Digital Evolution of Music Education: Exploring the Inheritance of Music Culture through Data Mining Technology in the Information Environment

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Abstract. The rapid development of digital information technology has had a great impact on the music industry, and the playing and downloading of music has become the main business of many Internet operators. The vigorous development of higher vocational education and the unique talent training mode determine that the course teaching will continue to deepen the reform. Vocational college students are the main force of social and economic development and the main element of social harmony and stability. Music education has always been one of the important contents of college students' quality education, an important part of college cultural construction and an important way to inherit excellent culture. Cultural inheritance and excavation is an important function of colleges and universities. It has the responsibility and obligation to make use of these unique folk music cultural resources, enrich the content of music education in local colleges and universities, and incorporate the excavation, research and inheritance of local folk music culture into the main channel of music education in colleges and universities. Based on musicology theory and data mining(DM) technology, this chapter proposes a style classification method based on music files. The recommendation algorithm based on sorting learning is experimented. At the same time, the experimental results are evaluated and compared with three algorithms, namely, user based collaborative filtering algorithm, product based collaborative filtering algorithm and unweighted sorting learning method.

Key words: Data mining; Music education; Cultural heritage; Network information;
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1   INTRODUCTION

With the rapid development and popularization of Internet technology, as well as the emergence and vigorous development of mobile Internet, it is very easy and convenient for people to obtain

information and resources through the network. But at the same time, due to the doubling of online information, people are at a loss to find the information they most want in the face of massive online information, which requires a lot of time and energy. This situation is known as the "information overload" problem [9]. Local music culture is the root of China's national music culture and a precious heritage of spiritual civilization accumulated in the long history [15]. At present, many vocational colleges still follow the teaching methods of middle schools or secondary vocational schools, or still learn from other ordinary colleges and universities, and have not formed their own unique, standardized and scientific music teaching system [6].

However, with the long-term impact of the western music education system and the impact of multiple music cultures, traditional music teaching has not been improved and breakthrough in its educational theory construction and education system construction. Traditional music is gradually marginalized and ignored. I believe that we can all feel this confusion and confusion [3]. However, because search engines generally only target a limited number of keywords, they cannot reflect the diversity of users. Search engines for the same keywords can only provide the same results, but for different users using the same keywords, they may need to obtain a variety of information [10]. Currently, recommendation technology has been applied to many e-commerce and entertainment application websites. It can excavate users' taste habits according to their usual interactive records and rating preferences, and recommend movies, music, books, clothes, daily necessities, etc. that users may like. For example, Amazon, Douban, last.fm and other websites have widely used recommendation technology [11].

In today's increasingly fierce competition environment, recommendation system can not only bring a lot of commercial value to websites and businesses, but also provide users with better user experience and services, making it easier for users to find what they want [4]. Music can be used as a form of entertainment to relax; It can also be used as a medium to spread culture; Can be used as a theme to lead the trend of the new era; It can also be used as a social means to expand people's social network. However, from the perspective of China's educational practice, although the education of national music culture has been included in the basic concept of the new music curriculum reform, how can we make use of schools as the main channel of education in today's diversified music culture background to make national music culture stick to its important position in music education [19].

In order to let the traditional local music culture enter the classroom, the national new curriculum reform puts forward: "According to the local music culture and customs, select appropriate angles and materials for distinctive music teaching", which provides a new opportunity for the inheritance and development of traditional music culture [14]. Traditional music culture is the foundation of Chinese music culture, with rich genre forms, a long history of development and profound national essence [16]. In order to inherit and develop the local music culture, I think it is urgent for us to fully tap the root and research value of traditional music culture, use effective communication channels - school music education channels, strengthen junior high school music education based on "local music culture", highlight the national characteristics of music education, and make traditional music culture inherit this new trend of international music education development, to become the responsibility and mission entrusted to us by the times as music educators.

Training data sets to produce the final desired ranking results provides a new idea for recommendation technology. In recent years, it has attracted the attention of many universities and research institutions, and has become a research hotspot in the field of recommendation. Combining the advantages of ranking learning method with traditional recommendation method provides a better platform for music recommendation system. Firstly, this chapter studies several commonly used recommendation algorithms and ranking learning algorithms, focusing on user-based collaborative filtering algorithm and RankBoost algorithm in peer-to-peer ranking learning algorithm, and explores the method and process of applying ranking learning method to recommendation

system. At the same time, several common recommendation algorithms and sorting oriented recommendation algorithms without weight are used as comparison experiments. Nornalized Discounted Cumulative Gain(NDCG) and accuracy are used as evaluation methods to verify the superiority of the recommendation results of the sorting based learning recommendation algorithm and the feasibility in the music recommendation system. Its innovation lies in:

(1)This chapter proposes an active search algorithm for mining Apriori frequent patterns, which effectively reduces the time and space cost and I/O cost in the process of mining frequent patterns. (2) This chapter compares the advantages and disadvantages of content-based recommendation algorithm, collaborative filtering recommendation algorithm and hybrid recommendation algorithm, as well as the application scenarios of point level, pair level and list level sorting learning methods, and explores the methods and processes of applying sorting learning methods to the recommendation system.

This chapter studies the inheritance of school music education and music culture, and the structure is as follows:

The first chapter is the introduction. This chapter introduces the background, significance, method and purpose of the research on the inheritance of music culture. The second chapter is an overview of relevant literature. The third chapter is the method part. This chapter introduces the data preprocessing process in the music classification method proposed in this chapter, including the decoding matrix of files, melody extraction algorithm, harmony extraction algorithm and data binning operation. The fourth chapter is the experimental analysis. The application of ranking learning algorithm in recommendation system is studied, and the recommendation algorithm based on ranking learning is tested and analyzed. The fifth chapter is the conclusion. Summarize the work done in this chapter.

2   RELATED WORK

The research of music genre classification technology can promote the development of music. Chinese traditional local music is rich in categories and widely distributed. In order to take better protection measures, we should first clearly divide and define its nature and categories, so as to put forward effective protection measures. Chinese local folk music mainly consists of traditional music of 56 nationalities, usually divided into four categories: folk music, religious music, literati music and court music. It includes all kinds of traditional music spread thousands of years before the 19th century and urban and rural music inherited and extended by traditional music since the 20th century.

Xu Yong proposed a classification algorithm based on support vector machine and a music classification method based on linear discriminant analysis. In this chapter, support vector machine is selected as the classification method, and Fourier transform method is used to extract the feature vector of audio data source. Dimension reduction is used [22]. It is easy to see from Co Ying's statement that the National Ministry of Education has always adhered to the theme of national music, and both stated that music education should draw nutrition from the fertile soil of human civilization, and through effective study of traditional national music culture, cultivate students' noble sentiments, improve their aesthetic ability, and enhance their profound national feelings [2]. Wei J pointed out that "the public art course is a limited elective course set up to cultivate high-quality talents needed for socialist modernization, which plays an irreplaceable role in improving aesthetic quality, cultivating innovative spirit and practical ability, and shaping a sound personality" "According to the advantages of educational resources such as discipline construction and the region where the university is located, as well as teachers' strengths and research achievements, all colleges and universities can offer various characteristic optional courses or series of special lectures on art at will to meet students' different interests and needs [20]. NART S has pointed out the direction for

public art education in colleges and universities, and clearly stated that art courses can be linked with the student credit system. This fully shows that the Ministry of Education attaches great importance to the standardized and scientific construction of public art courses in colleges and universities [13]. Xiao Hai explained the concept of "folk music" as: "folk music is an ancient and modern music culture type existing in the traditional music culture of all countries and nationalities in the world today. It is a kind of non professional music and cultural product created by the people and for the people to jointly control, enjoy, perform and inherit in their daily social life through oral transmission" [21]. Dillon S C used questionnaires, interviews and other research methods to investigate the current status of the inheritance of local music culture in folk and middle school music education. Through the analysis of the results, it concluded the importance and necessity of inheriting Yantai local music in junior high school music education [5]. From the perspective of the development of modern society, folk music is a relatively popular and widely developed traditional music. However, according to the survey, emerging music such as bel canto, popular music and pop music has a great impact on traditional music. The enthusiasm for learning folk music is often not as high as that of emerging music, and the venues for folk music activities are also greatly reduced [12]. Gilbert A D pointed out that colleges and universities, as the core part of contemporary educational activities, are an important symbol of the development of a country's and national culture. They are not only the support of local folk music culture, but also the most important inheritance field of contemporary national music culture [7]. Trenado C began to transform in most secondary vocational schools and upgraded to higher vocational education. The promulgation of the above two laws provided a reliable legal guarantee for the development of higher vocational colleges [18]. Partti H is even more inclined to learn piano, guitar, pop music and other emerging instruments and music forms in music learning, but often ignores traditional music and cannot appreciate its broadness and profundity. In this vicious circle, the inheritance of some national folk music is not only unable to develop and grow, but also loses some of its essence in the process of inheritance [17].

3 METHODOLOGY

3.1 Overview of School Music Education and Inheritance of Music Culture

From its birth and development to the present, Chinese traditional music has recorded and accumulated thousands of years of civilization and wisdom of the Chinese nation. Music itself is an important carrier of culture. Through it, people can feel the essence of traditional culture, the spirit embodied and the full understanding of history. Only when we recognize and affirm our own culture can we be respected and valued by the world. "Music culture is a synthesis of various music phenomena with different natures, forms and functions". As a unique form of human civilization, music culture reflects human material civilization, economic system and people's ideas. With the rapid development of economy, people's living standard and people's amateur cultural living standard are gradually improved, and the local music culture is gradually left out of people's sight. As a matter of urgency, I think that the inheritance of local music can not only rely on the meager efforts of social organizations, cultural centers and other departments and folk artists, but also make full use of and give full play to the educational inheritance function of schools, so as to absorb the essence of our native music culture, pass it from one generation to the next, and never stop. Traditional music education in colleges and universities is an important channel for popularizing and inheriting culture, while higher vocational colleges, as a platform for carrying forward Chinese traditional music culture, have incomparable advantages. It has certain advantages in carrying forward culture and inheriting spirit. At present, one of the difficulties of traditional music education and inheritance is that it is deeply influenced by the western music teaching system, especially in professional colleges. For professional students, their learning process is almost all Western-style teaching methods in terms of basic theory, composition, orchestration, etc. What they want is

exquisite specialty rather than popular culture. Therefore, for those of us who live in the present, especially those who are engaged in the study of national culture, we have the responsibility and necessity to actively explore the ancient and characteristic things of our country, spread them out, and make up for the lack of national characteristic culture at this stage. As we know, man is an advanced thinking animal. "Man is an animal of ideas, and ideas determine our behavior, our attitude, and even our musical values." As the culture of human voice, music is a part of the social culture that grows in the soil of deep-rooted national culture. Its stand is firm and its characteristics are distinctive. As shown in Figure 1, Figure 2, Figure 3 and Figure 4. From the picture, we can see the differences and characteristics of different ethnic groups in different regions in traditional folk music performances.

Figure 1: Indian belly dance.

Figure 2: Chinese gongs and drums dance.

Figure 3: African hand inspiration.

Figure 4: American jazz dance.

Music behavior is the product of music concept. In specific music activities, specific symbolic meanings and specific aesthetic values will show different performances in different races, groups and individuals. All this is determined by different natural environments, cultural traditions, social structures and personal experiences. Culture drives all human behavior, value orientation and psychological activities. As the carrier of a national culture, the nation's spiritual reflection in its national institutions is the representation of the national culture, and the national culture embodies the spirit and character of a nation. Each nationality has its own history, folk songs, music, costumes, etc. When students learn national songs or instrumental music, music teachers will explain the background of the nationality, national songs or music, so students can experience the folk songs or instrumental music of a certain nationality personally, and feel the national music and culture from

them, which are not available in ordinary textbooks. If not, the Chinese music tradition will not be able to realize modernization, nor can it fundamentally solve the main inheritance of music culture, nor can it assume the responsibility of developing human music culture in China ". In this case, if the essence education of original local music culture is infiltrated into school music education, students will learn the nutrients of outstanding achievements of human civilization from the deep soil of Chinese excellent traditional culture during their growth, thus improving students' understanding of local music culture and enhancing their deep national feelings. Although music art belongs to the category of music in both Chinese and Western countries, due to the huge differences between Chinese and Western cultures, there are also great differences in their understanding, not only reflected in the intuitive feelings on the emotional level, but also in the rational analysis and understanding. Therefore, the key point of this thesis is to change the teaching concept and take the inheritance of national culture and the promotion of national spirit as the ultimate teaching purpose. The students' learning of traditional music skills and techniques should be weakened, and the colorful teaching activities should be used to create a traditional music culture atmosphere. They should change passivity into initiative, feel traditional music and accept traditional culture imperceptibly.

3.2 Analysis of Music Culture Communication Based on Data Mining

Since the 21st century, the Internet has become an important channel for people to store, obtain and transmit information. However, with the development of Internet technology and the improvement of storage media, information explosion is an important problem that can't be ignored. Artificial intelligence and statistics are both disciplines that study how to discover knowledge from existing data and make predictions through existing knowledge. Among these disciplines devoted to knowledge discovery, statistics is a traditional discipline based on mathematical theory, while DM technology is more dependent on the powerful computing power of computers. The whole process of knowledge discovery can be roughly divided into: data cleaning and integration process, data transformation and selection process, DM process, pattern evaluation and knowledge representation process, as shown in Figure 5.
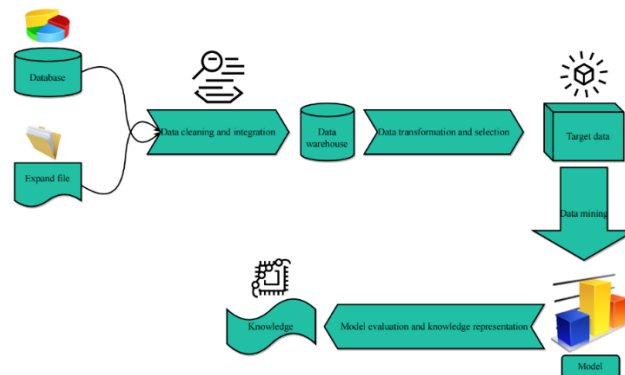

Figure 5: Process of knowledge discovery (KDD).

As we can see from Figure 5, the task of DM is to discover patterns from the target data. It can be divided into two categories: description mode and prediction mode. The descriptive model describes the existing characteristics and laws of the current data in an understandable way, while the predictive model predicts the value of the unknown field by using the relationship between the known field and the unknown field.

Compared with the point level ranking learning method, the rank ranking learning method can give better play to the advantages of ranking learning and make use of more user product information; At the same time, compared with the list level sorting learning method, the complexity is relatively moderate. User based collaborative filtering algorithm can make good recommendations for users through their historical interaction information and neighbor relationships. Here, we regard each user as a query, the corresponding product item as a document, and the user's product rating or interaction history behavior can be seen as the correlation between the two. Finally, for the target user, we can calculate a final product ranking table for him, and recommend the products with the highest ranking to the user. It is the soul of the main melody music and an important factor to distinguish the musical style. The analysis of main melody is a key research link in the music style classification method proposed in this chapter. The accuracy of extracting main melody from music files will directly affect the accuracy of classification results. However, for most music, there are many harmonies and accompaniment besides the main melody.

In this chapter, n_i, n_{i+1} is two adjacent notes, S_i, S_{i+1} is the starting time of two notes, and e_i, e_{i+1} is the ending time of notes. If their relationship satisfies Formula 1, it constitutes polyphony.

$$\forall n_i, n_{i+1} \begin{cases} s_i < s_{i+1} \\ e_i < e_{i+1} \end{cases} \tag{1}$$

The content of this section mainly studies the algorithm of extracting the main melody from the document.

As Skyline algorithm takes background accompaniment notes as main melody notes when the main melody is at rest, a minimum pitch threshold of ξ_p is set, which can be determined according to the range of specific main melody instruments (vocals). For example, vocals singing music is set as the lower limit of human voice range. After setting the threshold, the algorithm will remove all the notes in Music interface equipment matrix whose pitch value is less than the threshold value of ξ_p.

For each cluster after clustering, the audio track with the highest value of v is selected as the representative audio track, where $\overline{p}$ is the average pitch value, and $H(c_i)$ represents the information entropy of audio track c_i. The calculation method of information entropy is shown in Formula 2.

$$H(c) = -\sum_{i=1}^{12} p(h_i) \cdot \log p(h_i) \tag{2}$$

In formula 2, $p(h_i)$ indicates the probability that the note represented by h_i is the main melody melody note, and its calculation method is shown in formula 3.

$$p(h_i) = 1 - \frac{edist(h_i)}{edist \max_i} \tag{3}$$

Where $edist(h_i)$ represents the distance between the current track c and the whole in h_i dimensions, as shown in the formula.

$$edist(h_i) = \sqrt{(h_i - \overline{h_i})^2}$$

(4)

$edist\max_i$ represents the farthest distance from the whole in the dimension of h_i among all tracks of the current cluster. In formula 4, w represents a weight, and its value is usually between 100 and 140. In MIDI system, the average pitch varies from 0 to 128, and the information entropy ranges from 0 to 1. Therefore, if w is greater than 128, the average pitch value has a higher weight; If it is less than 128, the European distance from the whole is more important in the selection of representative tracks.

3.3 Experimental Process and Analysis Based on Recommendation Technology

For traditional recommendation algorithms, most of the main evaluation indicators used are scoring oriented, that is, the main purpose is to measure the accuracy of the scoring predicted by the recommendation system, such as the average absolute error MAE, root mean square error MSE, accuracy and recall. Because this chapter is a research on recommendation technology based on sorting learning, more attention is paid to the recommended location of the instance among the target users. At the same time, the data set is selected from the music data set, which is meaningless for evaluating the relevant scoring scores. More attention is paid to the final sorting recommendation results, or whether the user's recommendation results meet the user's needs. The local music cultural resources are an important part of the traditional Chinese cultural resources. It is a common characteristic of people in this region, and it also continues with the natural ecology, cultural changes, and economic development of this region.

When this algorithm is applied to music style discrimination, each item set needs to have a decision attribute. When connecting to generate candidate item sets, two frequent item sets that can be connected must meet the following requirements:

$$(l_o, l_h) \in \left\{ (l_1, l_2) \middle| diff(l_1, l_2) = 1, d_1 = d_2 \right\}$$

(5)

In the process of extracting music classification rules using the active search Apriori algorithm, it is necessary to set a confidence threshold of ξ_c, extract rules from frequent itemsets, and calculate the confidence of rules.

$$Confidence = \frac{\sup port}{|matched|}$$

(6)

If the confidence of the rule cannot exceed the threshold, delete the rule. If there are two rules R_o, R_b, among which,

$$\begin{cases} R_o : \{A, B, C\} \Rightarrow d_1 \\ R_b : \{A, B\} \Rightarrow d_1 \end{cases}$$

(7)

In this chapter, a reduction algorithm based on attribute value set chain is proposed to extract rules in music classification. This algorithm can get all reductions and reduce the time complexity of constructing discernibility matrix in discernibility matrix attribute reduction algorithm to $o(|C||U/C|)$. If the training data set is shown in Table 1, where $A-E$ respectively represent the harmony type in 1

SID	Harmonies	Style
S1	A,C,D	BLUES
S2	A,C,D,E	METAL
S3	A,C,B,E	JAZZ
S4	A,E	ROCK
S5	A,D,E	POP

Table 1: Training Data Set.

As shown in Table 1, in track S1, three types of harmony, A, C and D, are frequent, and their style is Blues. In this example, the value field of the condition attribute only contains frequent and infrequent values. The attribute reduction algorithm based on the attribute value set chain allocates a set for each value in the value field of each condition attribute. Different set chains are formed according to the different condition attribute values of each entity object.

The segmentation algorithm takes the measure as the basic unit, first runs the tuning and scale recognition, and determines the scale and tonality of the first measure. For each subsequent section, determine the distance between it and the previous section. If the previous section is and the scale used is, the distance between it and is calculated as shown in Equation 8.

$$dist(m_i, m_{i+1}) = \left| \left\{ n \middle| n \in m_{i+1}, n \notin s_i \right\} \right|$$

(8)

Normalized Discounted Cumulative Gain (NDCG) is mainly based on two principles: First, for the returned final sorting results, there are multiple levels of relevance, giving higher weight to the instance with higher relevance; Second, in the returned sorting results, the more relevant the instances are, the better it will be. For target user u, the NDCG calculation formula is as follows:

$$NDCG_u @ k = Z_u \sum_{i=1}^{k} \frac{2^{r_{u,i}} - 1}{\log(1+i)}$$

(9)

In the above formula, Z_u is the normalization factor, which makes the value of NDCG 1 when the returned result is optimal. $r_{u,i}$ is the correlation degree, and i is the ranking position of the instance in the ranking recommendation. The value range of NDCG is between [0,1]. Obviously, the larger the value of NDCG, the better the recommendation result. In the recommendation system, we have multiple users who need to consider the recommendation results, so the average NDCG of all users is taken as the evaluation index of the recommendation results. The average value of NDCG is defined as:

$$NDCG_{avg}@k = \frac{1}{N} \sum_{j=1}^{N} NDCG_j@k$$

$$(10)$$

The denominator in the formula increases with the lower ranking position, which correspondingly leads to the decrease of NDCG value, which makes NDCG evaluation index more sensitive to the top ranked products.

Education is a social activity that cultivates people and makes them knowledgeable. As a social activity system for cultivating people, education is bound to be influenced by three aspects, namely, school, society and family. School education, social education and family education cannot replace each other. In ethnic areas, all people can always feel the national traditional culture and be influenced by the national traditional culture. Everyone is concerned about the inheritance of the national traditional local culture. In school education, excellent inheritors of ethnic and local cultures should be invited to schools to guide and train students. Therefore, school education, family education and social education are combined to jointly promote the inheritance of national traditional local culture. Everyone becomes the supporter and advocate of inheriting national traditional local culture.

4   RESULT ANALYSIS AND DISCUSSION

In this chapter, user based collaborative filtering algorithm, product based collaborative filtering algorithm, and ranking learning technology without weight are used as the comparison algorithm of ranking learning recommendation technology. In the course of the experiment, the effects of the number of neighbors, the number of recommendations and the number of cycles on the results of the algorithm were tested respectively. The experimental results of each algorithm were evaluated and compared with two evaluation methods, and the running time of these algorithms was compared.

In order to verify the feasibility of ranking-based learning recommendation technology, this chapter adopts the real music data set of Ali Music provided by "Time Hacker Data Mining Competition" for experiments. The data set includes a total of 5,652,233 historical records of 10,842 songs by 349,946 users. Table 2 gives the specific user record information of this data set.

Column name	Explain
User_id	User unique ID
Song_id	Unique identification of song
Gmt_create	User Playtime
Action_type	Behavior type: 1. Play; 2. Download; 3. Collection
Ds	Record collection date

Table 2: User behavior table.

Here, the fixed parameter T is selected as 20 rounds, and the recommended quantity is selected as 10 and 20 respectively. The results of the experiment are given below. Figures 6 and Figures 7 show the results of the recommended accuracy evaluation indicators.
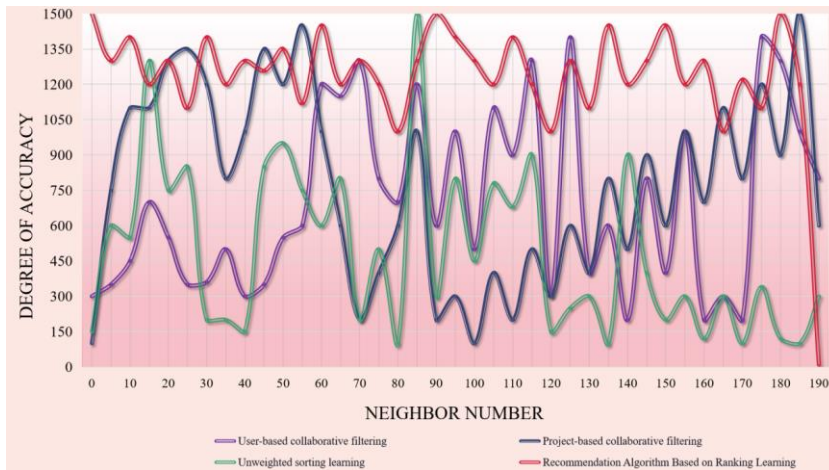
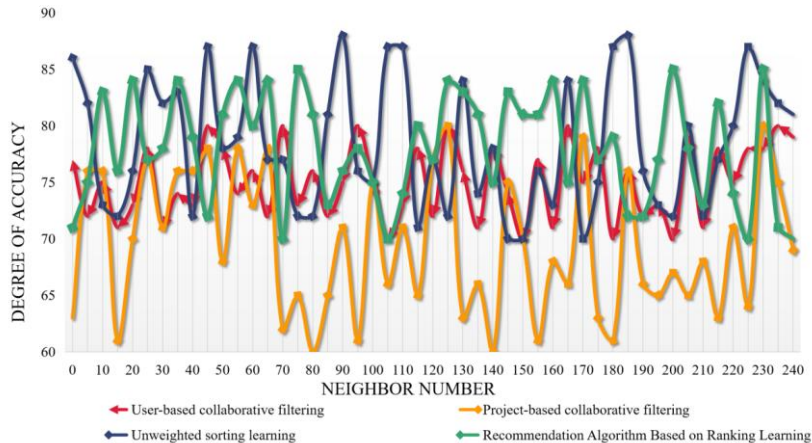**Figure 6:** Accuracy of 10 resultant recommendation algorithms.

Figure 7: Recommended algorithm accuracy when 20 results are recommended.

As can be seen from the figure, under the two evaluation indexes, the recommendation technology based on ranking learning proposed in this chapter is better than other recommendation algorithms. At the same time, it is observed that when the number of neighbors is small, the recommendation effect of several recommendation algorithms is not very good. The main reason is that the number of neighbors is small, the corresponding feedback information of target users is small, the number of songs that neighbors have heard but target users have not heard is correspondingly reduced, and the accuracy of recommendation also decreases accordingly. From the experimental results, we can see that the recommendation technology based on ranking learning has a good recommendation result, which verifies the practicability and accuracy of this method. Therefore, this chapter chooses the recommendation technology based on ranking learning as the recommendation method of music recommendation system.

Figure 8 shows the change curve of the accuracy of Skyline algorithm and MTSC algorithm with the increase of the number of tracks. In this experiment, 300 tracks are processed by Skyline algorithm and MTSC respectively. The change range of the number of tracks in these songs is 1-8.

The accuracy in the figure is the average of the accuracy of the algorithm in processing music with the same number of tracks in the experiment.
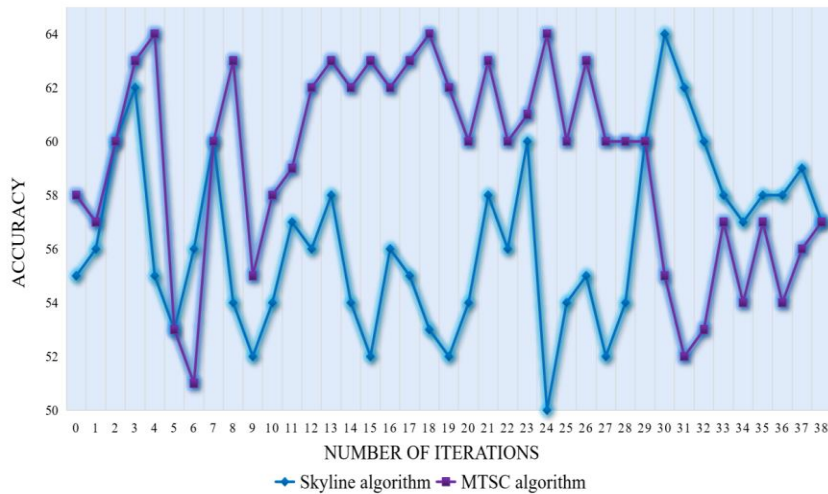

Figure 8: Classification results of different iterations.

It can be seen from Figure 8 that when the number of iterations Te=1, the model has not fully learned all the graphic information related to aspect words, so the accuracy of the model and the performance effect of macro average F1 value are relatively poor. However, with the increase of eT, the abstraction of text and image representation of the model is gradually enhanced, so the accuracy of DMN-GMUF model and macro average F1 value show an upward trend.

From the above experiment, it can be seen that the final recommendation number of the recommendation system to users also affects the calculation result. Obviously, the more recommendations, the greater the probability of hit, and the higher the accuracy. However, for practical applications, the number of recommendations that the general user can accept and the page is enough to display is about 10, and the next page is generally less than 20. Therefore, the number of recommendations in the previous experiments is basically 10 or 20, and this parameter is also used in the subsequent recommendation system design.

As shown in Figure 9, it is a comparison chart of the running time of user based collaborative filtering algorithm, project based collaborative filtering algorithm, unweighted value sorting learning method and sorting learning based recommendation technology. Obviously, the recommendation technology based on sorting learning has a great relationship with the number of cycles in operation, and the relationship between them is linear. Here, we choose the time of 20 cycles as the running time of the experiment to compare with other algorithms.

As can be seen from the above figure, the recommendation technology based on ranking learning takes more time than other algorithms, and its running time is about twice that of other algorithms under the condition of ensuring good results. This is because in the calculation process, the deviation pair matrix needs to be generated, which makes the vector representation of users more complicated when calculating user similarity, and at the same time, additional intermediate values such as weights need to be calculated. At the same time, it can be seen that although the running time has been greatly increased, in order to pursue better running results, these increased times are within the acceptable range.
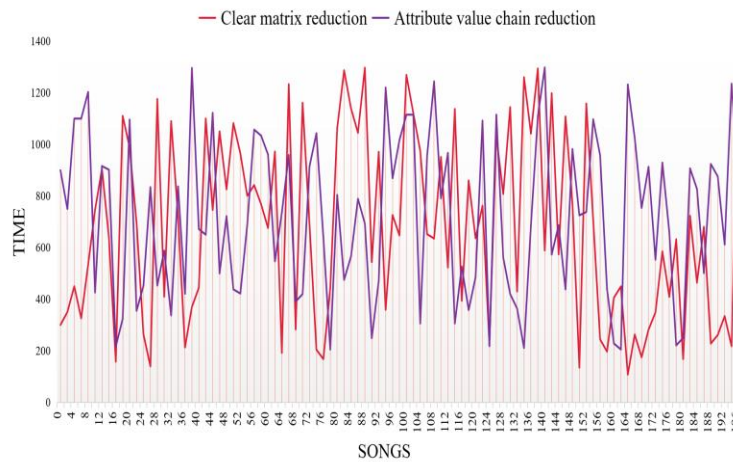
Figure 9: Comparison of running time of two recommended algorithms.

From the above experiments, it can be concluded that in the case of small-scale data sets, the time consumption of the two attribute reduction algorithms is the same. With the increase of data set size, the efficiency of attribute reduction algorithm based on discernibility matrix is much lower than that of attribute reduction algorithm based on attribute value set chain, as shown in Figure 10.
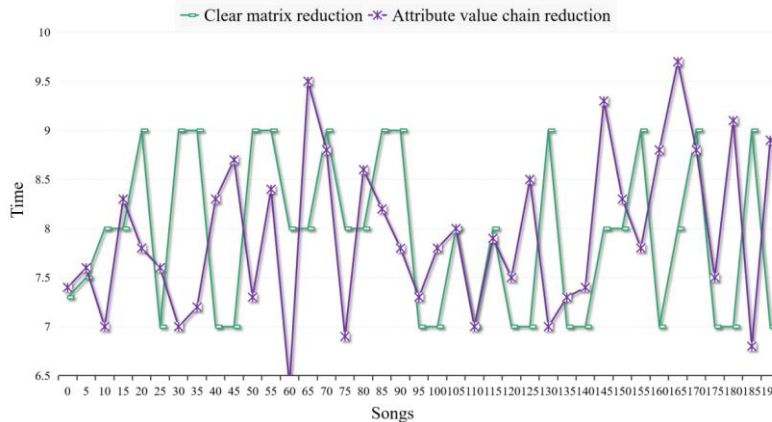

Figure 10: Comparison of time cost of two reduction algorithms.

It can be seen from Figure 10 that the attribute reduction algorithm based on attribute value set chain has better reduction efficiency than the discernibility matrix reduction algorithm.

5   CONCLUSIONS

In today's multicultural background, colorful foreign cultures stir up our impetuous hearts. In this colorful environment, we are impetuous and enthusiastic, and we yearn for novel and fresh things. The inheritance and excavation of culture is an important function of colleges and universities. It has the responsibility and obligation to make use of these unique folk music cultural resources, enrich the music education content of local colleges and universities, and incorporate the excavation, research and inheritance of local folk music culture into the main channels of higher education. As

we all know, the inheritance in school music education activities is the most important way. The evaluation of the teaching achievements of Chinese traditional music in schools mainly depends on the development effect of the inheritance of local music culture in each school. While inheriting the traditional local music culture, we should give full play to the role played by local colleges and universities. We should not only inherit, but also develop our traditional music culture. To achieve this goal, we all need to have a sense of responsibility and participation. We should make continuous efforts in the future music research and teaching. Let's carry forward this treasure of the Chinese nation. In this chapter, DM technology and music theory are combined, and a style classification method based on format music is proposed, which has achieved ideal results in relevant experiments.

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