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Numerical Protection Analysis of Shen Xiu Intangible Cultural Heritage Based on Software Definition Technology

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Abstract

The role of numerical protection analysis in the digital protection of Shen Xiu's intangible culture has changed the numerical value of Shen Xiu's intangible culture and made the digital protection of Shen Xiu's intangible culture a hot spot. However, in the process of numerical protection of intangible culture in Shen Xiu, there are some problems, such as poor digital collection effect and small amount of digital processing data. The main reason is that the traditional way of oral transmission and heart-to-heart transmission limits the development of digital numerical protection of intangible culture in Shen Xiu. Therefore, this paper proposes a digital protection method for Shen Xiu's intangible culture based on software-defined technology and plans the characteristics of Shen Xiu's intangible culture with different values. First of all, the data of Shen Xiu intangible culture in Shen Xiu are collected by software-defined technology, and the data of different values are summarized by software-defined technology, and the numerical division of Shen Xiu intangible culture is carried out according to the characteristics of Suzhou embroidery, leaving common characteristics. Then, according to the software-defined technology, the protective communication of numerical protection is carried out to promote the integration of the characteristics of Shen Xiu's intangible culture. The results of numerical protection analysis show that software-defined technology can improve the numerical extraction level of Shen Xiu intangible culture, promote the development of digital numerical protection of Shen Xiu intangible culture by using software-defined technology, and meet the requirements of numerical protection of Shen Xiu intangible culture.

Keywords: Software Defined Technology, Shen Xiu's Intangible Culture, Numerical Protection, Suzhou Embroidery, Feature Fusion, Intangible Culture

1. Introduction

As one of the traditional Chinese embroidery crafts, Shen embroidery has a classical Chinese embroidery style and is known as a fossil-level intangible cultural heritage. However, in the process of inheritance, Shen Xiu has problems such as technical interruption and a low inheritance rate and cannot achieve complete technical inheritance. Some scholars believe that as an important cultural heritage, Shen embroidery should be protected by modern communication technology as an important digital resource to improve its inheritance effect. Some scholars believe that taking Shen embroidery pictures, design schemes, and colour matching as numerical protection content can form a complete digital database, reduce the disappearance rate of inheritance personnel and inheritance skills, and provide support for future generations to learn and inherit. Software-defined technology integrates hardware devices and adjusts relevant parameters for networking, storage, and computing to achieve effective integration of resources. However, the number of Shen embroidery works is large, with thousands of surviving works and tens of thousands of folk works. The cost of numerical transformation of pictures and schemes of related works is high. Although some of Shen's embroidery works have completed numerical conversion, they are stored in different servers, clients and terminals, which require a lot of manpower and material resources to collect. In addition, the numerical forms of Shen Xiu's works are different; most of them are unstructured values, and there are inconsistent protocols for the transmission and protection of values between different platforms. How to reduce the collection cost of Shen embroidery works, improve cross-platform compatibility, and reduce the loss rate and delay rate of data transmission is the key, key and difficult point of the current numerical protection of Shen embroidery intangible cultural heritage. The protection ideas for embroidery works in foreign countries are relatively simple, mainly cross-platform protection, cross-value protection, and integration of existing resources. However, cross-platform protocol consistency, cross-value structure mapping, and resource integration require comprehensive communication technology, and the existing numerical protection methods lack flexibility, compatibility and consistency, which makes it difficult to meet the protection needs of Shenxiu's intangible cultural heritage. To this end, some scholars propose software-defined technology and discuss its feasibility at the theoretical level.

Software-defined technologies can separate the data plane from the control plane, enabling simplified control of complex hardware, while networked storage and computing are centralized and dynamic. Software-defined can realize flexible management and automatic management of networks, reduce the management cost of network devices, improve the scalability and stability of network devices, and achieve multi-platform protocol compatibility. Therefore, software-defined technology can provide technical support for the numerical protection of Shen embroidery's intangible cultural heritage, improve the utilization and compatibility of the original hardware, and complete the integration of pictures, design schemes, and colour matching. However, some scholars have disputed the numerical protection of intangible cultural heritage, believing that numerical protection has problems such as transmission delay, poor clarity, and data loss. Some scholars also believe that the numerical protection project of Shen Xiu's intangible cultural heritage is huge, it is difficult to establish new hardware equipment, it requires a large amount of post-maintenance funds, and the feasibility of implementation is low. To this end, some scholars suggest that software protection be applied to numerical protection to minimize the cost of numerical protection and improve the transmission effect and stability of patterns and videos. Some scholars proposed integrating Shen embroidery's intangible cultural heritage with software-defined technology, integrating the original communication hardware, transmission equipment, and network, and improving the protection of intangible cultural heritage. Therefore, the application of software-defined technology provides a new way of thinking for the protection of intangible cultural heritage, such as Shen Xiu. On this basis, this paper increases the numerical mining of ShenXiu's intangible cultural heritage, improves the level and intensity of protection, and realizes the integration of software-defined technology and numerical protection of intangible cultural heritage. Firstly, this paper explains the advantages and scope of adaptation of software-defined technology and explains the feasibility and inevitability of the implementation of Shenxiu's intangible cultural heritage. Secondly, this paper carries out numerical mining, numerical mapping and standardization of Shenxiu intangible cultural heritage

culture, reduces the non-numerical differences between different data, and completes the transformation of non-structured and semi-structured data into structural data. Then, the numerical protection of Shenxiu's intangible cultural heritage is mathematically described, simulated, analyzed, elaborated and discussed based on actual cases to verify the effect of software-defined technology, the degree of protection of intangible cultural heritage, and the subsequent role and effect, aiming to provide case support for the development of information communication and communication technology.

2. Literature Review

2.1 Research on Shen Xiu's Intangible Cultural Heritage

The 'Ensem-HAR' projected by Bhattacharya et al. [18] is a mixture of four different deep categorization models: the 'CNN-net,' Long Short-Term Memory Network (LSTM-net), 'ConvLSTM-net', and 'StackedLSTM-net'. The ensemble relies on a collection of categorization models that have a common foundation in 1D CNNs and LSTM networks but diverge in key architectural respects. When using the suggested Ensem-HAR for prediction, first stack predictions from the aforementioned four classification models, and then train a Blender or prediction to provide a final prediction for the test data. The suggested Ensem-HAR model for biomedical assessment was tested on three (WISDM, PAMAP2, and UCI-HAR), and it achieved 98.70%, accuracy, respectively. The new consequences demonstrate that the projected model outdoes the other numerous generated measurements that were used as comparisons. But, the model doesn't focus on the activity recognition of elder people and it doesn't focus on the China area.

Software-defined technology can realize the digitalization and standardization of hardware resources, realize the processing of massive data, and greatly improve the effective transmission of data in different regions [1]. In the numerical extraction of Shen Xiu's intangible culture, there are often problems such as complex data and frequent interference, which affect the numerical protection analysis of Shen Xiu's intangible culture [2]. Therefore, this paper combines software-defined technology with numerical protection analysis of Shen Xiu's intangible culture, analyzes the characteristics of Shen Xiu's intangible cultural works with different values, and extracts the key values for better integration. The result is shown in Figure 1.

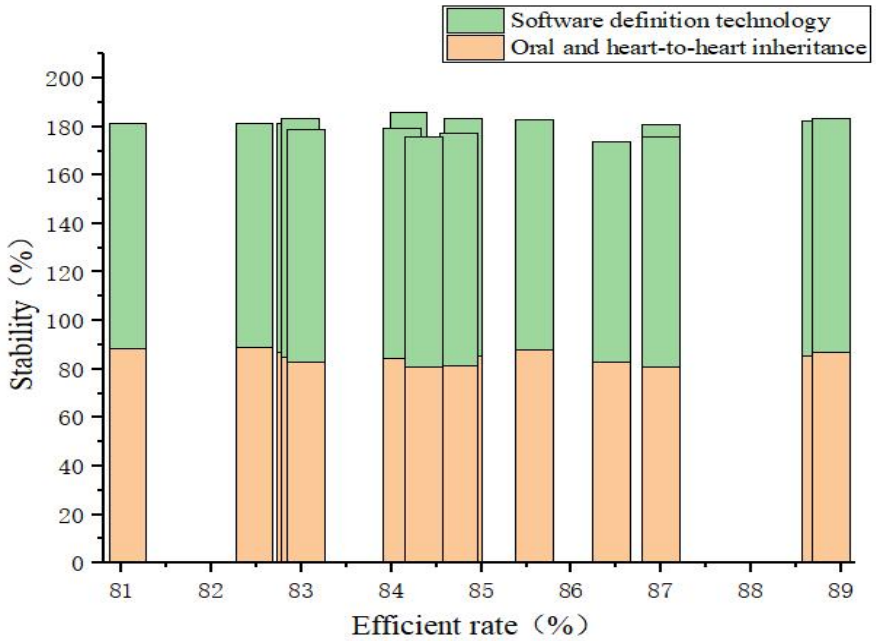

Figure 1. Current Situation of Numerical Protection of Intangible Cultural Heritage in Shen Xiu

Data sources: Shen Xiu's non-legacy cultural works literature, Shen Xiu's non-legacy cultural craft investigation report.

Figure 1 shows that software-defined technology plays an important role in the numerical protection of intangible cultural heritage during the period 2012~2022. Among them, the rate of intangible cultural heritage protection and the stability of protection of software-defined technology are basically the same as those of oral transmission. In some samples, software-defined technology has a better effect on the protection of intangible cultural heritage, indicating that software-defined technology can realize the objective expression of intangible cultural heritage data so that more inheritors can understand that the relevant technologies and techniques are more objective and feasible. The above survey results prove that software-defined technology can provide technical support for the numerical protection of intangible cultural heritage at the theoretical level, but the protection effect of Shenxiu's intangible cultural heritage needs to be further confirmed.

2.2 Application Conditions of Software-Defined Technology

Software-defined technology belongs to a communication mode based on a self-organizing network, which can realize relay protective communication [3], provide multi-terminal communication requirements for information protective communication, reduce the loss rate of protective communication, realize efficient utilization of communication resources [4], and stabilize communication protective communication. Therefore, software-defined technology provides basic conditions for the characteristic analysis of different Shen Xiu intangible cultural works [5], and the promotion rate of software-defined technology communication is shown in Table 1.

Table 1. Indicator Improvement of Software-Defined Technology (Unit:%)

Indicators	**Performance**	**Error**
Response time	94.95	5.09
Request rate	94.95	4.93
Load time	95.10	4.88
Peak response time	95.06	4.96

From the contents in Table 1, it can be seen that the delay time, data response rate, task loading time and research maximum response time of software-defined technology all have good performance, and the above indicators are the key indicators for the numerical protection of intangible culture. In terms of data loss rate, software-defined technology also has a good control effect, which further shows that software-defined technology can reduce the data loss rate in theory and provide technical and theoretical support for the numerical protection of Shen Xiu's intangible culture in the later period. In order to explain the software definition technology more objectively, this paper expounds on the data transmission process of Shen Xiu's intangible culture and describes its data processing flow. The communication process of software-defined technology is shown in Figure 2.

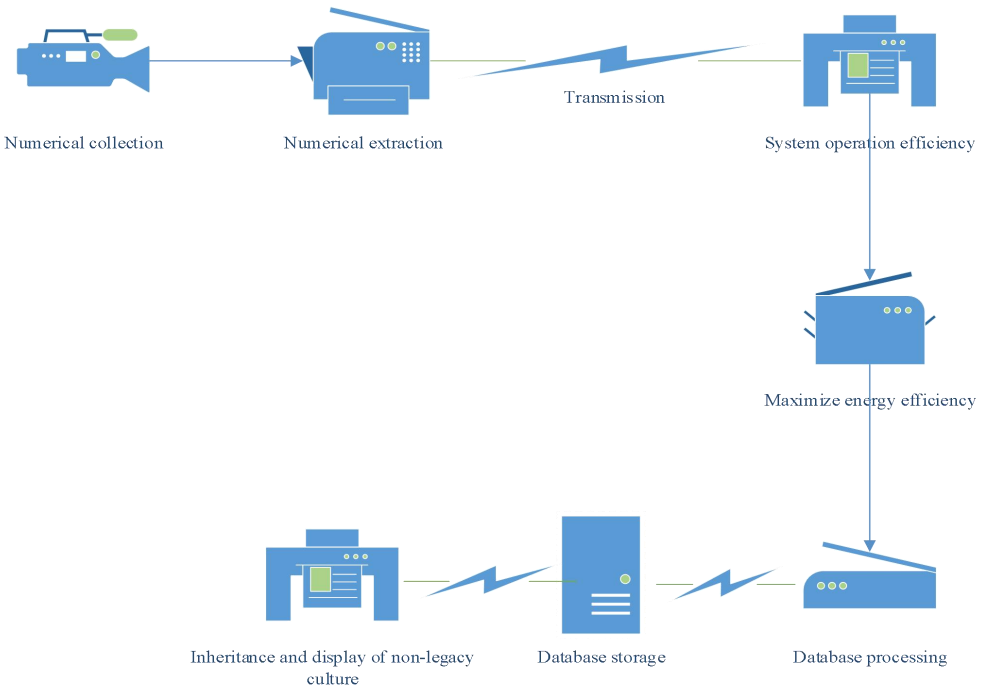

Figure 2. Numerical Protection Process of Shen Xiu Intangible Culture by Software Definition Technology

Software-defined technology has the advantages of a high terminal utilization rate and quantitative protective communication, which can realize the extraction of intangible cultural content and numerical protection in Shen Xiu [6] and combine with digital protection to simplify the identification process of feature data and realize the effective dissemination of feature data. At the same time, the cultural connotations and characteristics of Shen Xiu's intangible culture are analyzed to verify the effect and data integrity of software-defined technology [7]. Experiments show that software-defined technology can improve the recognition rate of feature data of Shen Xiu's intangible cultural works and simplify the data dimension and complexity of wireless protective communication. The software definition technology is applied to the numerical analysis of the characteristics of Shen Xiu's intangible culture, and the similarities and differences of Shen Xiu's intangible culture in different regions are compared [8]. In the process of numerical protection analysis of Shen Xiu's intangible culture, we should pay attention to the protective communication effect, so we should choose the relay end to achieve maximum protective communication efficiency. The relay software parameter adjustment process is shown in Table 2.

Table 2. Parameter Selection for Software-Defined Technologies

Content	Server	Parameter Selection
Light and Shade Levels, Three-Dimensional Sense, Texture	7	9
Simulation Artistic Effect	6、7	8
Needle and Embroidery Technology	5	3

From the description in Table 2, software-defined technology can select servers and Parameters according to the amount of protective communication data. It can not only carry out rapid protective communication on the data of Shen Xiu intangible culture in different regions but also realize numerical protection, classification, mining, and elimination, which is beneficial to the analysis of numerical protection of Shen Xiu intangible culture and the adjustment of related parameters. At the same time, the implementation of software-defined technology is not affected by the number of servers and parameter adjustment, which shows that software technology has high reliability in numerical protection. Although software-defined technology is implemented according to the requirements of intangible cultural protection, the protection process and content are in a highly

stable environment. In addition, the stable switching between different servers shows that software-defined technology can realize the transformation of unstructured and semi-structured data. The adjustment of different parameters shows that software-defined technology can realize cross-platform and cross-protocol transmission. Server and parameter adjustment show that software-defined technology can realize the transformation of data structure and compatibility in theory and provide a theoretical basis and feasibility for high-definition transmission and stable protection. On the whole, software-defined technology can realize the protection of Shen Xiu's intangible culture in theory and literature demonstration and also provide feasibility and compatibility for numerical protection, make it more stable and reliable transmission, improve the communication effect of numerical value, and provide support for intangible protection and communication technology application.

3. Methodology

Numerical protection mainly starts with the use of needles, colours, and lights in Shen Xiu's intangible cultural crafts. Software-defined technology mines characteristic data and needles reduces numerical characteristic indicators [9] and adds correlation values, influence values and development values to different numerical protection sets.

3.1 Data Quantitative Description of Numerical Protection of Intangible Cultural Heritage in Shen Xiu

The combination of numerical protection and software-defined technology can carry out massive protective communication on Shen Xiu data and reduce network protective communication. Software-defined technology can match frequency bands a_i [10], set endpoints and protective communication traffic for Shen Xiu data of Shen Xiu intangible cultural works. The specific protective communication process is as follows: Numerical data of Shen Xiu's intangible culture: The colour characteristics of Shen Xiu's intangible culture b_i are [11]; the needle is characterized by c_i; The characteristics of light use w_i. The numerical protection calculation function is $set(x_i)$, the importance of features is , the numerical data collection of Shen Xiu's intangible culture is shown in Formula (1).

$$set(x_i) = \sum (a_i + b_i + c_i) \cdot w_i \tag{1}$$

From the above programming code, the numerical protection analysis of Shen Xiu's intangible culture can be realized, and the selection can be made according to the features so as to improve the protective communication efficiency of the features.

Ranking of numerical protection indexes: the weight ranking function is $\min(k)$ [12], The calculation function of characteristic influence degree is $A(w)$, The order of fusion degree of numerical protection index is $B(w)$, The ranking result of software-defined technology is h, The ranking of numerical protection indexes is shown in Formula (2):

$$h = \frac{A(w) \cdot B(w)}{\min(k)} \cdot \lim_{x \to \infty} \tag{2}$$

Protective communication of software-defined technology for data extracted from Shen Xiu intangible culture: the wireless protective communication node is $alt(x)$, The node protective communication function is adj_i [13], The cooperative protective communication function of feature data is $chi(x)$, The numerical protection process of Shen Xiu's intangible culture is shown in Formula (3).

$$chi(x) = alt(x) \times adj_i \tag{3}$$

3.2 Protective Communication Processing of Shen Xiu Data

Shen Xiu's non-legacy culture Shen Xiu data and the numerical values show cross changes with needles, so it is necessary to encrypt the Shen Xiu data to determine the key needles and the relevance of needles. In addition, the occupation of transmitting terminal and relay delay have an impact on the protective communication of Shen Xiu's intangible cultural data, so it is necessary to

eliminate the irrelevant needle technique of Shen Xiu's intangible cultural data and realize the simplified processing of Shen Xiu's intangible cultural data.

To make the numerical protection analysis more reasonable, it is necessary to select the nearest relay end, and the processing results are shown in Table 3.

Table 3. Selection Rate of Relay End of Non-Legacy Culture in Shen Xiu

Protective Communication Content Type of Data	Parameter Number	Colour Technique	Technique of Using Light	Needle Technique	Utilization Rate
Portrait	3	94.94	95.00	94.98	84.92
	39	94.70	94.95	94.90	84.92
	34	95.29	95.08	95.20	84.87
	24	94.78	94.73	94.71	84.91
	9	94.95	95.13	95.03	84.89
Landscape Flowers and Plants	39	94.98	95.00	95.20	85.10
	9	95.18	95.01	95.25	84.98
	21	94.79	95.03	95.05	85.03
	18	94.88	95.01	94.99	84.97
	29	94.88	94.91	94.91	85.09
Birds, Fish and Insects	38	95.11	94.88	95.07	85.12
	11	94.88	94.98	94.72	84.88
	12	94.99	95.11	95.07	85.00
	17	94.94	95.00	94.98	84.98

From the identification of numerical protection of Shen Xiu's intangible culture in Table 3, the integrity of Shen Xiu's intangible culture colour, Shen Xiu's intangible culture stitch, Shen Xiu's intangible culture light and Shen Xiu's intangible culture materials is good, indicating that each collaborative terminal runs well.

3.3 Matrix Processing of Shen Xiu Data

The data in Table 3 are processed by dynamic programming, and the matrix values of each programming class are obtained. The results are shown in Table 4.

Table 4. Dynamic Programming Matrix of Numerical Protection

Test Parameter Number	Colour of Shen Xiu's Intangible Cultural Heritage	Shen Xiu's Intangible Cultural Needle	Shen Xiu's Non-Legacy Culture is Used Up	Non-Legacy Cultural Materials in Shen Xiu
3	1	0.3879	0.2254	0.9858
39	0.4173	0.2974	0.2474	0.5471
34	0.3523	0.7120	0.0474	0.8824
24	0.4934	0.7843	0.1753	1
9	1	0.4527	1	1
39	0.2989	0.9518	0.9517	0.9920
9	0.2944	0.3799	0.4839	0.9997

21	0.7715	0.3094	0.9483	0.7501
18	0.9339	0.4409	0.4208	0.7127
29	0.9058	0.5191	0.8814	0.4921
38	0.9127	0.3153	1	0.3811
11	0.9432	1	0.0884	0.9407
12	0.5959	0.5909	0.5597	0.9576
17	0.3752	1	0.4740	0.7478

According to the data in Table 4, the eigenvalue of the identification matrix of software-defined technology is < 1, indicating that there are eigenvalues in the matrix. It also indirectly shows that after being processed by software-defined technology, the numerical protection value exists, and there is no abnormal eigenvalue or false eigenvalue, which meets the protective communication requirements of software-defined technology. There are great differences in the values of intangible culture in Shen Xiu, and the wireless between values is > 0.042 seconds, which indicates that the complexity of data in Shen Xiu and the proportion of natural language are large, so it is necessary to simplify the complexity of protective communication data. In addition, the characteristic data processing capacity of software-defined technology is > 80%, and the protective communication volume of Shen Xiu data is 85%, which shows that software-defined technology can carry out protective communication for Shen Xiu data.

A SRE module and the attention loss function are the backbone of the CRN. Attention mappings are encoded on a class-by-class basis in the SRE module. To help CRN learn class-wise semantic information more effectively, the study employs attention loss as a dictionary regularisation term. In totalling, a series of 11 convolutions is used to perform dimension reduction. The number of object classes is denoted by K, the number of atoms in the lexicon is denoted by N, and the dimension of an atom is signified by C.

4. Results and Discussion

4.1 Shen Xiu Intangible Cultural Case Based on Numerical Protection

Conditions for Software-Defined Technologies

Based on software definition technology and combined with the characteristics of Shen Xiu's intangible culture, this paper analyzes the use of needles, colours and lights. Among them, there are 32 terminals such as pad, WIFI and LAN, 4 servers and 45 PC computers, with a transmission frequency of 12 ~ 45Hz. The needles for Shen Xiu's intangible culture are in the following formats. Pad and. jpg. The specific conditions are shown in Table 5.

Table 5. Hardware Conditions for Software-Defined Technologies

Parameter	Numerical Extraction	Protective Communication Terminal
Protective Communication Rate	45Gpisc、23.4Hz	7 ~ 9
Protective Communication Format	Text, picture, video	9 ~ 11
Protective Traffic	32TG~45TG	2 ~ 8
Single File Format	0.8G	9 ~ 10

Sampling results of software-defined techniques, as shown in Figure 3.

Character

Plants

Flowers and birds

Colour

Figure 3. Sampling Results of Shen Xiu's Intangible Culture

Figure 3 shows the foundation and actual display effect of Shen Xiu's intangible culture. As the framework of Shen Xiu's intangible culture, the basic data mainly displays numerical protection, which consists of needles and stitches. The comparison results in Figure 3 show that the software-defined technology can improve the numerical protection effect of Shen Xiu's intangible culture and present it with colour, needle and light, thus realizing the fusion of Shen Xiu data more accurately, which shows that the numerical protection analysis effect of software-defined technology is ideal. The specific data overview is shown in Table 6.

Table 6. Analysis of Numerical Protection Characteristics of Shen Xiu's Intangible Culture

Needle for Intangible Cultural Heritage in Shen Xiu	**Research Direction**	**Characteristic Index Number**	**Characteristic Specificity**
Rotating Needle Feature	Texture	6	93.98
	Vivid	8	99.73
Needle Roller Characteristics	Demeanor	7	94.31
	Nature	9	95.82
	Gorgeous	8	91.09
Embroidery Feature	Realistic	7	99.27
	Flexible	9	92.59

Feature Extraction Process of Shen Xiu Intangible Cultural Heritage

The detailed rules of feature analysis are the numerical analysis measures of Shen Xiu's intangible culture, which can deeply analyze the numerical analysis effect of Shen Xiu's intangible culture and its specific implementation. The specific identification results are shown in Table 7.

Table 7. Extraction of Characteristic Values of Shen Xiu's Intangible Culture

Recognition Method	**Characteristic Index**	**Degree of Feature Analysis**
Analysis of Needle Characteristics	Use up	91.85
	Colour	92.59
	Needle Roller	91.12
	Personality	93.71
	Stereoscopic Impression	97.98
	Visual Feature	92.02
	Feature of Sensation	90.01
	Turn Nature	94.48
	Delicate Plain Clothes	99.91
	Soft Luster	98.43
Characteristics of Shen Xiu's Intangible Cultural Heritage	Vivid	98.58
	Realistic	95.81
	Image	73.95
	Picture Texture	92.09
	Rotary Embroidery	95.97
Index Number	14	
Maximum Value	85.12	
Maximum Range of Change	15.14	
Maximum Change Amplitude	50.73	

The feature extraction results in Table 7 show that the feature degree is close to 10 times, which shows that the software-defined technology can meet the actual feature value extraction, making it reach more than 10 times. The change process of Shen Xiu's intangible cultural characteristics is shown in Figure 4.

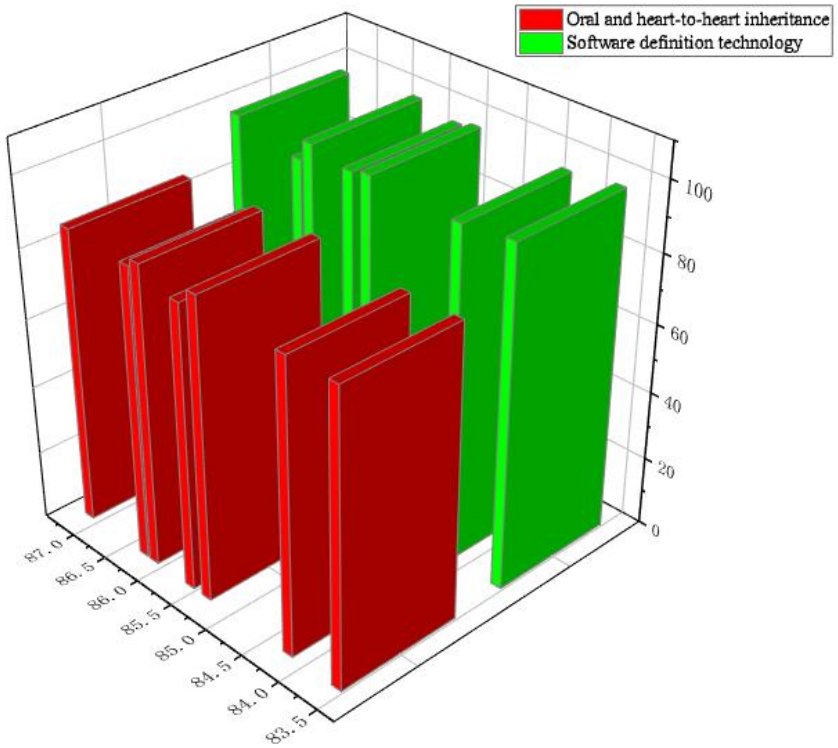

Figure 4. Judgment Process of Numerical Protection of Shen Xiu's Intangible Culture

It can be seen from Figure 4 that the method proposed in this paper has a high degree of feature extraction for Shen Xiu's intangible culture. In the process of Shen Xiu's intangible culture, the data feature degree can reach over 90%, and the data continues to increase. The main reason for the above problems is the integration of software-defined technology, which simplifies the protective communication of Shen Xiu's intangible culture in the opening ceremony. Software-defined technology improves the protective communication rate of data, reduces the occupancy rate of servers, and realizes the real-time reproduction of Shen Xiu's intangible culture.

Characteristic Recognition Rate of Shen Xiu's Intangible Culture

The change in Shen Xiu's intangible culture will have an impact on the needle, colour, light presentation, port compatibility, wireless protective communication rate and frequency band occupation, so it is necessary to reduce the frequency of change. The specific results are shown in Table 8.

Table 8. Characteristic Recognition Rate of Shen Xiu's Intangible Culture

Indicators	**Content**	**With a Needle**	**Colour**	**Use Up**	**Compatible Data**	**Protective Communication Point**
Common Characteristics	Character	95.08	95.10	94.91	94.87	84.99
	Flowers and Birds	95.05	94.81	95.35	54.90	85.12
Numerical Protection	Character	94.80	95.02	94.92	74.74	84.99
	Flowers and Birds	95.04	95.14	95.19	54.98	85.02

The change of numerical protection in Table 8 is shown in Figure 5.

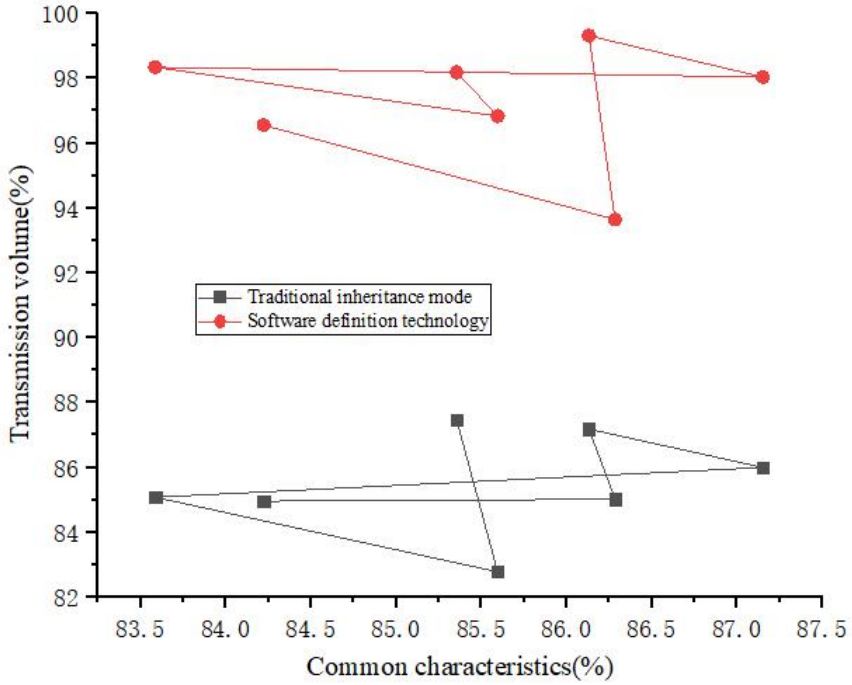

Figure 5. Changes in Feature Recognition of Shen Xiu's Intangible Culture

It can be seen from Figure 5 that there is no great change in the common features and numerical extraction of Shen Xiu's intangible culture under different feature recognition degrees, indicating that the change of Shen Xiu's intangible culture will have little impact on stitching. In addition, the change of common characteristics is a fundamental change which has not had any impact on Shen Xiu's intangible culture, further proving that software-defined technology can realize the numerical protection of Shen Xiu's intangible culture. The reason is that software-defined technology simplifies protective communication through data, which can reduce the error rate of protective communication, shorten the analysis time of Shen Xiu intangible cultural data and increase the single time since it can fully meet the analysis requirements of numerical protection.

Software Defined Technology Network Endpoint Selection Effect

The selection effect is the basis of the numerical protection analysis of intangible cultural characteristics in Shen Xiu. It is necessary to sample and identify the feature points at multiple endpoints, record the actual display results and compare them. The specific results are shown in Figure 6.

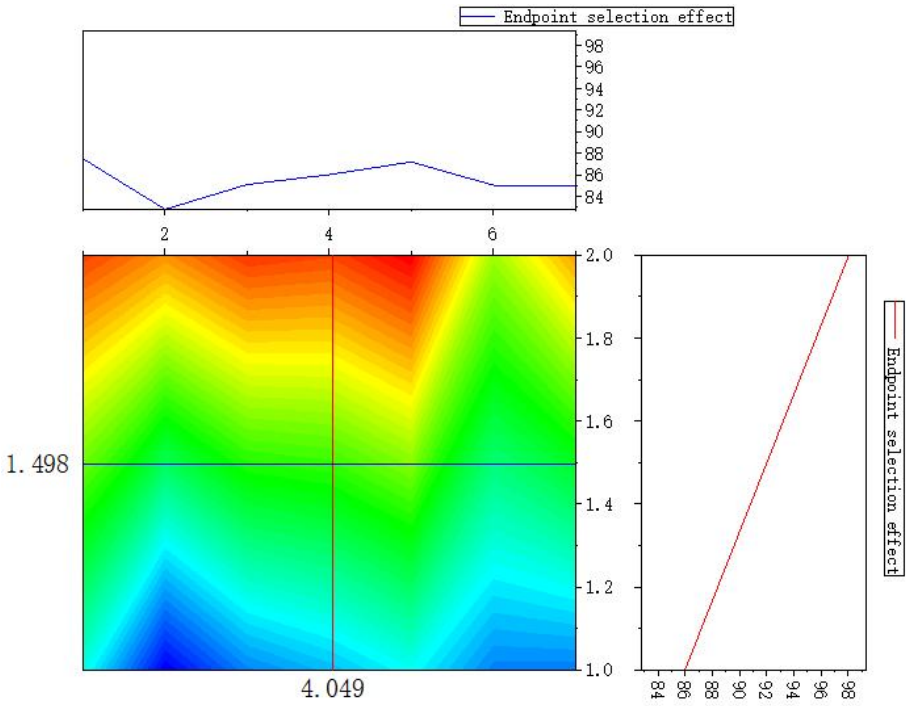

Figure 6. Adjustment Effect of Software Parameters for Numerical Protection of Intangible Culture in Shen Xiu

As can be seen from Figure 6, the relay endpoints are scattered, and the selection effect data is concentrated from both sides to the middle. The results show that there is a big difference between Parameters and feature quantities, which shows that relay endpoints can meet the actual requirements of protective communication. In the process of protective communication, the data is scattered on both sides. The reason is that the software parameter adjustment and numerical protection are mutually restricted, and the protection level changes along its own direction, and a better protection level calculation is realized. The above data show that software-defined technology can effectively plan the characteristic values of Shen Xiu's intangible culture and improve the ability of network communication. Summarize the data in Figure 6 and get the following calculation results, as shown in Table 9.

Table 9. Adjustment Effect of Software Parameters of Shen Xiu Intangible Culture

Software Parameters	Shen Embroidery Index	Endpoint Occupancy Rate	Fusion Effect	Fusion Index
Channel Parameter	Needle Characteristics	88.89	87.35	7
	Color Fusion	89.48	80.99	7
	Pattern	89.40	83.59	10
System Parameters	Needle Characteristics	80.05	83.12	10
	Color Fusion	85.33	89.88	3
	Pattern	84.35	84.80	5

The results of channel parameters and system parameters are identified, and it is found that in the whole sampling identification, the recovery rate of test data packets with needle features, colour fusion and patterns is more than 80%, the receiving selection effect is more than 80%, and the progressive probability is more than 80%, which shows that there is little difference between the numerical protection levels of Shen Xiu intangible culture in different sampling results, and the receiving effect and pattern data recovery rate of the software-defined system are all more than 81.3%. Further, it shows that the software-defined technology can realize the protective

communication of Shen Xiu's intangible culture values and can provide wireless communication data support for the numerical identification of Shen Xiu's intangible culture.

Accuracy of Numerical Protection

The patterns of Shen Xiu's intangible culture are diversified, the details are complex, and the number of colours is large, which requires high-frequency software parameter adjustment to accurately judge the numerical protection of Shen Xiu's intangible culture. The results are shown in Figure 7.

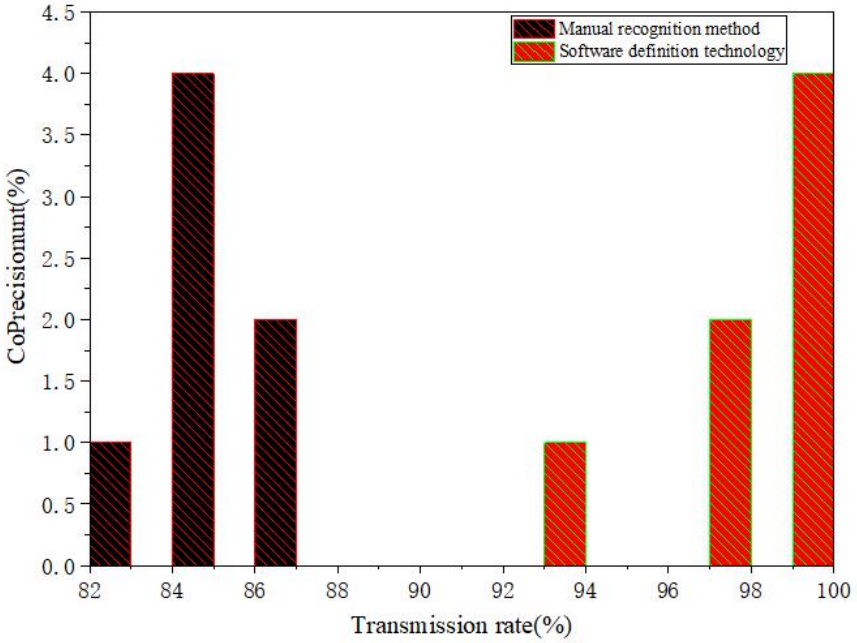

Figure 7. Accuracy of Protective Communication of Non-Legacy Culture in Shen Xiu

It can be seen from Figure 7 that the numerical protection accuracy of software-defined technology is higher than that of the manual identification method, and the protective communication results of Shen Xiu intangible culture are less different from the actual presentation, which shows that the protective communication of software-defined technology can accurately complete the pattern data analysis and provide comprehensive support for Shen Xiu intangible culture. The results are shown in Table 10.

Table 10. Accuracy Rate of Recognition of Non-Legacy Cultural Characteristics in Shen Xiu

Parameter Adjustment Frequency	**Traditional Processing Results**		**Protective Communication Results of Software-Defined Technology**	
	Character	**Flowers and Birds**	**Character**	**Flowers and Birds**
1%	81.58	80.54	94.12	97.89
5%	81.41	82.93	97.14	97.98
10%	81.19	80.54	96.12	96.85
15%	80.89	78.98	97.90	96.10
20%	83.09	83.12	97.19	96.74
25%	83.12	83.48	96.89	96.42
30%	80.29	81.09	97.51	97.94
35%	82.48	80.23	97.70	97.02
40%	80.54	79.53	98.54	98.15

From the results o protective communication processing in Table 10, it can be seen that the accuracy of numerical protection of intangible culture in Shen Xiu is relatively high, and the protective communication rate of software-defined technology is more than 90%, which is mainly

due to the extraction of Shen Xiu data by software-defined technology, which reduces the complexity of protection of intangible cultural heritage, and further proves that the protective communication of software-defined technology can meet the actual requirements. Moreover, in the process of judging the protection level, there is no deviation, which shows that the protective communication effect of Shen Xiu's intangible cultural characteristics is ideal.

5. Conclusion

As an important embroidery content, Shen Xiu is the focus of intangible cultural protection. Previous data value protection had some problems, such as poor compatibility, transmission delay, unstable storage, and so on, which led to poor protection effects. As a new communication technology, software-defined technology has the advantages of flexible and stable implementation, which provides reference and feasibility for the protection of intangible culture in Shen Xiu. Aiming at the numerical protection analysis of Shen Xiu's intangible culture, this paper proposes a software-defined numerical protection extraction method, which can achieve a protective communication rate of 10 Gpits with the help of software-defined technology. The test results show that the protective communication accuracy of software-defined technology is more than 95%, the Parameter can be reasonably selected by software-defined technology, and the protective communication coincidence rate is over 80%, which can meet the needs of numerical protection extraction. Therefore, software-defined technology can realize numerical protection extraction and promote the development of Shen Xiu's intangible culture.

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