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New Media Art Design in Chinese Cultural Communication Based on Logistic Regression Model

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Abstract

The purpose of exploring the application of new media art design in Chinese cultural communication is to promote a wider dissemination of Chinese culture through new media. In this paper, starting from the logistic regression algorithm, the loss function is optimized by using maximum likelihood estimation, and a sparse logistic regression model is constructed by introducing sparse prior factors. Ten-fold cross-validation performance evaluation and example analysis are conducted for the model. From the performance evaluation, the average check accuracy rate of the sparse logistic regression model is 92.27% and the average check completeness rate is 7.88%. From the analysis of cultural communication applications, the best application carrier for cultural communication is historical digital video resources, which accounts for 42.7%, and the type of communication is style-based video, which has increased by 18.13 percentage points from 2017 to 2021. This shows that the use of logistic regression model can effectively analyze the application of new media art and design in Chinese cultural communication, and also provides a new path for Chinese cultural communication.

Keywords: *Sparse logistic regression, maximum likelihood estimation, sparse prior factors, new media art design, Chinese cultural communication*

Introduction

With the progress of science and technology and the development of society, traditional media art can no longer effectively meet the needs of cultural development and people's spiritual and cultural needs, and people have put forward higher requirements for the ways and means of Chinese cultural communication, and new media art has emerged under this situation (Wang Y, 2019) (Zhi, 2021). In recent years, digital art has been developing, and a large number of traditional media have gradually begun to turn digital and are widely used in various industries and fields (Z, 2021) (Meng & Zhang, 2021).

Since Chinese culture itself has a very deep historical origin, it often acts as a source of development when various media are used for taking materials (Mason & Vavoula, 2021; Xia T, 2020). The new media art itself, obtained after the organic combination of modern technology and new media art design, has also assumed a very important responsibility in the preservation

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and transmission of Chinese culture (Qin & Fedorovskaya, 2020) (X, 2018). However, since the media itself has many different forms of expression and communication methods, the characteristics and realities of new media art design itself must be fully considered when packaging Chinese culture for communication, so as to promote a wider range of Chinese culture dissemination (Demetrescu, d'Annibale, Ferdani, & Fanini, 2020) (Zhao Y H, 2018).

Chinese cultural communication is to achieve the inheritance and development of Chinese culture. The literature (Chen Y X, 2019) studied the influence of Chinese culture on the national image with Korean college students, and it could not only discover how to enhance the national image with the help of Chinese cultural products, but also provide a suitable perspective for the national image building and cross-cultural communication. The literature (Tian & Yu, 2022) aims to explore the cultural roots of the positive construction of Chinese indigenous communication theory, theoretically guided by the assumptions of the Chinese and Western cultural paradigms and the study of the Chinese cultural discourse system, and through qualitative content analysis, the research results have some implications for communication studies at home and abroad. According to the paper (Song, 2018), the construction of "One Belt, One Road" has promoted the people-to-people contact between China and related countries, formed a new cultural exchange network, enabled the wide dissemination of traditional Chinese culture and contemporary art, and enriched the outreach and connotation of cultural exchange.

In addition, the literature (Chen L, 2018) argues that Confucius Institutes are important in promoting Chinese language and Chinese culture, and through Confucius Institutes, they can promote the wider dissemination and development of Chinese culture. Literature (L, 2018) discusses that in the field of overseas Chinese language education, in addition to traditional Chinese culture, the importance of the dissemination of contemporary Chinese culture should also be emphasized, so that overseas Chinese language learners can have a deeper understanding of contemporary Chinese and thus become a bridge for cultural exchange between China and the host country. Starting from the influence of traditional culture on Chinese value judgments and ways of thinking, the literature (W, 2018) discusses Confucianism, which is the core of traditional culture, as a means to gain a deeper understanding of Chinese culture when international education in China develops to a high level, thus promoting the wide spread of Chinese culture.

In order to explore the application of new media art design in Chinese cultural communication, this paper first gives the characteristics of new media art, illustrates for Chinese culture, and introduces the influence of new media art design in Chinese cultural communication. Then based on the logistic regression algorithm, the sparse logistic regression model is constructed by introducing sparse prior factors using maximum likelihood estimation to optimize the loss function, and the evaluation criteria of the model are given. Finally, the performance evaluation experiments and practical application analysis of the model constructed in this paper are conducted to design the application vehicle and type of new media art design in the process of Chinese cultural communication. From the analysis results, we can see that new media art design

in the process of Chinese cultural communication is mainly in the form of digital video.

New media art design and Chinese cultural communication

Chinese culture is the soul of the Chinese national spirit, and Chinese culture is the carrier of the Chinese national spirit and the concentrated embodiment of the wisdom of Chinese civilization for five thousand years. Its distinctive historical features can visually and clearly express the morphological characteristics of a certain stage of cultural development and witness the historical development and changes of a nation. With the development of new media art, some regions have set off a wave of spreading China's image, improving China's cultural influence and promoting economic construction through new media channels, providing a new channel and idea for the rapid and large-scale propagation of Chinese culture.

New Media Art Design

New media art not only provides an unprecedentedly efficient and convenient means of disseminating Chinese culture, scientific theory, modern aesthetics and social thought, but also plays a very important role in promoting the innovation and iteration of art forms.

Unlike traditional media, many forms of new media art expression, the presentation of works are usually accepted by the audience, through the audience's five senses and movement space, through sound and light to demonstrate the effect of the work and allow the audience to participate in the work. New media can be the perfect combination of technology and art. In the process of creating new media art, imagination and experimentation become the key elements that determine the success of the work. Usually our common new media art presentation is mainly produced by using the latest technical means such as video, computer, network, and digital technology. The characteristics of new media art design are shown in Table 1.

Table 1 Characteristics of new media art design

Characteristics	Explanation
Digital	New media art design is based on digital technology and is closely integrated with computers
Time-sensitive	The creation of new media art works needs to be completed within a limited time, skillfully integrating traditional and modern technology
Multi-level	Diversified needs of audience groups and diversified communication carriers

Chinese Culture

Chinese culture, as the name implies, is the excellent culture, both material and spiritual, that has belonged to the People's Republic of China for 5,000 years.

Our ancestors have used their various life experiences and creativity for thousands of years, recorded them in writing or in other ways, and passed them down from generation to generation, forming the Chinese civilization and culture with Chinese characteristics that is unique to us today. Horizontally, Chinese culture includes all forms of culture, such as political, economic,

historical, philosophical, artistic, and folkloric forms. Vertically, it mainly includes ancient, modern and modern contemporary culture. Chinese culture is vast and profound, and when inheriting and promoting it, we should pay attention to treating it critically, taking the essence of it, and inheriting and passing it on in line with the needs of the development of the times.

To sum up, the selection of Chinese culture in this study is all the excellent traditional Chinese culture with Chinese characteristics, as well as the excellent modern Chinese culture with the times, including both the excellent material culture and the excellent spiritual culture, and its scope is very wide and can cover all the excellent Chinese culture.

Application of New Media Art and Design in Chinese Cultural Communication

Enriching the emotional experience of the public

With the continuous development of China's economy, the satisfaction of material life makes people more inclined to the pursuit of spiritual life, or the pursuit of emotional experience. In the context of today's economic globalization, social production capacity has been improved as never before, and material wealth has been rapidly accumulated. People hope to experience Chinese culture more closely through the novel communication method of new media art design. Figure 1 shows the hierarchy of needs theory proposed by Malos, which states that after people have obtained the satisfaction of the most basic physiological needs, the four spiritual needs of security, social needs, respect needs and self-actualization needs will appear at a higher level. With the continuous development of social economy, most people have moved away from the pursuit of physiological needs and started to pursue spiritual needs, i.e., the full pursuit of the spirit of Chinese culture and the need to learn from the outstanding culture of the Chinese nation for 5,000 years.

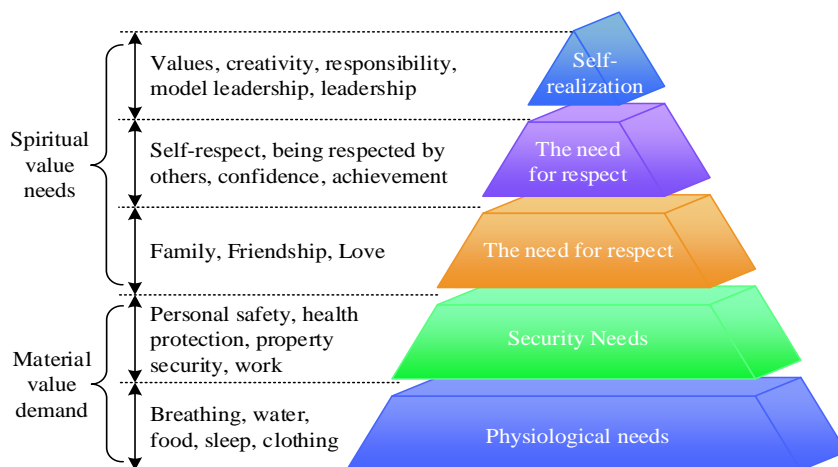


Figure 1: Malos Hierarchy of Needs Theory

Increase intercultural communication capabilities

In the process of using new media art design to carry out cross-cultural communication, the inevitable problem is the contradiction between the "individuality" of Chinese culture and the "commonality" of world culture. In the context of global cultural diversity, how can the interaction and communication between two heterogeneous cultures preserve the individuality of the cultural "self" while gaining the understanding and recognition of the cultural "other"?

In this regard, this study takes new media art as the communication medium, cross-cultural communication as the perspective, narrative research paradigm as the basis to refine the three core elements of story, discourse and context, and Chatman's narrative structure theory to construct the narrative outer layer of content production, expression production and meaning production, and come up with a dual narrative model of short video in the perspective of cross-cultural communication as shown in Figure 2, in order to solve the conflict between Chinese cultural individuality and In order to solve the conflict between Chinese cultural individuality and cross-cultural commonality, and to establish and improve the cross-cultural communication ability of new media art and design works.

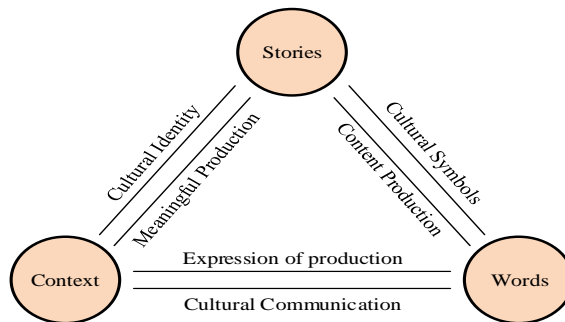


Figure 2: Cross-cultural communication model

In summary, the use of new media art design can make Chinese culture more widely spread, making it easier for the public to feel the spirit contained in Chinese civilization. Through new media art design, we can help Chinese culture achieve cross-cultural communication and visually express the Chinese voice that contains the charm of Chinese civilization in the face of global cultural diversity.

A logistic regression-based model of cultural communication

Based on the previous analysis of Chinese culture and new media art design, this chapter focuses on the effective mathematical model that is needed to analyze the efficiency and manner of cultural communication in the process of Chinese communication culture dissemination. The following is a description of the theoretical knowledge related to logistic regression.

Sparse logistic regression algorithm

Logistic regression

A logistic regression model is a special case of a generalized linear model, which is a multivariate statistical analysis method for analyzing and predicting the probability of occurrence of a state of the explanatory variable based on single or multiple discrete or continuous explanatory variables. The dependent variable of the logistic regression method can be either a binary categorical variable or a multivariate categorical variable, with a wider range of applications when the dependent variable is a binary categorical variable, the basic description of which is shown in Figure 3.

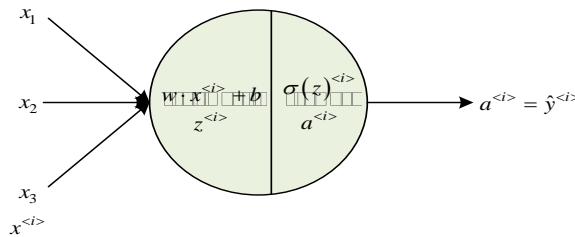


Figure 3: Logistic regression description

Logistic regression models, as one of the most commonly used statistical analysis methods, play a key role in the solution of classification problems.

Let $X = (x_{ij})_{n \times d} \in R_{n \times d}$, x_{ij} be the j th variable in row i , $x_i = (x_{i1}, x_{i2}, \dots, x_{id})^T$ be all the eigenvalues in row i , then X be $(x_1, x_2, \dots, x_n)^T$, y denote the label of the independent variable representing x_i , noted as $(y_1, y_2, \dots, y_n)^T$, $y_i = 1$ or $y_i = 0$, the probability of the event occurring is p_i and the probability of the time not occurring is $1 - p_i$, then the posterior probability can be expressed as:

$$\begin{cases} p(y_i = 1 | x_i) = \frac{1}{1 + e^{-\beta^T x_i}} \\ p(y_i = 0 | x_i) = 1 - \frac{1}{1 + e^{-\beta^T x_i}} \end{cases} \quad (1)$$

where $\beta = (\beta_1, \beta_2, \dots, \beta_d)^T$ is the vector of characteristic coefficients. The ratio of the probability of the event occurring to the probability of the event not occurring is $p / (1 - p)$, which can be obtained by taking the logarithm of:

$$\text{Logit}(p) = \ln\left(\frac{p}{1-p}\right) \quad (2)$$

is called *Logit* transformation, then the logistic regression model is:

$$\text{Log}\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2, \dots, \beta_d x_d \quad (3)$$

where is a constant term, the above equation can also be written as:

$$\frac{p}{1-p} = \exp(\beta_0 + \beta_1 x_1 + \beta_2 x_2, \dots, \beta_d x_d) \quad (4)$$

The left-hand side of the above equation indicates the event occurrence ratio we are interested in.

the larger the ratio, the greater the probability of the event occurring. for each unit increase in β_j , the event occurrence to non-occurrence ratio becomes $\exp(\beta_j)$ times larger, $\beta_j > 0$ then $\exp(\beta_j) > 1$, the event occurrence to non-occurrence ratio becomes larger. $\beta_j < 0$, then $\exp(\beta_j) < 1$, the ratio of occurrence to non-occurrence becomes smaller.

The logistic regression model can be solved using maximum likelihood estimation, using the log-likelihood function as the loss function, and the objective function of logistic regression can be expressed as:

$$\begin{aligned} l(\beta) &= -\sum_{i=1}^n [y_i \ln p(y_i = 1 | x_i) + (1 - y_i) \ln p(y_i = 0 | x_i)] \\ &= -\sum_{i=1}^n \left[y_i \ln\left(\frac{1}{1 + e^{-\beta^T x_i}}\right) + (1 - y_i) \ln p\left(\frac{e^{-\beta^T x_i}}{1 + e^{-\beta^T x_i}}\right) \right] \\ &= \sum_{i=1}^n \left[\ln(1 + e^{\beta^T x_i}) - y_i \beta^T x_i \right] \end{aligned} \quad (5)$$

By solving the above optimization problem, a classification function can be obtained. However, the problem of overfitting can be solved by solving the log-likelihood function directly for high-dimensional data of $d \gg n$. A sparse logistic regression model can be established to solve this problem:

$$\min_{\beta} \{l(\beta | D) + \lambda \sum_{j=1}^p P(\beta_j)\} \tag{6}$$

Where λ is a reconciliation parameter, the smaller λ is, the less penalty the model has and the more variables are retained in the model. $P(\beta)$ is a regularization term, and $P(\beta)$ can be chosen according to different situations.

Sparse logistic regression

Sparse logistic regression is constructed on the basis of logistic regression by introducing sparse prior factors. According to Bayesian theory, with known X and y , the w likelihood function can be expressed as:

$$P(w | y, X) = \frac{P(y | w, X)P(w | X)}{P(y | X)} \propto P(y | w, X)P(w) \tag{7}$$

Solve w from this likelihood function, i.e.:

$$w = \arg \max_w P(y | w, X)P(w) \tag{8}$$

Knowing $P(y | w, X)$, the estimation of w requires the combination of a priori factor $P(w)$.

Assuming that the weights are not correlated with each other, by the theory of generalized normal distribution, weight $w_i (i = 1, 2, \dots, d)$ satisfies the distribution corresponding to equation (9).

$$\frac{\beta}{2\pi\Gamma(1/\beta)} \exp\left\{-\left(\frac{|w_i - \mu|}{\tau}\right)^\beta\right\} \tag{9}$$

where τ, β, μ is the adjustment parameter. Taking the mean $\mu = 0$ and adjusting β yields two common prior factors. $\beta = 1$ corresponds to the Laplace a priori factor, i.e.:

$$P_{Laplacian}(w) \propto \exp(-\lambda_1 \|w\|_1) \tag{10}$$

where λ_1 is the conditioning parameter and $\|w\|_1$ is a $L1$ -parametric number with respect to w , i.e.:

$$\|w\|_1 = \sum_{i=1}^d |w_i| \tag{11}$$

$\beta = 2$ corresponds to the Gaussian prior factor, i.e.:

$$P_{Gaussian}(w) \propto \exp(-\lambda_2 \|w\|_2^2) \quad (12)$$

where λ_2 is the conditioning parameter and $\|w\|_2$ is a $L2$ -parametric number with respect to w , i.e.:

$$\|w\|_2 = \sqrt{\sum_{i=1}^d w_i^2} \quad (13)$$

The Laplace prior and the Gaussian prior correspond to the $L1$ - and $L2$ -parametric penalty terms, respectively. By adding the $L1$ -parametric penalty term to the logistic regression model and calculating the log-likelihood function, we can obtain equation (14) corresponding to the optimization problem, i.e., the sparse logistic regression model, denoted by $LR1$.

$$\log P(y | w, X) - \lambda_1 \|w\|_1 \quad (14)$$

$L1$ The essence of the penalty term is the addition of prior information that the model parameters obey a zero-mean Laplace distribution. This penalty term, also called the Lasso penalty term, enables the weights corresponding to irrelevant features to be reduced to zero, resulting in a sparse result. The joint Laplace prior and Gaussian prior yields the elastic net prior, i.e.:

$$P_{Elastic-net}(w) \propto \exp(-\lambda_2 w^T w) \exp(-\lambda_1 \|w\|_1) \quad (15)$$

By adding the elastic net penalty term to the logistic regression model, we can obtain equation (16) corresponding to the optimization problem, i.e., the elastic net logistic regression model, denoted by $LR12$.

$$\log P(y | w, X) - \lambda_1 \|w\|_1 - \lambda_2 w^T w \quad (16)$$

The $LR12$ model adds a $L2$ parametric penalty term to the $LR1$ model. $L2$ The essence of the penalty term is to add prior information that the model parameters obey a zero-mean Gaussian distribution. The $L2$ penalty term, also called the ridge penalty term, suppresses the weights corresponding to irrelevant features and avoids overfitting.

The elastic net penalty term has the advantages of both the ridge penalty term and the lasso penalty term, and thus is widely used.

Evaluation criteria of the model

After the model is established, we need to evaluate the performance of the model. Taking the application problem of new media art and design in Chinese cultural communication, which is the subject of this paper, as an example, if the accuracy of the model is very low, the model cannot be applied in practice. When comparing the prediction ability of different models, different indexes will lead to different judging results. The goodness of the model is relative, and moreover, it needs to be closely integrated with our target needs.

Confusion matrix

For the classification problem, we can generally use accuracy and precision to measure the performance of the model, but these two metrics alone do not meet the needs of our task. For example, for the application of new media art and design in Chinese cultural communication, we are more concerned about what kind of new media art and design expression carriers can be accurately classified into Chinese cultural communication carriers, because the loss caused by misclassification of wrong communication methods is greater than the loss caused by misclassification of correct communication methods.

Therefore, based on the characteristics of the research content of this paper, the rate of checking accuracy and completeness better meet our needs.

We record the wrong new media art and design cultural communication carriers as positive cases and the correct new media art and design cultural communication carriers as negative cases, and we represent the classification results in the form of a table, called the confusion matrix, as shown in Table 2.

Table 2: Confusion Matrix

Actual Sample	Predicted results	
	Positive Example	Negative Example
Positive Example	TP	FN
Negative Example	FP	TN

Based on the confusion matrix, we define the evaluation metrics based on the confusion matrix as shown in Table 3.

Table 3: Evaluation index based on Confusion Matrix

Evaluation Indicators	Definition
Accuracy rate	$P=TP/(TP+FP)$
Complete rate	$R=TP/(TP+FN)$
F_1 metric	$F_1=(2 \times P \times R)/(P+R)$
F_β metric	$F_\beta=((1+\beta)^2 \times P \times R)/(\beta^2 P+R)$

ROC curve and AUC area

In binary classification, we often predict the probability of a sample belonging to a positive case by building a model, and then set a certain threshold, if that probability is greater than this threshold, we classify it into the positive class, otherwise it is classified into the negative class.

We need to select the threshold according to our task preference, if we pay more attention to the accuracy rate we truncate at the top position in the sort, and if we pay more attention to the full rate we select the truncation at the relatively back position.

We can select different truncation points and obtain different confusion matrices to plot the ROC curve, which reflects how well the classifier expects the generalization performance under different task demands.

The ROC is calculated as the true case rate (TPR) and false positive case rate (FPR) under different thresholds, and the curves are plotted with them as the vertical and horizontal coordinates, respectively. Both are defined as follows:

$$TPR = \frac{TP}{TP + FN} \quad (17)$$

$$FPR = \frac{FP}{TN + FP} \quad (18)$$

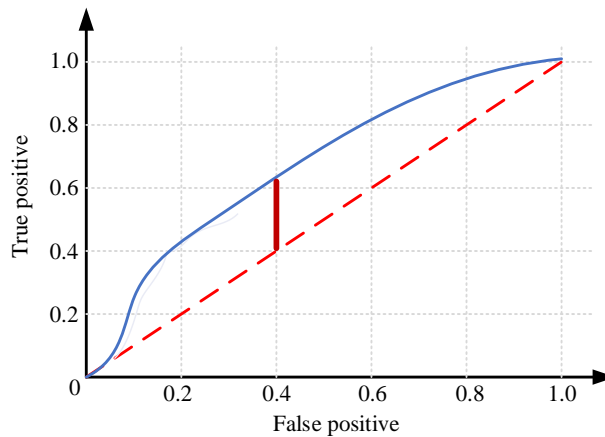


Figure 4: ROC Curve

Figure 4 shows a schematic of the ROC curve, with coordinate $(0,1)$ representing the case where both FN and FP are 0, which is the ideal data where all positive examples are ranked before the negative examples.

The closer the curve is to $(0,1)$, the higher the performance of the model.

When comparing models using ROC curves, if the ROC curve of one model completely wraps the curve of the other model, the former must be better than the latter. If the curves cross, we generally use the area under the curve as the criterion for judging, which we call the AUC value. It is generally believed that the larger the AUC value, the better the model performance.

Calculation example analysis

The emergence of new media art design has provided an effective way for Chinese culture to form a digital life.

This chapter will use the digital media video resources of new media art design on the Internet regarding Chinese cultural communication as an example, and use a sparse logistic regression model for quantitative analysis of the data. The effective analysis of the data will be used to verify the specific ways in which new media art design is applied in Chinese cultural communication, so as to achieve a deeper level of Chinese cultural communication and stimulate the digital vitality of Chinese cultural communication.

Model performance evaluation

Based on the design of the performance evaluation indexes of the sparse logistic regression model in the previous section, this section uses the UCI database to evaluate the performance of the sparse logistic regression model as a way to illustrate the effectiveness of the model in analyzing the application of new media art design in Chinese cultural communication.

In conducting the performance evaluation experiment, a ten-fold cross-validation method is adopted for the experiment, with 70% of the selected UCI database as the test set and the remaining 30% as the validation set. The average value after ten times cross-validation is taken as the performance evaluation of the sparse logistic regression model, and its experimental results are shown in Figure 5.

Through the analysis, we can see that the check accuracy rate and the check completeness rate are a pair of contradictory metrics.

If we hope that the check accuracy rate is as high as possible, we will tend to divide more samples into positive cases, which will inevitably cause the check completeness rate to decrease. In this paper, the average accuracy rate is 92.27% and the average completeness rate is 7.88% after the ten-fold cross-validation.

The F1 metric is a comprehensive index that combines the accuracy rate and the detection rate, which is essentially a summation of the two indexes.

The average F1 metric after performing ten-fold cross-validation is 14.06%, which is below 20% of the F1 metric to meet the model classification requirements.

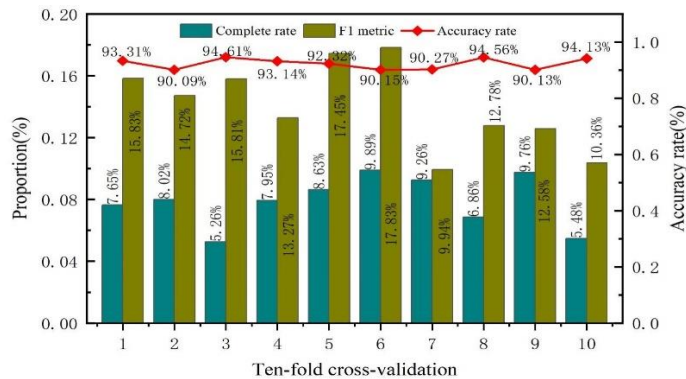


Figure 5: Ten-fold cross-validation results

Analysis of cultural communication applications

Application carrier analysis

New media art design has made Chinese cultural communication more digital and popular, and the use of new media art digital resources can achieve a wider dissemination of Chinese culture. In this section, the new media art design digital video resources on the Internet are used as the object of analysis, so as to find a new media art design carrier suitable for spreading Chinese traditional culture. The results of its analysis are shown in Figure 6.

From the analysis data of application carriers, the most popular application carrier for the dissemination of Chinese culture among new media art design digital video resources is historical digital video resources, which accounts for 42.7%, through new media art design, the reproduction of historical culture can be better realized, and historical digital museums can be used in a more direct form to let the public feel the beauty of Chinese history and culture, so that they can produce an immersive feeling. The digital museum of history can make the public feel the beauty of Chinese history and culture in a more direct and immersive way. The next most popular application vehicle is digital video resources for calligraphy, which accounts for 36.9% of the total.

This shows that new media art design brings the famous calligraphers in Chinese history to the public in the form of digital videos, enabling them to understand the cultural flavor of calligraphy by observing its strokes. The third ranking is the digital video resource of food, which accounts for 36.8%.

The programs carrying Chinese food culture such as *China on the Tip of the Tongue* and *Taste Search* are unanimously favored by the public, and the food culture is being presented to the public through new media, so that they can understand the hard work of food through the fine lens, and more effectively provide an effective way for the dissemination of Chinese food culture.

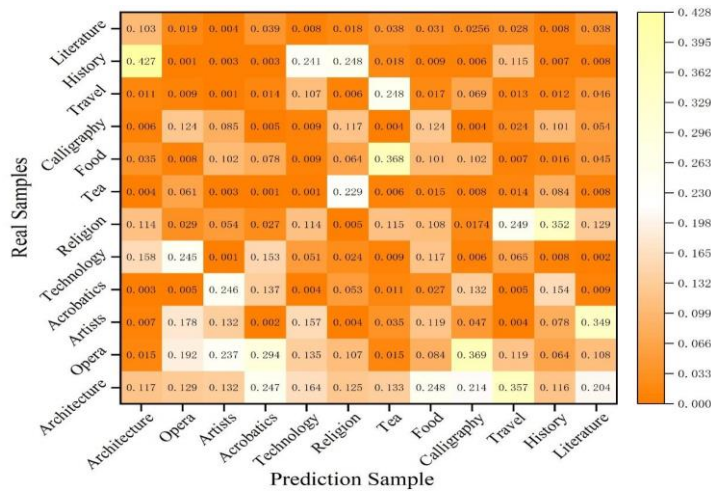


Figure 6: Cultural Communication Application Carrier

Types of Cultural Communication

This section compiles and analyzes new media art and design digital video resources about Chinese cultural communication in recent years, and explores the role of new media art and design in Chinese cultural communication from the perspective of the growth of digital video resource types. The results of its analysis are shown in Figure 7.

From the type of application of new media art and design digital video resources to Chinese cultural communication, the five categories of education, style, people, politics, and entertainment are the main categories from 2017 to 2021, and the five-year category with the fastest growth rate is style videos, which increased from 20.58% in 2017 to 38.71% in 2021, an increase of 18.13 percentage points. This is due to the rapid development of short videos in these five years, which allow more different kinds of Chinese culture to be understood through shorter video lengths, new media art design that makes short videos more diverse, and clip design that makes Chinese culture call out from short videos. From educational resources, the increase from 21.82% in 2017 to 35.62% in 2021 is 63.27%, which shows that more educational resources begin to be shown to the public in the form of new media art, making it easier for the public to get education and culture. From the figure category resources, it increased from 22.15% in 2017 to 36.25% in 2021, an increase of 63.63%. Through new media, more historical figures and modern figures are known to the public, which in turn also spreads the Chinese culture behind the figures. In terms of political resources, from 22.08% in 2017 to 33.43% in 2021, new media has enabled the public to personally comment on political culture, enhancing public discourse and providing a new channel for monitoring the country's political culture. In terms of entertainment resources, the growth from 20.94% in 2017 to 31.42% in 2021 is an increase of 50.05%. While absorbing China's excellent culture, the public will also screen the various types of culture reacting to the entertainment world, which has a lower growth compared to other types of cultural

communication. This also shows that the public has the right concept of cultural communication and does not accept the resources of the entertainment category that affect Chinese cultural communication.

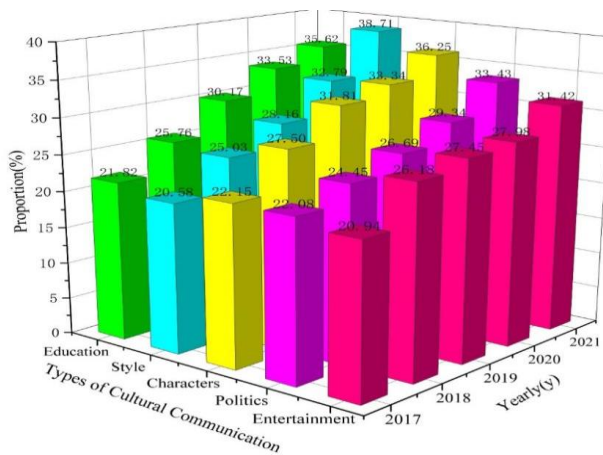


Figure 7: Types of Cultural Communication

In summary, new media art and design has enabled the all-round development of Chinese cultural communication in the form of digital video, which has helped Chinese culture to spread more deeply and promoted Chinese culture into millions of households.

Conclusion

In order to explore the application of new media art design in Chinese cultural communication, this paper constructs a sparse logistic regression model based on logistic regression model and introduces sparse factors. The performance evaluation and example analysis were carried out for the model, and the analysis concluded that the percentage of new media art design in Chinese cultural communication with historical and cultural videos was 42.7%, and the communication types were mainly style videos. Through the analysis, the following suggestions are made for the application of new media art design in Chinese cultural communication:

- (1) Enhance the dissemination effect of Chinese culture with the help of short videos. We should actively publish short videos related to Chinese culture and use new media art design to beautify them, so as to get more audience participation and attention and enhance the effect of Chinese culture dissemination.
- (2) The advantages of different subjects complement each other to help the spread of Chinese culture. New media art design should echo with digital technology and choose diverse ways to broaden the communication channels of Chinese culture.
- (3) Timely correction of negative images of Chinese culture. For resources on the Internet that spread well but have negative content to correct the bias and misunderstanding of the audience

about Chinese culture, to avoid the disconnection and distortion of Chinese culture in the process of dissemination.



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