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ORIGINAL

INNOVATIVE COMMUNICATION STRATEGIES FOR TRADITIONAL NATIONAL SPORTS CULTURE IN THE ERA OF DIGITAL TRANSFORMATION

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ABSTRACT

Traditional national sports are recreational activities created by all ethnic groups in labor practice and in line with their own physical activities. As younger generations increasingly gravitate toward digital platforms, this research provides insights into effectively engaging them with traditional sports. By utilizing modern communication strategies, these sports can capture the interest of youth, fostering a new appreciation for cultural heritage. Through mutual integration and penetration, the Chinese traditional physical culture system with distinctive features and profound connotations has been formed, and it has played an irreplaceable role in enhancing national cultural identity, maintaining and deepening national feelings. However, in the face of a large number of ethnic minority cultural resources data with rich content and complex structure, how to quickly and accurately find, obtain and use valuable information has become one of the urgent problems to be solved in the development of ethnic minority information. This paper combines big data processing technology with data mining (DM) technology to study the DM methods of massive minority physical culture resources, and provides an effective way to promote the protection and inheritance of minority physical culture. The experiment shows that PSO kmeans algorithm not only reduces the running time, but also ensures the stability of the algorithm. In the task of ethnic cultural resources clustering, the accuracy rate is improved by 3.4%.

KEYWORDS: National Traditional Sports; Data Mining; Cultural Transmission; Innovative Communication

1. INTRODUCTION

Traditional national sports culture faces unprecedented challenges and opportunities. With the rapid advancement of technology, particularly the widespread use of the internet and social media, the ways in which traditional sports are communicated and their audience demographics have significantly changed. This shift compels us to rethink how to effectively preserve and promote these culturally rich sports. China is a unified multi-ethnic country. The five thousand year Chinese civilization has brought about the harmonious coexistence and common development of 55 ethnic groups in China, and also created the splendid national culture of all ethnic groups (Liu et al., 2020). Ethnic sports is the precious cultural heritage of the Chinese nation and an important part of China's socialist sports cause. It is difficult for us to reflect the whole field from small to large from a certain point. Therefore, we should grasp the research hotspots of ethnic sports as a whole, so as to summarize the theme of research in the whole field, clarify the evolution direction and process of research in this field, and summarize its future development trend (Ouyang & Liu, 2013). Under this background, ethnic sports are in urgent need of cultural interpretation. Reviewing the development path dependence of ethnic sports, examining the current development path trend of ethnic sports, and proposing the future development path trend of ethnic sports have important breakthrough bottleneck significance for demonstrating national self-confidence, enhancing national affinity, expanding cultural influence and improving cultural competitiveness under the current economic integration background, and are also important measures to realize the current inheritance of national traditional culture, carry forward national spirit, realize equal dialogue between Chinese and western cultures and realize the great rejuvenation of the Chinese nation (Luh, 2003). However, there are still many problems in the protection and inheritance of national traditional culture, such as the loss of national ballads, folk art and legends, the decline of exquisite national crafts and architecture, the abandonment of rituals and customs with traditional virtues, etc. Many national traditional cultures are on the verge of disintegration, and how to protect them is an imminent cultural development event (Zhang, 2019). The research on the cultural characteristics of ethnic sports will undoubtedly play a very important role in the re-emergence of ethnic sports in a future world that pursues cultural diversity. This topic summarizes the common characteristics of the ethnic physical culture. There are 16 points in total. Each point is not general, but the National Traditional Sports appears in its development process and restricts the development direction of the ethnic sports (Bergeson, 2019). With the rapid development of world multiploidization, economic globalization, and information networking, the vast number of developing countries have expanded their international exchanges and cooperation in a wider scope and deeper degree (Ju et al., 2021). However, globalization is not a free lunch. While selectively exporting economy and technology, western developed countries export their ideology, culture and values in large quantities and

unreservedly, which has a profound impact on the pattern of human civilization (Yin & Cui, 2021). Make use of information technology, such as DM technology, big data processing technology and the Internet, to serve the nation. "Internet" + "national culture" is to use the platform of the Internet to serve the nation. It can be seen that the combination of Internet and national culture will create a new ecology, and the digital resources of national culture accumulated for a long time will be widely studied and valued. DM technology is a very important knowledge discovery technology, which refers to the process of discovering hidden information and knowledge with potential value from massive data resources by applying DM methods, such as predictive analysis and cluster analysis. Under the background of "internet plus", the speed of data growth is from TB(Terabyte) to EB(Exabyte) and ZB(Zettabyte), the data scale is getting bigger and bigger, and the data structure is more complex, which brings new challenges to DM (Song et al., 2019). With the rapid, far-reaching and wide audience characteristics of new media in communication, it can really deepen and expand the dissemination of ethnic physical culture, promote it all over the world, truly give play to and release the essence and connotation of ethnic physical culture, so as to drive the development of socialist national culture and accelerate the construction of a socialist cultural power. This paper studies the transmission path of ethnic physical culture, and the structure is as follows: The first chapter is the introduction. This paper describes the research background and the reasons for choosing this topic, introduces the current research status of national physical culture and data mining, and explains the main research contents of this paper. The second chapter is a summary of relevant literature, summarizing its advantages and disadvantages, and putting forward the research ideas of this paper. The third chapter is the method part. The principle of the main particle swarm optimization algorithm and K-means algorithm is studied, and the basic flow of the algorithm is analyzed. The particle swarm optimization is optimized, and they are designed in parallel. Then, the parallel programming is implemented on Spark platform, and the experimental results are analyzed. The fourth chapter is the experimental analysis. According to the basic research of the experiment, the requirements of each functional module of the mining prototype system are analyzed, and the data mining prototype system of ethnic cultural resources is designed and implemented, and the data classification results are displayed through the system. The fifth chapter is the conclusion and prospect.

2. Related Work

At present, human society has entered the era of new media, and many scholars are also exploring based on new media, specifically analyzing its influence on social development, politics, economy and culture. In recent years, with the upsurge of mass sports and national fitness, the research on new media, sports events and physical culture has been increasing day by day, and a series of fruitful theoretical documents and research results have been formed.

Qi l takes Wushu culture as the starting point of research, and gives a detailed description of the spread of Chinese Wushu Culture in the international community in different periods. He believes that the establishment of Jingwu Sports Association and the central martial arts hall has played an important role in promoting the spread of Wushu culture. At the same time, the large-scale commercial performance also provides an important opportunity for its dissemination (Qi et al., 2021). Zhao a believes that when a country can produce a culture that is generally accepted by other countries, it naturally attracts other countries to follow its own will. It can be seen that culture is an important part of soft power and directly affects the level of soft power (Zhao et al., 2020). Rui understands the development status of national traditional physical culture and specific examples that can show the characteristics of national traditional physical culture through face-to-face talks or telephone interviews with education departments, sports management departments and national traditional sports researchers (Rui, 2023). Zhang ZP put forward the Countermeasures for the inheritance and development of the traditional physical culture of ethnic minorities, and built a "government led" mechanism for the protection and promotion of the traditional sports of ethnic minorities; Relying on Colleges and universities to carry out research and reform of traditional sports activities of ethnic minorities; "Combination of sports and education" brings the traditional sports of ethnic minorities into the teaching content of the school; Combined with national fitness, promote its development towards life; Make use of the competition effect to give play to the platform of the Democratic games; Develop the traditional sports tourism resources of ethnic minorities and promote the industrialization development (Zhang, 2010). Bu t believes that "the development of traditional sports of ethnic minorities should be scientifically inherited, orderly and standardized; the development path complementary to modern sports; he also pointed out that it is a rational path for the development of traditional sports of ethnic minorities to base on the local and go to the world" (Bu, 2011). Wei l put forward: "the development thinking of traditional sports of ethnic minorities in the perspective of intangible cultural heritage believes that the inheritors of traditional sports of ethnic minorities should be protected and cultivated first, and attention should be paid to the excavation of the spiritual and cultural connotation of traditional sports of ethnic minorities (Wei, 2017) Wise uses citspace visualization software in the form of data and takes 2066 pieces of literature information obtained from the CNKI database on the research topic of ethnic sports as the research object (Wise et al., 2023). As a journalist, Lei s expressed the role of current communication means on the dissemination of folk physical culture from the perspective of media (Lei et al., 2010). Yang pointed out that to implement China's sustainable development strategy, culture, education and the development of science and technology should be placed in an important strategic position. In particular, in Chapter 6 of the report, the chapter "education and sustainable development capacity building" is specifically listed for

education, which not only points out the direction of future development of education, establishes the due status of education in the national development strategy, but also clarifies the historical responsibility that education should bear in social changes (Yang et al., 2021). Jiang H pointed out that new media still has immeasurable potential in the future, and its rich and diverse forms and open industrial structure are of great significance for deepening the communication levels and effects in different fields (Jiang & Tsai, 2021). Therefore, we should strengthen the research on the digital resources of ethnic minority culture, give full play to the role of long-term accumulated data, fully combine "ethnic resources" with "DM", and use information technology means and methods to mine the cultural information of ethnic minority resources.

3. Methodology

3.1 Discussion on the Dissemination of National Sports Cultural Resources

The extensive exchange of information in the 21st century makes the links between countries more and more close, showing the trend of global economic integration and cultural diversity. The ups and downs of the Chinese national culture over the past five thousand years have warned every Chinese people that if China wants to develop, the nation wants to revitalize, and the people want to be rich and strong, it must adhere to the socialist development path, inherit the national culture, and carry forward the national spirit. This is the direction of the national cultural development. Ethnic minority cultural resources refer to the general term of cultural and artistic expressions with certain historical, literary, artistic, scientific and social values, which are passed down from generation to generation by ethnic minorities living in ethnic areas, preserved among the people, reflect the historical origin, living customs, psychological characteristics of various ethnic groups or groups in various regions, as well as the natural environment, group characteristics, religious beliefs and other contents on which they live. Ethnic cultural resources mainly include ethnic costumes, folk songs, folk arts, legends, ethnic crafts, rituals and customs, etc., which reflect the cultural characteristics and values of ethnic cultures. Most of these resources are described in words, presented on ethnic websites or local government papers, distributed in different regions, and displayed in various ways. From the perspective of China's industrial development as a whole, the popularization of new media technology and the promotion of new media business have made the new media industry develop rapidly, Source for China to highlight its cultural influence on a global scale. Therefore, national traditional sports are not only different from other cultural groups in appreciation value, but also lack perfect reflection mode in communication mode, which is easy to breed a variety of variants. China's long history has left the Chinese nation with a rich and precious heritage of traditional physical culture, which has unique effects of physical fitness, health care and

education of national inheritance. According to the dominant factors of competitive ability, the project is classified into physical fitness and skills; According to the movement structure of sports, it can be classified into single movement, multiple movements and multiple combinations. Therefore, according to the cultural foundation of Chinese traditional sports, the author divides national traditional sports into competitive, fitness, leisure and game cultures, as shown in Figure 1.

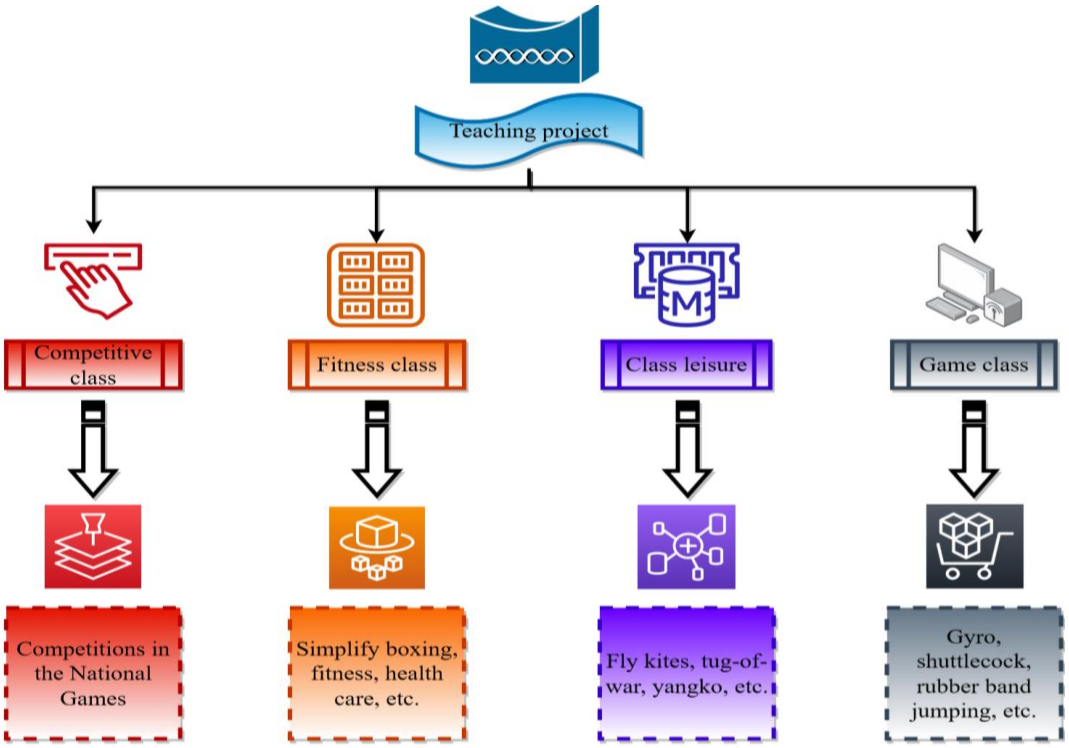

Figure 1: Schematic diagram of the classification of national traditional culture and sports events

3.2 Research on Traditional Culture of National Sports Based on Data Mining

Living in the era of big data, data from human activities and various sensors are exploding every day, and useful tools are urgently needed to quickly screen out useful information from numerous data. Find useful information from massive data, and present knowledge to people through visualization technology. DM is a process of knowledge discovery in database. How to find information useful for decision-making from massive data has become a hot issue in all walks of life. DM is widely used in the fields of banking, news, marketing and advertising, and shows its practical application value. In different application fields, the process of DM is different. For text data classification, the typical mining steps are: data source, data preprocessing, data analysis, result evaluation and knowledge display. Due to the increase of data scale and the low efficiency of traditional DM algorithms, it is not suitable for massive DM. Parallel processing technology distributes data and computing

tasks to different nodes, and combines DM technology with parallel processing technology to reduce the load of a single node and improve the efficiency of parallel mining of massive data. The data analyzed in this paper is mainly divided into two parts. One part comes from the data of the network crawler crawling the national network and the Chinese Intangible Cultural Heritage Network; The other part comes from the data of ethnic cultural resources accumulated in the laboratory for a long time. When acquiring network data, it contains character coded data, data source, creation time and other data in HTML format. The data after "de-noising" only contains unique plain text data. Chinese text word segmentation is used to remove the influence of stop words in the data that have no practical significance for clustering, such as "de", "Le", "you" and other words with high frequency. The flow of data pre-processing is shown in Figure 2.

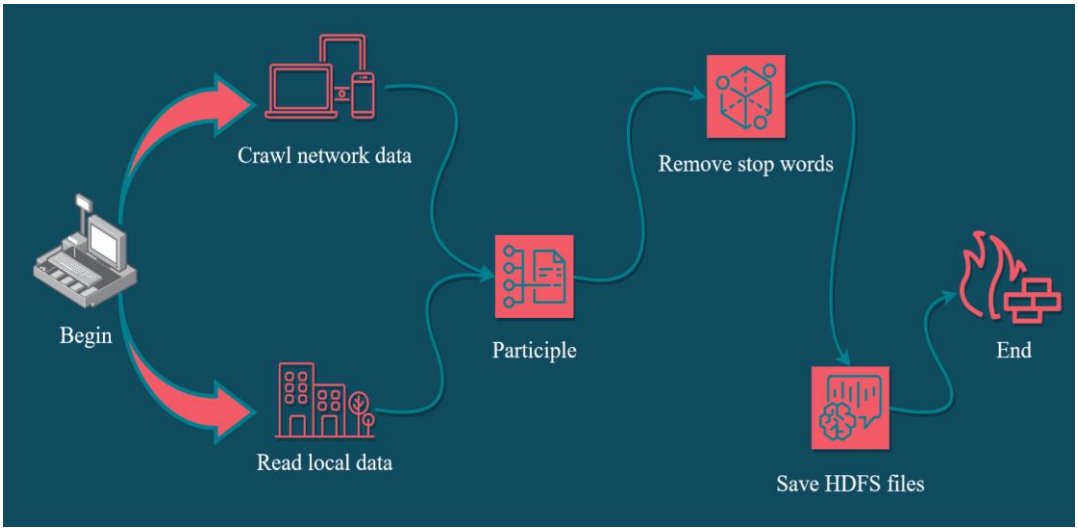

Figure 2: Data preprocessing process

By filtering out useless words, feature selection can reduce the number of features, reduce the dimension of data, enhance the generalization ability of the model, reduce over-fitting, and make the program run more efficiently. TF-IDF describes the weight of words in the data set, which is related to the frequency of words appearing in the text (Document Frequency) through the word frequency (Term Frequency). Feature selection is carried out according to the weight of words. The higher the weight information, the stronger the discrimination ability of word corpus, otherwise the weaker the recognition ability. For the word t, its TF-IDF calculation formula is shown in (1):

$$tfidf(t) = tf(t) \times log\left[\frac{N}{df(t)}\right] \quad (1)$$

In practical application, the square of $tf(t)$ is squared, and the calculation formula is shown in (2):

$$tfidf(t) = \sqrt{tf(t)} \times log\left[\frac{N}{df(t)}\right] \quad (2)$$

3.3 Parallel Design of PSO-kmeans Algorithm Based on Spark

Parallel PSO-kmeans algorithm based on Spark is mainly composed of PSO algorithm and K-means algorithm. K-means uses the sum of error squares as the clustering criterion function. Each iteration will check whether the maximum number of iterations or the clustering center is changed. If not, the next iteration will be performed until the convergence conditions of the algorithm are met. $X = x_1, x_2, x_3, \ldots x_n$ denotes the data set to be clustered, n denotes the dimension of the data, $X = x_1, x_2, x_3, \ldots x_n$ denotes the cluster center of the data set, k denotes the number of cluster centers, and the distance between each object and each cluster center is calculated by the Euclidean distance. The calculation method is as follows (3):

$$D(x_i, z_h) = \sqrt{(x_{i1} - z_{h1})^2 + (x_{i2} - z_{h2})^2 + \cdots + (x_{im} - z_{hm})^2} \quad (3)$$

If $D = (x_i, z_h) = min_{x \epsilon X, z \epsilon Z} \|X - Z\|$, D is divided into the nearest cluster center according to the principle of distance nearest. After a cluster is completed, the adjustment method of the cluster center is as shown in formula (4):

$$C_h^* = \frac{1}{n_h} \sum_{i=1}^{n_h} X_i^h \quad (4)$$

Where, n_h is the number of objects in the subset after classification. For the square error criterion function J, the calculation method is as follows (5):

$$J^* = \sum_{k=1}^{n_h} \sum_{h=1}^{k} \left\| x_k^h - c_h^* \right\|^2 \quad (5)$$

For any δ, if there is $|J* - J| < \delta$, it means that the clustering criterion function converges; If it doesn't exist, it means that the convergence condition is not met, and the iteration continues. When the algorithm meets the convergence condition or reaches the maximum number of iterations, it stops the iteration and jumps out of the loop. The maximum number of iterations is set to ensure the robustness of the algorithm. In particle swarm optimization algorithm, each individual has two characteristics: position and speed, and each individual may be a feasible solution to the swarm problem. The position information of particles is used to represent the value of independent variables in the objective function, and the value of the objective function corresponding to this position is called the fitness of particles. Each particle in the particle

swarm updates the velocity and position information of the particle according to its individual extreme value and global extreme value. The individual extreme value is found through the step-by-step iteration of particles, and its iterative calculation method is shown in formula (6):

$$Pbest_i = (Pbest_{i1}, Pbest_{i2}, Pbest_{i3} \cdots Pbest_{iq}) \quad (6)$$

Global extremum is the optimal solution found by the population composed of all particles in the iterative process, and its calculation method is shown in formula (7):

$$Gbedt_i = (Gbedt_{i1}, Gbedt_{i2}, Gbedt_{i3} \cdots Gbedt_{iq},) \quad (7)$$

Suppose that in a particle swarm with a particle population of m, that dimension of the particle search space is q, then the velocity and position of the particle are q -dimensional vector. The position of q -dimensional particles is represented as $X_i = x_{i1}, x_{i2}, x_{i3}, \ldots x_{iq}$, and the velocity of q -dimensional particles is represented as $V_i = V_{i1}, V_{i2}, V_{i3}, \ldots V_{iq}$. Through the current individual optimal value and the global optimal value, the particle completes the speed update, and the update method is as shown in formula (8):

$$V_i = (t+1) = w \times V_i(t) + c_1 \times r_1 \times (Pbest_i - X_i) + c_2 \times r_2 \times (Pbest_i - X_i) \quad (8)$$

Where c1 represents the influence of the individual optimal position of particles on the velocity; C2 represents the influence of the optimal position of the group on the particle velocity, c1= c2=2. R1 and r2 are used to represent the weight of particle velocity, which are randomly and uniformly distributed in [0,1]. If $pbest_i$ represents the individual optimal position of particle i, $Gbest_i$ represents the group optimal position of particle i; The velocity of particle t at the i iteration is $V_i(t)$. The update mode of particle position is shown in formula (9):

$$X_i(t+1) = X_i(t) + V_i(t+1) \quad (9)$$

4. Result Analysis and Discussion

In this experiment, the data used in the experiment is the processed text file data set, which is divided into 5,000 texts in Data1, a national data set accumulated in the laboratory. Data2 is 10,000 texts; All the data set Data3 of ethnic websites collected by web crawlers is 15,000 texts. Firstly, the advantages of distributed cluster over traditional single-machine environment are verified, and the performance comparison of Spark of three cluster nodes and Spark of one node is tested experimentally. Analyze three data sets of different sizes, and calculate the time it takes to complete clustering. The experiment compares and analyzes the advantages of parallel particle swarm

algorithm over serial algorithm in the same data set, and compares the time consumed by particle swarm algorithm in 100 iterations in the same data set. The statistical results of running time are shown in Table 1.

Table 1: Time comparison of PSO algorithm in serial and parallel (m)

PSO	DATA1	DATA2	DATA3
1 NODE	5.3	10.4	24.0
3 NODES	7.5	14.8	22.0

The changing trend with the increasing time of data set is shown in Figure 3.

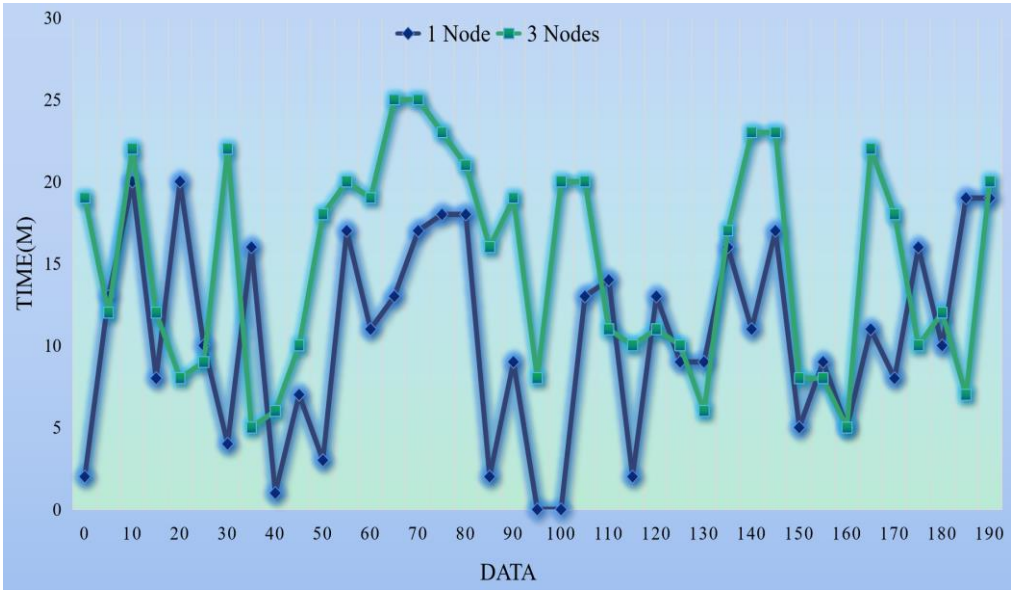

Figure 3: Running time of PSO in different data sets

In the early search process, the improved particle swarm optimization has a large inertia factor, which is suitable for intensive search. With the increase of iteration times, the number of particles is small, which is suitable for a small inertia factor. The flying speed of particles is high, and the optimal value of particles can be found more quickly, thus reducing the search time of the optimal value of the algorithm and quickly determining the category of particles. Under the cluster of three data sets and three nodes, the iteration is carried out for 100 times, and the statistical results of the time consumed by executing the particle swarm optimization algorithm and the improved particle swarm optimization algorithm are shown in Table 2.

Table 2: Time comparison between PSO algorithm and improved PSO algorithm (M)

ALGORITHM	DATA1	DATA2	DATA3
PSO	7.8	15.2	22.0
IMPROVED PSO	6.8	13.8	19.5

As can be seen from the table, the average running time of the improved PSO algorithm has been improved under different data sets, and when the data set increases, the improvement effect is more obvious, and the change trend of time comparison is shown in Figure 4.

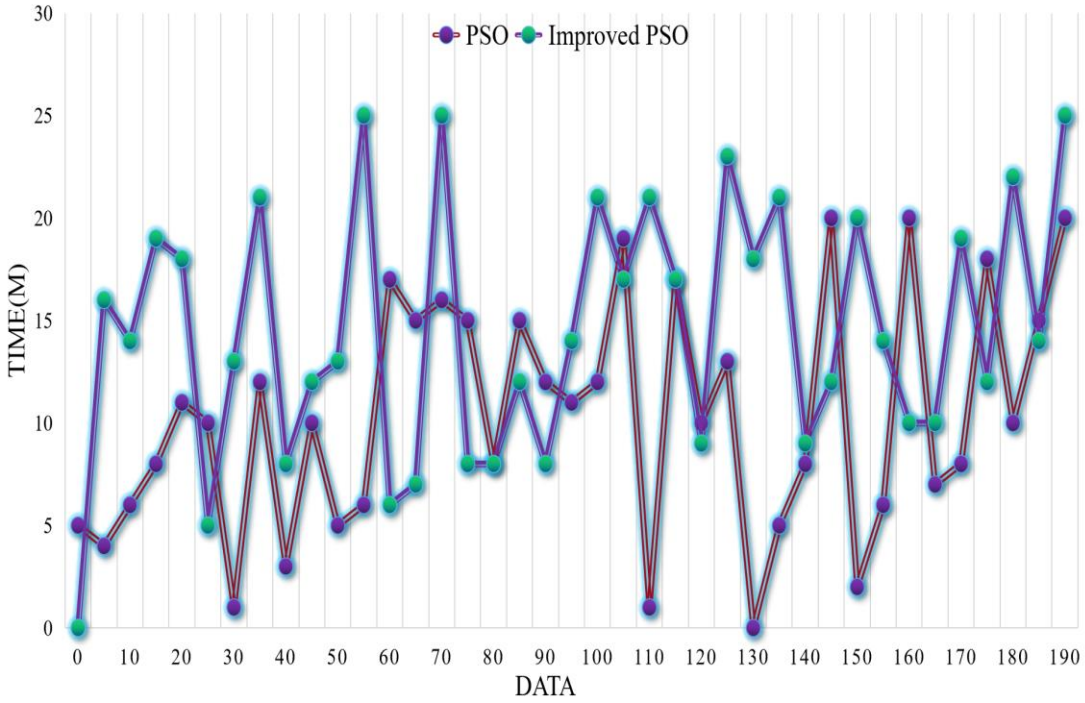

Figure 4: Time comparison chart of PSO and improved PSO

Through the investigation of the main factors that tourists consider when choosing Wa cultural ecological village, the results show that the top three are characteristics, spatial distance and popularity. It shows that when tourists choose a tourist destination, the first consideration is whether the destination is attractive, what its characteristics are, followed by factors such as spatial distance and popularity. Because the main components of tourists are from this region and this province, people who choose to travel on weekends have to consider the spatial distance. With the increase of people's economic income and the continuous improvement of scenic spot construction, the influence of price and safety factors on people's travel is getting smaller and smaller.

Therefore, enriching the activities of ethnic cultural ecological villages, reflecting the cultural characteristics of our nation and developing traditional sports tourism products of ethnic minorities with ethnic characteristics will be the subject of concern in the future. In the process of spreading national traditional physical culture in the new media environment, Teachers are in a key position, and their cognitive level of national traditional physical culture also determines the spreading effect of national traditional physical culture. As shown in Figure 5.

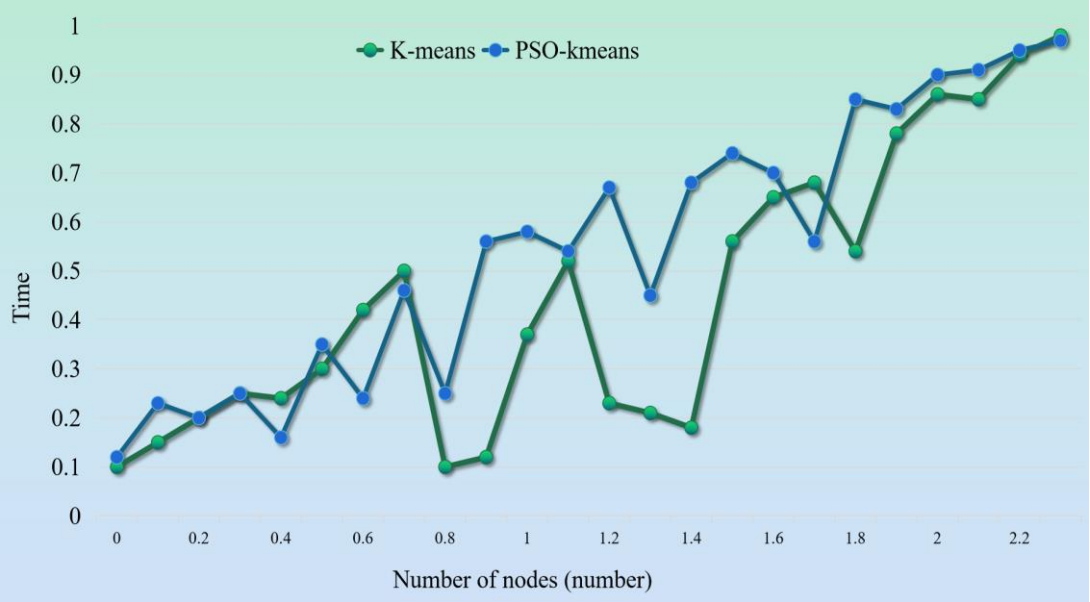

Figure 5: Acceleration ratio of PSO kmeans and k-means

5 If the fitness curve of keyword distribution generated by the figure is consistent with the zipf distribution curve in its main trend, the logarithmic scatter diagram of keyword distribution is made by taking the order number of keywords from increasing to decreasing as the horizontal axis and the logarithmic value of keyword frequency as the vertical axis. Training and expansion are important measures to improve the comprehensive quality of physical education teachers and ensure that their theoretical level and professional skills can keep pace with the times. In view of the situation of physical education teachers' participation in the training and development of national traditional physical culture, the author made an investigation and statistics. As shown in Figure 6.

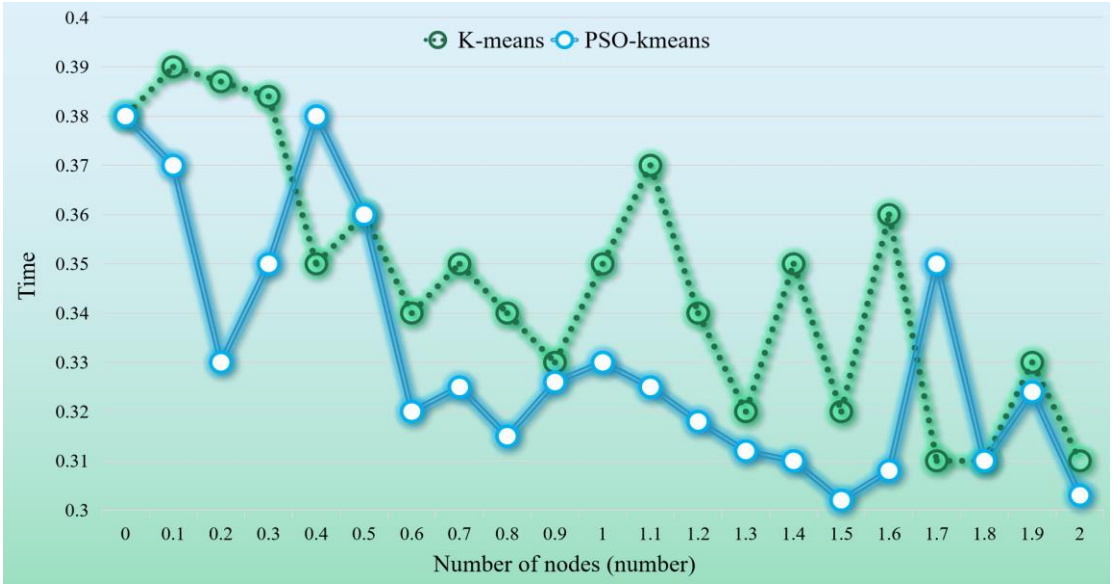

Figure 6: Expansion ratio of K-means and PSO kmeans

Most P.E. teachers say that they occasionally take part in training and expansion activities, which are mostly hard indicators from higher education departments; 32 people said they regularly attend, and 4 people said they never attend. There are only 8 PE teachers who often participate in professional training and quality development. Through this problem, it can also be seen that the higher education authorities in Chengdu universities pay insufficient attention to the professional training and expansion of physical education teachers' national traditional physical culture, and the existing training mostly loses the form and system level, and the actual effect is not good. The present situation of inheritance and dissemination of traditional national physical culture in China is uneven. In order to prevent the deviation of collected data from being too large, which will affect the research quality, the author chooses a region with rich traditional national sports events. In the aspect of physical education teachers, it is the selected physical education teachers and the teachers who have a close relationship with national traditional sports. At the same time, in order to obtain more comprehensive and objective information, this paper also conducted interviews with school leaders, other relevant PE teachers and teenagers. In order to explore the preference of Chengdu teenagers for the traditional national physical culture and the existing traditional national sports courses, the author set up relevant questions. As shown in Figure 7. Among the 280 teenagers surveyed, 212 said they liked traditional national physical culture, accounting for 76% of the total; 44 people expressed general understanding of the national traditional physical culture, accounting for 16%; There were also 24 people who said they did not like the traditional national physical culture, accounting for 8% of the total number of people surveyed. Generally speaking, Chengdu teenagers generally like the traditional physical culture. Therefore, the spread of national traditional physical culture has a certain Youth Foundation.

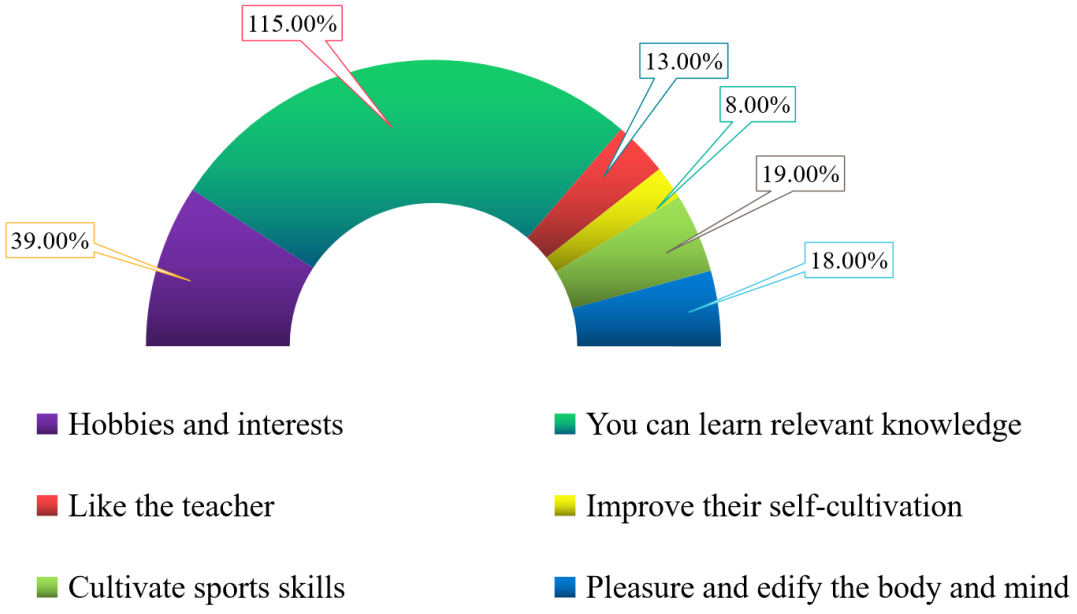

Figure 7: Statistics of reasons why teenagers like traditional national sports

In view of the reasons why most teenagers like national traditional sports, the author also conducted a survey and statistics. As shown in Figure 7 Most teenagers like traditional national sports courses because they can learn relevant traditional national sports knowledge. There are 115 people in this part, accounting for an absolute proportion of the total number. At the same time, 19 people said that they liked traditional national sports because of their own interests. The traditional national physical culture has been protected for a short time in China, and the cultural communication experience is not rich. However, with the development of the times, the communication influence is gradually deepened. The protection system of Chinese traditional national physical culture is a vertical system, that is, the vertical protection is carried out at the national, provincial, municipal and county levels, and the skills are inherited through dynamic communication. The definition of the subject concept of "international communication" in academic circles is divided into three viewpoints, that is, the national viewpoint of the communication subject, the pluralistic viewpoint of the communication subject and the viewpoint of no communication subject. These three viewpoints have practical argumentation and are the reflection of the development of international communication in a specific period. However, the main body of international communication will also change with the passage of time. With the development of science and technology and the increasingly obvious trend of global economic integration, the main body of communication will also show a dynamic development trend, from a unitary organization to a diversified organization, and from the government to the government, enterprises, social third-party institutions and individuals. For example, in the process of communication, digital information technology can be used to collect, store and disseminate project content to effectively make up for the shortcomings in the traditional system. At the same time, dynamic communication can also be used as a supplement to new media communication to achieve the purpose of cultural connotation inheritance. In the Internet age, the discourse system and logical expression based on newspapers and TV media make mass communication somewhat powerless. With the advent of 5G, more communication theories will face greater challenges. It can be seen that digital communication channels can realize resource sharing and complementarity, so that national traditional physical culture can be truly transmitted.

5. Conclusions

Traditional national sports carry deep historical and cultural significance and play a vital role in enhancing national identity and fostering community cohesion. However, the fast-paced modern lifestyle and the pervasive influence of Western sports culture have put many traditional sports at risk of being marginalized. There is an urgent need to explore new communication paths to engage younger generations and spark their interest in traditional sports. Therefore, it is necessary to explore the needs of various units and personnel

in the process of inheriting and carrying forward traditional physical culture from the national perspective, and to carry out an expanding analysis of the communication channels of traditional physical culture through new media technology, so as to improve the difficulties faced by new media platforms in the process of traditional sports communication, effectively improve the audience identity of traditional physical culture in communication practice, expand the social influence of traditional physical culture, and strengthen the economic and social benefits of traditional physical culture projects. This paper mainly takes the massive minority culture data as the research object, uses DM algorithm to cluster them, analyzes the current situation of minority culture research, DM research and big data parallel computing framework. This paper discusses the relevant technologies of Chinese text DM, mainly including word segmentation, removal of stop words, statistics of word frequency and feature vector. Particle swarm optimization, K-means algorithm and improved PSO k-means algorithm are respectively applied to cluster and analyze the collected ethnic cultural data on spark.

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