

Analysis of Efficient Correction Method of Continuous Motion Images in Taekwondo Competitions

Jianhua Chai

Railway Police College, Zhengzhou, 450000, China

Abstract: In order to solve the series of problems such as unclear continuous motion images in Taekwondo competitions, it is proposed to use a minimal binary method to cut and refine images for images correction and revivification. This method cuts and refines the continuous motion images in Taekwondo competitions, finds symmetrical points and asymmetrical factors in the images, performs rough cuts to obtain corresponding precise images, and finally uses least square method to fit the new images according to the binary features displaying by images. Experiments show that this method can effectively correct all kinds of problems in the continuous motion images in Taekwondo competitions, and can be widely used in unsuccessful cases such as unclear continuous motion pictures in Taekwondo competitions, and It has universal versatility.

Keywords: Taekwondo; Continuous motion; correction method

1. Introduction

In Taekwondo competitions, there are often such a problem: In the rapid movement of players, the effect of continuous motion images is relatively poor. Therefore, it often leads to difficulty in the determination of referees, and it also directly affects the enthusiasm of Taekwondo enthusiasts to watch the game. Audiences who watch the game with appreciation do not want to see blurred or unresolved images. Optacional Rhaerter Deguauction is abbreviated as ORD. This system is often used for image recognition, modification, segmentation, and extraction. In the processing of image photos [1], ORD is a very common processing software. Image print identifier is one of the most important components of an ORD system. Due to various reasons, it is difficult to achieve high-definition and unambiguous images of continuous motion in Taekwondo competitions. The original source of the images in this paper is basically collected in the scene, such as cameras, and so on. Due to human factors or non-human factors, it exists blurry phenomenon during the printing or flushing of pictures, which makes it difficult for viewers to appreciate. In order to solve this kind of problem, it is necessary to perform detailed decomposition and reconstruction on the original images collected in the scene, so as to correct the images.

2. Correction method of Continuous Motion images

The features of continuous images differ from other plane images in that the composition of their motion is continuous and inseparable. Most of the motion in Taek-

wondo are continuous and consistent, and they cannot be separated. Therefore, in Taekwondo competitions, images correction of continuous motion is a practical problem that needs to be solved. Also, in Taekwondo competitions, images with continuous motion often appear unclear. Therefore, solving this problem is currently a top priority.

According to the features of Taekwondo, it is an activity in which both body and mind need to be reconciled. To learn Taekwondo well and achieve certain achievements in the competitions, physical coordination capability and excellent physical fitness are indispensable conditions. In other words, in the Taekwondo competitions, the most important thing is not the power of Taekwondo, but the mastery condition of Taekwondo. The most important factor affecting performance in Taekwondo competitions is the continuity of motion. Relatively consistent motion with proper punching speed are necessary conditions to win the game, and it is also the key to victory in a Taekwondo competition. Taekwondo is an activity in which the body as a medium, assimilates each movement into the mind through language and mind perception. In the process of competitions, if brute force is used arbitrarily, there is no way to win. Taekwondo needs players to perceive its beauty with heart. Therefore, the continuity of Taekwondo motion is particularly important. So, in the Taekwondo competitions, the images of continuous motion are the focus of the referees and coaches. Therefore, the superior Taekwondo continuous images is an essential element in Taekwondo competitions.

3. The Process of Efficient Correction of Continuous Motion Images in Taekwondo Competitions

3.1. Efficient correction steps of continuous motion images

The images of continuous motion has the features of easy tilting of the overall images and low texture of the images pixels. Therefore, using ORD software system to repair the problematic images is the best solution. The detection of whether a continuous motion image is ambiguous is usually divided into three steps. The first step is to open the ORD software system, export the image, and analyze the data of the tilt angle and tilt position. Click on the original data in the details, and then analyze the data against the corresponding data standard. The tilt or fuzzy judgment of an image is more than just a standard of visual visibility. Instead, it is necessary to actually compare the corresponding data and perform calculations and modifications [2], so that the continuous motion images can present the most perfect state to the people. The commonly used detection method is binary linear analysis. This method is a new method based on the binary analysis method and the linear analysis method. The binary linear analysis method refers to the statistical analysis of an image's tilt angle value and the peak value of the pixel processing, and then draws the necessary conclusions. Finally, the corresponding image processing method is performed. The second step is to set the image baseline. Behind each image, there is a certain composition angle and compositional rule. When the image is tilted or blurred, the image's composition baseline changes. Therefore, a simple way to determine whether an image meets the standard is to see if the baseline position of the image meets the requirements. In a continuous image, the bottom baseline composition of the image can accurately reflect whether the image is tilted or shifted. The bottom baseline of the image directly represents the standard of the image. Therefore, the slope can be obtained by calculating the angle between the bottom baseline of the image and the standard baseline, thus changing the tilt angle of the image to make it a more perfect image. In the ORD software, it can be calculated by $\theta = \arcsin(f)$ [3], where f is the slope of the bottom baseline of the image and the actual standard baseline. This slope can be easily changed in the ORD software. The third step is to draw conclusions from the data analysis and calculation integration of the image and use ORD software system for image adjustment and production. In Taekwondo competitions, most players are too late to think about the beauty and regularity of the motion, which requires our later adjustments. Every minute in the competitions is exciting. Whether it's a player, a coach or an audience, everyone's research is focused on the play-

er's continuous actions. As images' modulators, we are concerned with the images' quality, perspective, and image issues. Therefore, in the continuous actions images in Taekwondo competitions, our primary task is to correct the images so that they can achieve their best presentation.

3.2. The process of efficient correction steps of continuous motion images

Several groups of flawed continuous motion images in the Taekwondo competitions are selected. The minimum binary image cutting method is used for rough cuts and integration of images. After 20 experiments comparisons, we average and compile the data into the following table.

Table 1. Comparison results by using the binary image cutting method with the traditional method

Item	The minimum binary image cutting method	The traditional method
Image clarity	93.51%	73.26%
Image slope	5.68%	36.51%
Image aesthetics	91.31%	77.62%
The overall effect of the image	97.21%	84.89%

As shown in Table 1, it can clearly be seen that in the experiment of comparing the minimum binary image cutting method with the traditional method, In the aspects of image clarity, image aesthetics and the overall effect of the image, the image effect after using the minimum binary image cutting method is better. After using the minimum binary image cutting method, the image tilt rate can be as low as 5.68%. This data is negligible in image processing. In general, it is impossible to see the image problems with the naked eye when the image is enlarged to 100 times. This is undoubtedly a qualitative leap in the history of image revision. ORD system is an image modification system that is often used by us, but in the traditional image modification, it is very difficult for us to carry out breakthrough and innovation. The use of the minimum binary image cutting method for image analysis and cutting is also a way people have never tried before. Therefore, the experimental research results of this paper have great significance.

4. The Results Analysis of Efficient Correction of Continuous Motion Images in Taekwondo Competitions

In Taekwondo competitions, due to human factors, many pictures or images of continuous motions are not tilted in their entirety, that is, they are partially tilted. The use of the minimum binary image cutting method to deal with partial tilted or overall tilted images is very simple and convenient [4]. It is also very effective after processing. In the Taekwondo competitions, the tilt angle of the con-

tinuous motion images can also be divided into the front part tilt and the back part tilt. If the tilt angle can not be obtained directly from the formula of $\theta = \arccos(f)$, then the images can be directly imported into the ORD system for data research and analysis. The ORD will directly display the tilt angle and tilt direction of the images, and get the final conclusions according to the related calculation and we can directly adjust and correct the images according to the conclusions. The minimum binary image cutting method proposed in this paper is the correction method based on the image tilt. It uses ORD software to divide the original images into thousands of small patterns, and then remove the tilt angle, high definite picture format, and re-find a perfect Taekwondo continuous motion images. Using this method, the original images can be regarded as a number of segmented pattern images, and then the images are minimized and fitted. Finally, the images are corrected by rotating and re-adjusting the angle. This method is not only used for image tilt, but also can be used for image blurring and asymmetry. Images of

continuous motion in Taekwondo competitions may also have problems such as blurred images and overlapping images. In the ORD system software, the images are opened, the images are rotated according to the center point position, and then each rotation point and the symmetry point are connected [5], and then the images are re-cut and refined using the minimum binary cutting method. Finally, we can distort the images' order, click reintegration to create new integration of images. In ORD software, the reorganization and arrangement of images is a very important part. Using the pattern of the images and the angle of rotation, the refined images are cut, disassembled and rearranged according to the difference angle of rotation, and then the tilted angle rotation is used to correct the problematic images.

In order to ensure the efficiency of the image correction using the minimum binary cutting method, the author has done three experiments to prove the efficiency of the method. The experimental results are shown in Table 2.

Table 2. Three experimental results of image correction using the minimum binary method

Item	The first time	The second time	The third time
Image clarity ratio	78.36%	82.34%	98.92%
Image aesthetic ratio	77.93%	83.98%	93.58%
Image adoption ratio	77.98%	89.17%	94.29%
Image success ratio	71.34%	89.64%	98.67%

From the data in Table 2, it can be clearly seen that the correction efficiency of continuous motion images in Taekwondo competitions is gradually improved by using the minimum binary cutting method, which proves the feasibility of the experiments. Because of "practice makes perfect", the perfection degree of the images is gradually increasing as the number of experiments increases. The tilt correction of images is generally divided into two types [6]. One is the problem of rotational deviation that occurs during the process of shooting photography, and the other is the problem of unclear images because of low pixels. No matter which problem, it can be solved. The minimum binary image cutting method advocated in this paper can effectively improve such problematic images. First, get some images that are relatively vague or have some problems from Taekwondo as the basis. In Taekwondo competitions, the process is more important than the result. The coherence of the action can be said to directly determine the result of the competition. In China, we generally believe that the significance of the results is greater than the significance of the process. The traditional Chinese people's ideas are that results are more important, and the enjoyment of process is often ignored. In Taekwondo competitions, the results are not fixed and are flexible. The reason is not only that the judgement in the Taekwondo competition requires diversification, but also there is a very important point - whether the player's motions are consistent or not. When

a player makes the first attack, he often flashes a picture in his head that the opponent is not able to resist, instead of the opponent's successful defense and attack. Therefore, this is also a typical case of failure. In many Taekwondo competitions, obviously strong players, regardless of their physical qualities or their punches and leg kicks, have the upper hand, but the result of the competitions is that they are failures. Most of the reason is that the player's motions are not continuous enough. If the offensive actions are made without stopping and there is no time for the enemy to react and dodge, even if the first motion fails to hit the opponent, it will also hit the opponent in the next motion successfully. Therefore, in the Taekwondo competitions, the purpose of the motions is not only to strike the opponent's body. In the course of the offensive, bruising to the enemy's confidence and infighting the enemy with quick fists are also part of winning the competitions. In the Taekwondo competitions, some images with bright colors were taken as sample images for the experiments, and then grayscale cognition is changed and detected. Detect the RKN color fullness and the color second degree value of the images, obtain the images grayscale processing result and the second-degree value images map, then find the peak of the image processing degree at the left and right edges of the images [7], finally, use the minimum binary image segmentation method, the image is further segmented and color contrasted, and a brand new picture is reconstructed.

5. The Effect of the Minimum Binary Image Cutting Method on the Efficient Correction of Images

The images seen by the horizontal projection method are magnified and indeterminate. So the mistakes of the images will also be exposed. However, if the images are corrected using the minimum binary division method, the recognition rate of the images will be increased. And the images is roughly divided to obtain the boundaries of the small images. The images are again marked and processed by the method mentioned in the paper, a perfect continuous images of Taekwondo will be obtained. The images' imaging features are used to set the images' parameters and rotation angle, and then the straight line segmentation method is used to mark the images to obtain the new parameters of the images. The correction images using this method are relatively clear and the effect is also perfect. A clear picture is a visual feast for Taekwondo players or audiences. In particular, the high-definition perfect images of a continuous motion is a representation of a player's style, and it also allows the audiences to regain the passion of the competition. The development and research of the minimum binary image segmentation method is therefore of great significance and value.

The minimum binary cutting method can adjust and correct the continuous motion images in the Taekwondo competitions. Whether the Taekwondo players themselves or the Taekwondo coaches or audiences, the quality of the images is undoubtedly a kind of visual impact enjoyment. Presenting clear and high-quality images in the competitions is our responsibility and motivation, especially the exciting competition atmosphere in Taekwondo. The minimum binary image cutting method is simple and easy to use, and the use of ORD system software is also very convenient. Problems such as the tilt or unclearness of the images can be easily resolved to achieve the best state of the images, which is what everyone wants to see.

6. Conclusion

The minimum binary image cutting method proposed in this paper can use the image segmentation and refinement function in ORD software to disassemble the images and then arrange and improve the new images according to the new coordinate parameters and data. It can reduce the tilt angle of the images and increase the resolution of the images so that images of continuous motion in the Taekwondo competitions can be perfectly presented to the audiences. This method is simple and easy to operate, and the time it takes to take action is also very short, with high accuracy, high efficiency, and a relatively high audience satisfaction rate. Therefore, it is recommended that this method is used for the correction of continuous images in Taekwondo competitions.

References

- [1] Zhang Yan. Research on Visual Analysis Based Standardization Judgement Method for Basketball Shooting Action [J]. *Modern Electronics Technique*, 2017, 40 (3): 47-50.
- [2] Li Lang. Analysis of Mechanics Principle in Taekwondo Exercise [J]. *Secondary Physics Teaching Reference*, 2017 (9X): 72-73.
- [3] Du Qiyi, Yang Mengxi, Guan Jianming. Study on Zhao Shuai's Characteristics of Taekwondo Techniques and Tactics at Rio Olympic Games [J]. *Journal of Wuhan Institute of Physical Education*, 2017, 51 (11): 85-89.
- [4] Li Haitao. Correction of Landing Speed to Ground Stability of Wushu Jumping Movement [J]. *Computer Simulation*, 2017, 34 (8): 293-296.
- [5] Guan Jianmin, Zhong Yongfeng, Hu Yihai. Analysis of the core elements of Taekwondo's spiritual values [J]. *Sports Culture Guide*, 2017 (9): 53-57.
- [6] Duan Tianlong, Liu Tianyu, Shen Yingzhi. Inspiration of Korea Taekwondo revitalization plan for the development of China Wushu sanda [J]. *Journal of Shandong Institute of Physical Education and Sports*, 2017, 33 (4): 32-36.
- [7] Wu Xuan, Chenxu, Liu Shangli. Visual Search Advantages of Taekwondo Athletes Under Dynamic Threat: Evidence from ERP [J]. *Journal of Beijing University of Physical Education*, 2017, 40 (9): 60-65.