Basketball Game Penalty Angle Testing Based on Action View Technology Collection

Liu Liang
Jiangxi Normal University of Science and Technology - College of Physical Education
Nanchang, Jiangxi, 330000, China
zb316122058@163.com

ABSTRACT: *The penalty angle test in basketball games based on action view technology is a method that uses a video analysis system to conduct detailed research on penalty situations in basketball games. Through action view technology, various details of the free throw process can be collected and analyzed, providing valuable training data for basketball players and coaches. This testing method mainly utilizes high-resolution cameras to capture the free throw process from multiple angles and combines action view technology to analyze the video frame by frame. By accurately measuring and evaluating each action and detail during the free throw process, a series of important data can be obtained, including player posture, coordination of actions, power transmission, and ball trajectory.*

Keywords: Basketball, Digitization, Video image processing, Discussion

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1. Introduction

Our attention to sports is no less than the attention of any other industry, not only because sport is a factor in showing comprehensive national strength, but more importantly it is the inheritance of human civilization and also contributes to the improvement of civilization. [1]. In the process of the penalty basket and promotion of various sports, we have been adhering to the traditional pattern of solid punishment, which is to play a steady play. In the process of improving the overall strength, it also consumes a lot of energy and physical strength. [2]. In the traditional mode, the promotion of sports has also encountered a bottleneck, and it cannot further find a breakthrough based on the original model. [3].

Modern science and technology have reached a certain level, and various industries have put into the trend [4]. Based on the above analysis, taking basketball sports as an example, video image processing technology and video analysis processing are carried out. Then the algorithm is used to calculate the algorithm, which can be saved by using the camera technology at various

angles. Then the action difference of the video is calculated by using the frame difference method. The specific point deviation is obtained by using the algorithm and then compared with standard free throws distance dual frame image. Then, with the existing local locking technique, the trajectory and distance of each node can be precisely reached. Then Using a differential image target frame and algorithm, we can get the lifting space in the process of penalty basket, and ultimately improve the efficiency and accuracy of the basket [5].

2. The State of the Art

The popularity of basketball in foreign countries is relatively extensive, and its popularity is also relatively highly affected by history. [6]. Basketball is a competitive sport. In daily leisure, it also passes the world sports spirit and connotation; therefore, in the process of the expression of the ball and free throws, we need to improve it constantly. In this paper, from the perspective of sports technical analysis, given the movement with the whole body expression and free throws in the process of grasping, we have made corresponding analysis to make technical preparations for its further improvement with the help of modern technology [7].

In free throws sports, by using a video image analysis scheme of an intelligent digital current sports system, we can quickly identify the athletics lifting point effectively objectively and scientifically [8]. The measured node data obtain the optimal solution, and the expression is displayed through the motion speed and the table, and then the trajectory of the node is adjusted to the optimum position According to the local locking technique [9], and next the C++Builder programming software is used to release the function and ensure the progress and efficiency of basketball at the technical level. The development goal of high technology is to use it for people, use it in all walks of life, improve the competition ability effectively and reduce manpower, material resources and financial resources at the same time [10].

3. Methodology

3.1 Frame Difference Legal Value Algorithm

Based on the requirement of a correlation algorithm for optimizing free throws in basketball, Firstly, the statistical algorithm is used to construct the correlation algorithm to optimize free throws. Optimizing the basketball penalty basket is helpful for better and faster sports model construction and details filling. The mathematical basis of the optimized design of the basketball free throws is geometry which is derived by the algorithm of geometric algorithm design, algorithm, and algorithm of art classification application and through the integration of the eventual, established 3D model. Using the fractal dimension angle and mathematical method to describe and study various complex sports models, the algorithm describes and classifies sports data. It is possible to discard the traditional barriers, such as rough estimate and conservative free throw, and finally get the data which can be directly used for construction by means of describing the real attributes of the complex system and the description of the state. In the construction process, this paper adopts the scheme combining the processing mechanism of optimization free throw with the relevance algorithm. First of all, the model scheme of a sport is designed by hand; then Input statistics and other data into the algorithm; next the simulation model of free throw is optimized by algorithm and finally, the construction data of joint point consumption statistics is obtained. Specifically, we adopt the first overall after the local pattern is shown in the following formula.

$$Si = \frac{\sqrt{\mathrm{x}^2 - (y-1)^2}}{(z-1)^2} - \frac{\sqrt{(y-1)^2}}{(z-0.5)^2} \tag{1}$$

First, establish a simulation model, and then algorithm statistics is carried out according to the model. Among them, s stands for the design amount of the joint and XYZ is used to represent the amount of joint points in each sports component. By using the above formula, the amount of joint point design is set up at the beginning of the design, and then the total amount is obtained by subsection calculation.

$$Q(Si) = \sum_{j-1}^{k} a_i^{\,2} + \sum_{i-1}^{\mathrm{p}} bi^2 \tag{2}$$

In the upper formula, Q represents the final total set of the design amount of joint point of the model for optimizing free throws

which is also the number of units in the relevance algorithm for optimizing free throws. k、p represent dimension coefficient and *a, b* represent the starting point of interval joint point design. The optimal solution of all the units is obtained through the joint operation.

$$M(\omega) = \int L(a_0, a_i) dF(A_0, A_i) \tag{3}$$

In the above equation, *M* represents the actual amount of the final actual joint, and *L* represents the starting value of each design interval. A、a is the same as the previous formula. After the final value *F* is determinedÿ we have integrated the assumed algorithm *Q* and the association algorithm, which is used to optimize the free throws, and calculated the corresponding location of the algorithm node and, finally, the node data of the correlation algorithm, which is used to optimize free throws is determined.

According to the analysis of its structure and then based on the results of the analysis, the algorithm is generated based on the proposed correlation algorithm. Finally, the filter results of optimization of the selection process of the basketball training design algorithm are uploaded to the algorithm in packaging form. Then the algorithm is used to select the information and finally integrate it. The detailed process is shown in the figure below.

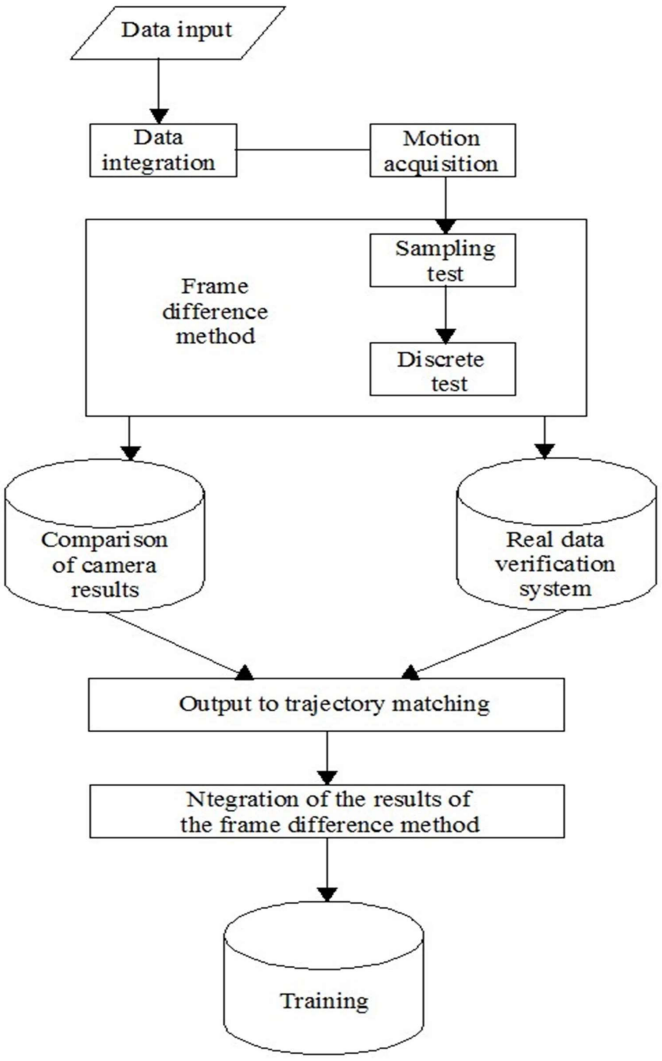

Figure 1. Optimization of the selection process of Basketball training design algorithm

3.2. Dartfish Lapping Model Construction

After establishing the model of relevance algorithm for free throw, the next step is to integrate Dartfish and model construction. For the building of the whole algorithm, it is divided into four parts. This includes the collection of material for the terminal of the correlation algorithm, which means it is carried out based on the relevance algorithm material model of basketball optimization. The information data of each integrating planning content is extracted from the various algorithm factors, and the basic information of each stage. Among them is the information provided by the relevance algorithm for optimizing free throws, which generates technical information, and so on. Secondly, we conduct data processing, which mainly integrates and deals with the information from different optimization free throws. Through effective algorithm processing, the smooth operation of each algorithm is realized after the agreement is reached in every aspect, and the operation of each algorithm is guaranteed. The design content and information collected by each algorithm and the relevance algorithm of the basketball basket optimized by the algorithm are used to generate the composition requirements, which are displayed on the total algorithm results to allow the designers to operate through the information algorithm terminal and finally shown so as to athletes can adopt.

Arm movement	**Joint movement**	**Muscle movement**	**Upperlimb movement**	**Touchlegs movement**
Amplitude of motion	0.83665centimeter	0.67353centimeter	0.77836centimeter	0.78965centimeter
Movement speed	0.5meters per second	0.7meters per second	0.5 meters per second	0.5meters per second
Exercise time	5.3 millisecond	5.5 millisecond	5.2 millisecond	5.4 millisecond

Table 1. Trajectory Optimization of Basketball Wave Movement

As shown in Table 1, in the model construction algorithm factor processing integration stage, *bi* represents the optimal node movement, *i* stands for cross-data classification, and *x* represents the micro set of joint blocks and the swing set. The specific algorithm is as follows:

$$(\mathrm{b}_{21}b_{20}b_{19}..b_1b_0)_2=(\sum_{i=0}^{21}b_i.2^i)_{10}=x \tag{4}$$

First, the initial results of the individual evaluation are obtained through the calculation of the above formula and the corresponding microdata, i.e., the optional number set of words, is encoded. Then the specific coding is used to classify the lexical genetic vocabulary and the data is automatically standardized by the correlation algorithm of optimizing free throws in order to provide preconditions for further work. Based on the data coding, the data is put together. We think of *X* as the sum of the individual evaluation data and *x'* as the number of microdata. The integration scheme of 3d data is obtained by calculating the following formula.

$$\mathrm{x}=-1+x'(\frac{2-(-1)}{2^{22}-1}) \tag{5}$$

After integrating micro-level data is completed, a small data division is carried out on nodes as standard units. *Q* represents the total amount of data body of the cluster, *W* represents the category number of micro-level data, and *F*, and *X* represent the correlation coefficient of optimizing free throws. It is applied to the three levels of system architecture, and the complex data is then structured and reorganized step-by-step. Finally, the optimal solution can be obtained according to the corresponding problems. The final integrated data operation method is shown in the following formula.

$$\mathrm{Q(Fi)}=\frac{\sqrt{\mathrm{W_i}-0.3(\mathrm{W_{i+1}}-X_i)}}{0.513W_i} \tag{6}$$

After classifying the data, it can reflect the architecture of the whole algorithm in a macroscopic way, and finally, it can be uploaded to the system processing link in the form of packaging, and then carry out the next research work. The packaging data is entered into the frame difference method and the terminal is processed and integrated through the data. The specific process is shown in Figure 1.

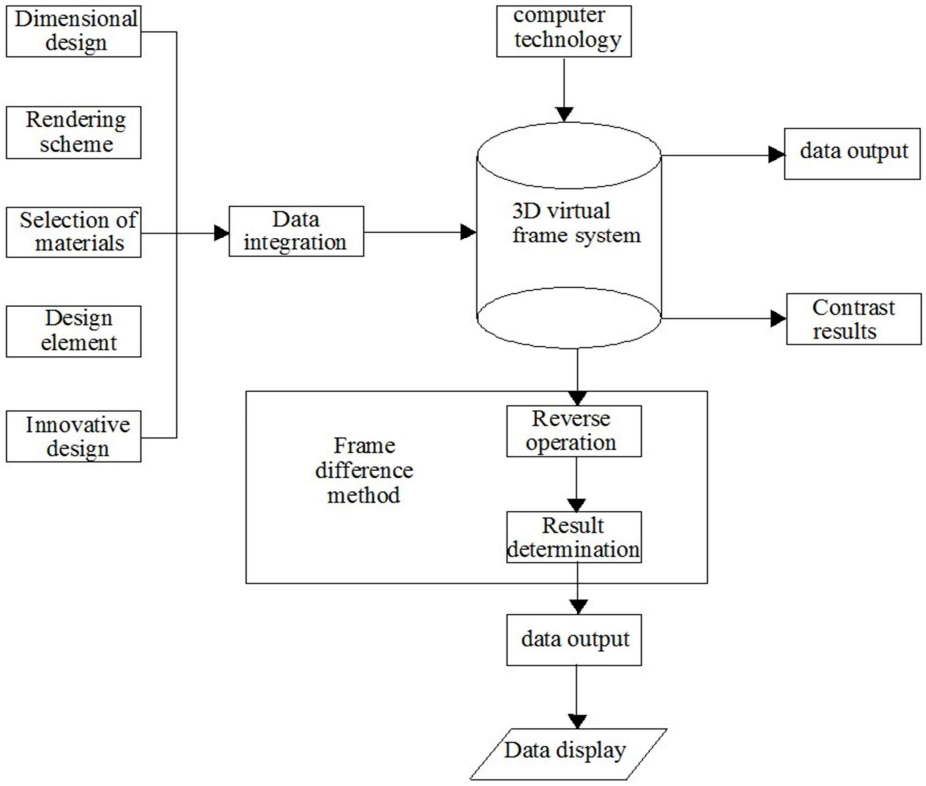

Figure 2. Optimization of Basketball training through dartfish data point calculation and integration

Through the calculation and integration of Dartfish data points, in this design process, we will focus on the integration algorithm generation framework and information algorithm input factors. In the operation and collection of data, based on the association algorithm generation framework, the algorithm is classified and encoded from the content of the design input. It is divided into three major aspects: design data of generation design of relevance algorithm for optimizing free throws, metering output and sports basic data. Fit it with the design data of generation design of relevance algorithm for optimizing free throws and then obtain the scope of the material of design data of generation design of relevance algorithm for optimizing free throws. The generation framework of relevance algorithm for optimizing free throws is used as the middle link so the design accuracy requirement must satisfy the construction principle of the algorithm. Finally, the finishing work of this link is carried out to collect the design factor input. We can see from above that through simulation technology and algorithm, it is numbered, and then the model based on the relevance algorithm for optimizing free throws is constructed.

4. Result Analysis and Discussion

After the model of video image processing technology is completed ÿthe swing arm trajectory test of the joint movement point frame structure based on Dartfish is presented. In the process of verifying the accuracy of the algorithm, choose basketball court as experimental site, and choose the joint measurement algorithm, in order to show the authenticity of the algorithm of relevance algorithm for optimizing free throws in the process of use. In order to construct this experiment and prove that our dynamic algorithm can optimize the relevance algorithm of free throws. The corresponding relation is established by using the generated radix of the algorithm of relevance algorithm for optimizing free throws and corresponding algorithm simulation test. The relationship of the design database consolidation architecture is shown in the table below.

Factor	Aesthetic degree	Design difficulty	Design factor	Accuracy	Fractal level
Dartfish data point calculation	S1 S2 S3	0.2 0.4 0.2	0.3 0.5 0.5	3.2 2.4 4.2	4.2 3.2 6.3
Traditional algorithm	S4 S5 S6 S7	1.3 0.6 0.5 0.8	0.7 2.4 4.2 2.4	5.6 4.2 6.3 4.5	6.2 4.5 3.7 5.3
Potreamalgorithm	S8 S9 S0	0.6 0.8 0.4	1.4 0.5 0.3	9.1 3.5 6.2	7.1 2.5 3.5

Table 2. The Design of the Algorithm for the Design of the Data Base of the Concrete Measurement Algorithm

In the above test, we selected the motion trajectory recorded by the camera as the basis and divided it into four kinds of situations: basketball standard material, swing arm efficiency test, basket fluency test and overall effect. The performance of these tasks is tested in the case of the connection of these tasks, while checking the data information immediately. When the design data input is not too long, the processing capability priority data port algorithm of frame generation algorithm of relevance algorithm for optimizing free throws is more fluent than the traditional framework algorithm in the distributed search ability of the user request because the relevance algorithm generates the calculation of the dispersion coefficient and the writing read and distribution increases the burden of the load dispatcher, which causes the additional overhead of the algorithm and consumes the resources. As the changing factors of the design materials are increasing, the algorithm of the correlation algorithm of relevance algorithm for optimizing free throws is better than the traditional framework algorithm. The user information algorithm design requests to the target information in the display accuracy is higher than that of the traditional join algorithm and performance of the whole design information algorithm cluster dynamic algorithm has been significantly improved.

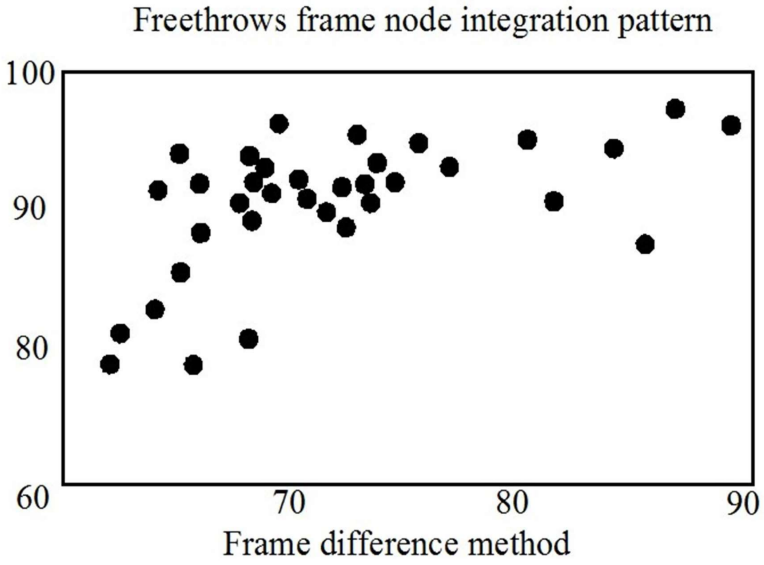

Figure 3. Optimization of the relevance algorithm generation model of Basketball training

The picture of optimization of the relevance algorithm generation model of Basketball is shown above. We can see that with the increase of input design material factors, the amplitude of the swing arm of the players in free throws will not be disturbed. Before we use the correlation algorithm, the arm trajectory requirements of the whole algorithm are increasing, however, after adopting the optimization algorithm, the whole information algorithm design algorithm increases with the input design factor, and the shooting percentage of free throws is no longer obvious which shows that using this optimization is a big step forward compared with the traditional pattern. As the number of request node task connections continues to increase, when a certain number is reached, the whole information algorithm will reach a saturation state whether it is a simplified algorithm or an improved algorithm, because the utilization of each algorithm resource in the information algorithm is saturated. When this happens, we should consider extending the information algorithm and adding a certain number of back-end real algorithms to increase the available algorithm resources. While testing the fusion, we take part of the data in the form of a wave graph as shown as follows.

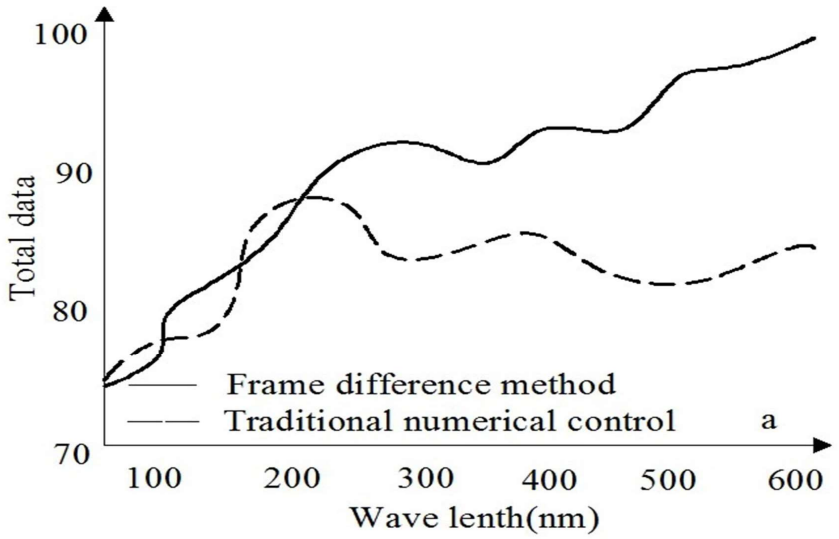

Figure 4. New algorithm optimization of Basketball training relevance algorithm generation model

At the same time, during the testing process, we have carried out the research statistics of the new algorithm optimization of basketball training relevance algorithm generation model. After test, we have found that with the increase of requirements of free-throws' efficiency this algorithm has more advantages in time and geography than the traditional algorithm and the overall performance of data processing is better. As shown above, in dealing with the same free throws, the accuracy of both is consistent, but with the dynamic changes of the number of free throws, algorithm optimization of basketball training relevance algorithm generation model is significantly better than the traditional algorithm of model data. They are significantly higher than the traditional processing mode in dealing with the rational aspects of the complex model of algorithm optimization of basketball training relevance algorithm generation model, and the organization of the mixed design task is higher than the free-throw percentage that deals with the task in the traditional state. As a result, relevance algorithm generation architecture algorithm and dynamic data integration algorithm can show a stronger processing speed and accuracy in dealing with the more complicated data of design information.

5. Conclusion

With the rapid development of sports and culture industry represented by the sports industry, it is essential to make strategic upgrading based on the general direction and modern technology. Taking the analysis of video image processing technology as an example, as well as the 3D design by the frame difference algorithm to optimize free throws, the impact of the research which associates the two generation algorithm on the traditional mode will improve the quality and efficiency of the sports industry. Based on the design research of the correlation algorithm for optimizing free throws, in this paper, it provides a practical basis for the sports industry in China in terms of technology and thinking. On the basis of traditional design, this paper uses the method of system association to improve the amount of statistics represented by joint points and the optimal free throw is used to

generate model of correlation algorithm and then the technical factors are integrated and by using the c ++ Bulider, the algorithm is added to optimize the correlation algorithm of free throw to generate the design material which is used by athletes for information algorithm. However, In this process, we still need further effort at the integration ability of correlation algorithm which generates architecture data unit and also at the uncertainty of the basket strength.

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