital technology is imperfect, the construction of resource database is not systematic, and there are loopholes in the terminal service system. Technical support is not available, and it is difficult to implement digital protection in a large area. The awareness of cultural participants is not enough, the popularity is not strong, the publicity is small, and the legal system is weak.

The reason is that the digital technology is not perfect, the government support is not strong, the individual and collective understanding of information is still small, the inheritor is missing, and the relevant protection units pay little attention to it. More research scholars only pay attention to qualitative analysis, small-scale research, and few substantive in-depth research, and pay more attention to the legal measures designated by the state. There are few practical suggestions, one-sided and un-systematic analysis. In addition, the practice method of Xingyi boxing itself is boring. Compared with the current diversified life, it cannot meet the spiritual needs of people's life. Therefore, most young people still choose the latter, resulting in fewer and fewer young people studying this aspect, and the development prospect of Xingyi boxing will be very slim. In addition, with the continuous influx of foreign Western culture, it will increase the difficulty of the digital protection of Xingyi boxing.

As shown in Figure 6 above, a questionnaire was randomly distributed to students, young people, and the elderly in Taigu. The survey found that Taigu Xingyi boxing has a deep-rooted influence, which is passed down from generation to generation, and the phenomenon of passing on men to women is very serious. Except that there are more women in the elderly population, most of the inheritors and disciples of other groups are men, so this also has a great impact on the development and dissemination of Xingyi boxing.

The application of digital technology in intangible cultural heritage is less, and the system is not fully mature. Generally, the basic information of the inheritor (name, age, native place, inheriting sect, inheriting time, etc.) is recorded for the text data of Xingyi boxing, which is mainly stored and displayed by images and network platforms. With the rapid development and replacement, digital technology is also maturing and improving. We should not only use the existing technology, but also use innovative methods to realize the adaptive integration of digital technology and intangible cultural heritage, build the corresponding digital database, and realize the process from single text and picture digitization to three-dimensional digitization.

*Data Acquisition.* The collection of information mainly focuses on the information of inheritors and the development of Xingyi boxing. We sort out the current development data of Xingyi boxing, record in detail, classify into categories, conduct in-depth analysis and exploration,

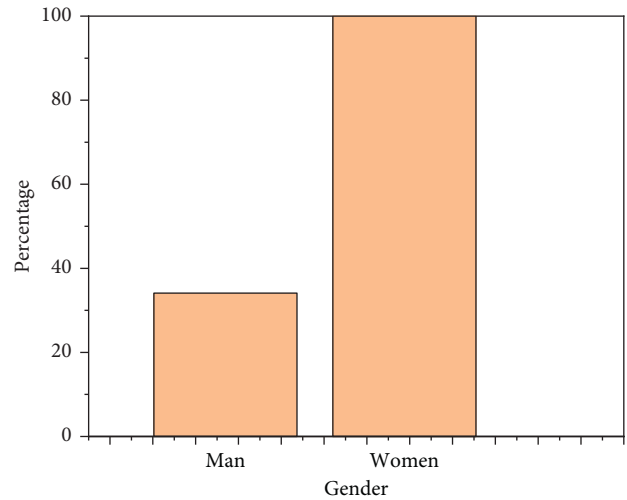


FIGURE 6: Male/female ratio of Taigu Xingyi boxing practice.

electronize the text data, digitize the sound signal and electronize the photograph data, and reasonably use the three-dimensional imaging technology and three-dimensional technology for collection and preservation.

*The storage technology of data information.* We classify the digital information collected from Xingyi boxing archives, establish the corresponding documents of each digital information, and build the resource database according to different moves of Xingyi boxing. Attention shall be paid to ensure the integrity of data without missing or omission.

*Digital Management.* The collected and integrated information resources are very valuable. Its information security needs to be protected. To prevent data loss and data tampering, it is necessary to provide convenient information query and retrieval procedures, increase antitheft measures, and strengthen data security.

In short, in the modern society and the digital age, using digital means to protect Taigu Xing Yi Quan's archives resources is not only the requirement of the times, but also the inevitable trend of the development of national culture, which will also improve the development of local culture.

## 5. Conclusion

Digital protection is an organic combination of high technology and low capacity technology, which provides the ability of integrating digital resources for modern technological life. It can be said that digital protection provides new ideas and improvements through data development, motion-sensing technology and virtual reality research, and big data analysis. The guidelines for cultural protection are invalid and become a new source of illegal cultural protection. Technological progress has changed the protection of illegal culture and heritage. The protection of cultural heritage conflicts is different from the protection of cultural heritage. The fluidity of



data dictates that the use of unprotected cultural heritage should create a robust, dynamic, and self-sustaining environment. Whether it is data processing, intelligent application of digital technology, or big data analysis, digital protection is not only a platform to record, preserve, and disseminate the intricate cultural heritage, but also provides a new way for the inheritance, innovation, and development of intangible cultural heritage. It can be predicted that with the modernization of digital technology, digital protection will provide stronger support for the protection and inheritance of technology. However, while focusing on the development of cutting-edge technology, we need to go back to the basis of cultural heritage and find the combination of technology and culture.

In essence, this combination reflects the positive interaction between digital technology and ownership of heritage and nonconforming assets. As the heritage culture is not valued, the inheritors and owners of the heritage cannot become important protection bodies, especially for industry in everyday life. At the same time, perhaps digital conservation may decide that the combination of digital technology and cultural conservation is useless.

## Data Availability

No data were used to support this study.

## Conflicts of Interest

The author declares that there are no conflicts of interest regarding the publication of this article.

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