International Journal for Housing Science and Its Applications
Publish August 10, 2025. Volume 46, Issue 4 Pages 6036-6048

https://doi.org/10.70517/ijhsa464440

Interactive Ideological and Political Education of Sports Major Students Based on Intelligent Image Recognition in Artificial Intelligence

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Abstract As the main channel for systematic Marxist theoretical education and ideological and political education (IPE) for physical education (PE) students, the ideological and political (I&P) course is of great importance in guiding and cultivating PE students. In the education informatization and global online education development, this paper took Marxist theory, especially the theory of IPE, as the theoretical basis from the perspective of blended teaching, which was commonly practiced in I&P theory courses in Chinese colleges. Combining the research results of pedagogy, teaching theory, curriculum teaching theory, and network teaching, it goes deep into the teaching and even the curriculum teaching level to discuss the reform of the I&P theory courses in the new media environment. In this paper, the human hand image recognition and tracking algorithm was used to study it. Through the investigation and research experiment on the interaction system of PE students' I&P classroom, we can understand the factors that affect students' attention. In the teaching method based on extracurricular learning, the probability of keeping students focused was significantly increased by 23.67%. In the classroom, if video technology is used to improve classroom teaching, the probability of students' attention in the classroom can be increased by 14.78%. Therefore, it is urgent to study the interaction of IPE for PE students.

Index Terms Artificial Intelligence, Intelligent Image Recognition, IPE for PE Students, Tracking Algorithm

I. Introduction

The independent choice of knowledge and values of PE students is increasing day by day, and the teachers of I&P theory courses in colleges are also constantly looking for new modes that are suitable for them. In general, there are two widely used teaching methods at present: "content strategy", which is to attract students' attention by enriching teaching content, and carry out teaching in the form of heuristic, participatory, interactive, and case-based teaching. The second is the "tool strategy", which uses new teaching methods, takes the innovation of teaching methods as the main teaching method, and uses multimedia technology to improve the effectiveness of classroom teaching. "Video playback" is the most common one. Teachers have increasingly adopted the "later" teaching method to improve the quality of teaching. However, compared with the traditional teaching methods, how much the use of multimedia has improved? In today's era of increasingly rich information and "attention deficit", how effective such educational reforms would be? This is an important reality. The problem is also the focus of this article.

It is also a hot topic at present to adopt an interactive way to solve the IPE problems of PE students. Among them, Qiao S used the fuzzy evaluation theory to first analyze the I&P quality of members of college sports clubs, and then proposed an interactive path between IPE and sports club activities [1]. Fu W proposed that in the contest of different ideologies, the interaction between ideologies still shows a certain regularity [2]. Qi X S proposed to construct an evaluation mechanism based on the efficiency principles, feasibility, objectivity and fairness. Based on this, he constructed a practical teaching evaluation mechanism for I&P theory courses [3]. According to the requirements of cultivating talents for newcomers, Chen J adopted a blended teaching method based on flipped classroom, and makes full use of the I&P SPOC (small private online courses) course of self-learning for newcomers [4]. Gavrilova A V proposed that the ways can be divided into scientific dogma and judicial nomination, legal propaganda, legal education and so on. The behavior is to control the addressee and to control his thoughts and behavior, and has a coercive nature to prevent deviation from the absolute standard of behavior [5]. However, due to the lack of data sources and insufficient understanding of the interactive system, the above research is only at the theoretical stage and has little practicality.

Using intelligent image recognition technology to study the interaction of PE students' IPE is a very novel topic. Xu P proposed that in the context of network multi-dimensional interaction, young PE students can search for new information and knowledge in time, which was an impact on the traditional IPE model [6]. Weiwei Z proposed the interaction model in the design process of I&P and participated in various stages of the project according to the project progress, and finally completed the system development with the project team members [7]. Lin R analyzed the multiple optimization paths of PE students' political education based on information media. The interactive mode fully recognized the characteristics of students' development and maximized the autonomy and initiative of students' learning [8]. Liu Y proposed that I&P workers can timely carry out targeted guidance education through self-media platforms, enrich political education resources, and provide a new open environment and broad educational space [9]. The flaws in Protasova O's research steed from the underreporting of many aspects of democratic socialist party activity in the modern historical literature [10]. However, due to the definition and thinking of traditional IPE courses, intelligent identification technology cannot be highly integrated with it and its advantages can be exerted.

The innovations points: (1) Based on image recognition and augmented reality technology, an interactive system of IPE in colleges was constructed, thereby promoting the development of I&P teaching. (2) This paper used network technology and augmented reality technology. Users can experience the visual effects of augmented reality anytime, anywhere, and allow users to interact with people through their hands. (3) Aiming at the shortcomings of hand segmentation in this system, a dynamic hand region recognition algorithm based on the pixel growth gradient of the foreground object is proposed.

II. Interactive System of IPE in Context of Artificial Intelligence

II. A.Interactive System Framework

This subject researches and designs a B/S-based interactive augmented reality education and teaching assistance system. Figure 1 displays the overall architecture [11].

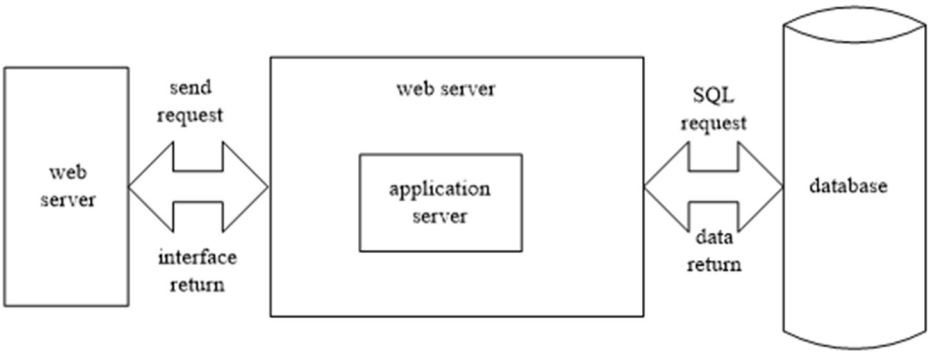


Figure 1: Overall architecture

As can be seen from Figure 1, based on the Java-based SpringBoot framework, the server program is implemented using the ControllerService-Mapper three-tier structure model. It is mainly used to handle requests from browsers, as well as access to MySQL databases, and data management on web pages to clients [12]. The system was developed and tested on IntelliJIDEA platform and WebStorm platform [13].

II. B.Data Table Design

In the design of the data table, the above content is firstly analyzed, and the table structure of the database is constructed [14]. This paper used MySQL database to build user information table, three-dimensional model information table, teacher information table, student information table and other data tables. Combining the user table structure, 3D model information table and 3D model as examples, this paper expounds the fields in the data table and their meanings and functions. The registered user information form and the 3D model information form are listed in Tables 1 and 2.

Table 1: Registered user Information

Field name	Type	Length	Main keyboard
id	INT	25	Yes
usemame	Varchar	25	Yes
realName	Varchar	30	Yes
password	Varchar	10	no
utype	INT	45	Yes
IDCard	Varchar	10	no
sex	INT	10	no
workNum	INT	10	Yes
telephone	Varchar	25	no

Table 2: 3D Model Information Sheet

Field name	Type	Length	Main keyboard
id	INT	40	Yes
tempName	Varchar	60	no
tempAddr	Varchar	50	Yes
imgageUrl	Varchar	50	no
remark	Varchar	10	Yes
createdBy	INT	55	Yes
created I ime	datetime	10	no
lastModifyBy	INT	16	Yes
lastModifyTime	datetime	10	no
deleteFlag	INT	10	no
userName	Varchar	20	Yes

II. C.3D Registration

The 3D registration technology uses a computer to calculate the 3D coordinates of virtual objects, and fuse them with the actual scene in real time and accurately. Only vision-based 3D registration technology is introduced based on vision technology. There are two types of vision-based 3D registration techniques (visual markers registration and nature and images) [15], as shown in Figure 2:

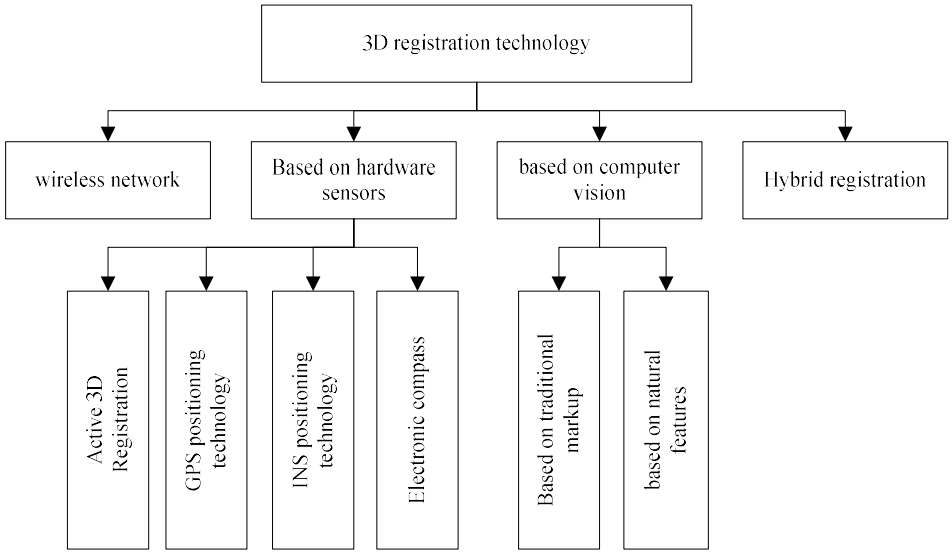


Figure 2: Classification of 3D registration technologies

(1) Registration method based on visual landmarks

In augmented reality technology, 3D registration based on visual markers is usually adopted, that is, markers are set in the actual scene, and the markers are captured by a camera, and then the position of the virtual object is determined by sequence operation and placed in the corresponding position, as shown displayed in Figure 3.

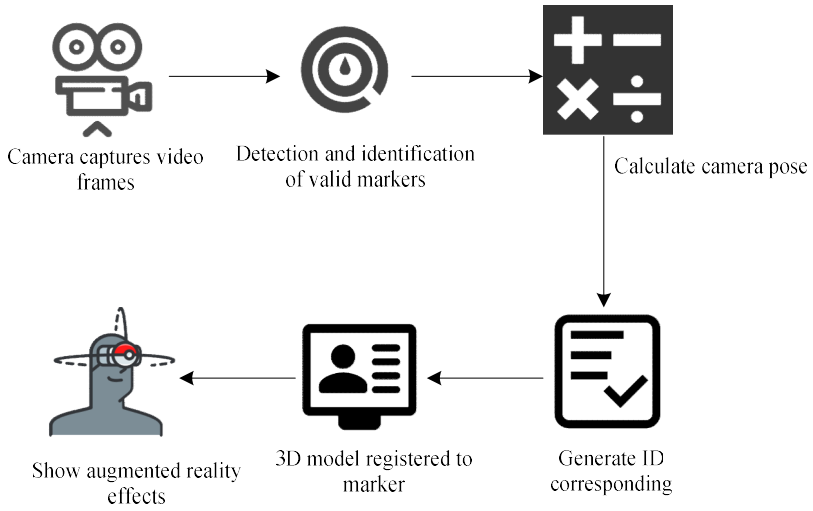


Figure 3: Registration process based on visual landmarks

The artificial mark used in 3D registration is usually composed of a black border with a certain width and an inner layer pattern, with a rectangle as a plane, the computer calculates the coordinates of the mark on the screen, and places it in the corresponding position [16].

(2) Registration method based on natural features and image features

It can be registered by using the characteristics of nature and images, without setting the logo in advance, but analyze the real-time images in the real scene and automatically identify them, so as to realize the tracking and registration of natural feature points.

By comparing the above two registration methods, it can be seen that the registration method based on visual markers is a robust, stable and efficient registration method. Since the system is carried out under uncertainty, the registration based on the visual mark is more in line with the requirements of the system.

II. D.Overview of Interaction Technology

Real-time interaction is an important part of augmented reality systems, and human-computer interaction (HCI) has been researched as a key technology all over the world. According to worldwide research, the classification of real-time interaction of augmented reality systems is shown in Figure 4:

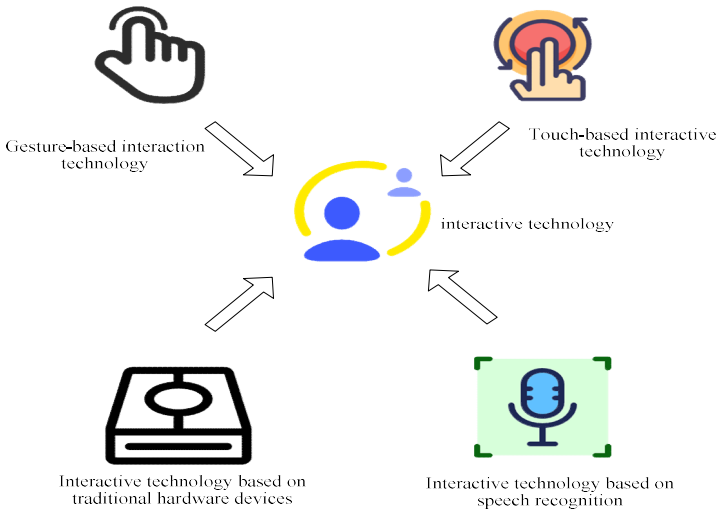


Figure 4: Implementing the interaction classification diagram

As can be seen from Figure 4, in some augmented reality systems, researchers can also use conventional hardware devices to interact with the augmented reality system. People commonly use keyboard, mouse, controller, etc. The functions such as zooming and dragging of virtual objects are realized by clicking and sliding the mouse [17]. The interactive way of this path is relatively easy to implement, but because of the need to use hardware, it cannot provide a natural interactive experience, thus weakening the immersion of the augmented reality system.

Gesture interaction technology has become a new type of communication. In recent years, human body motion interaction technology, as a new type of HCI tool, uses human beings as an input interface. The computer uses the body movements captured by the camera to judge the user's intention. Compared with other methods, gestures are the most intuitive and natural. In actual operation, users can wear gloves with special colors or use special electronic devices to perform gesture input without any auxiliary devices. Touch screen interaction technology refers to HCI through touch, sliding and other touch hardware devices. Compared with traditional mouse, keyboard, joystick and other hardware, it has more humanized characteristics. This method is also welcomed by the majority of users while the intelligent terminal is developing.

Through the comprehensive analysis of the above two interaction methods, it can be found that the interaction based on voice and gesture is the most natural communication method that is closest to people, and it is also the best user experience. Combined with this system, the 3D model can be better controlled through the interaction of natural gestures and sounds, so this paper adopts the interaction method based on human gestures and gestures to study the interactive system of IPE [18].

II. E. Human Hand Image Recognition and Tracking Algorithm

The system analyzes and processes the image data captured by the camera, extracts the position, direction and distance of the target, and generates action descriptions through hand motion information, and finally completes the display of the angle and posture of the 3D virtual model. Figure 5 shows the hand object recognition pipeline in this paper [19]. The hand target recognition process in this paper is shown in Figure 5:

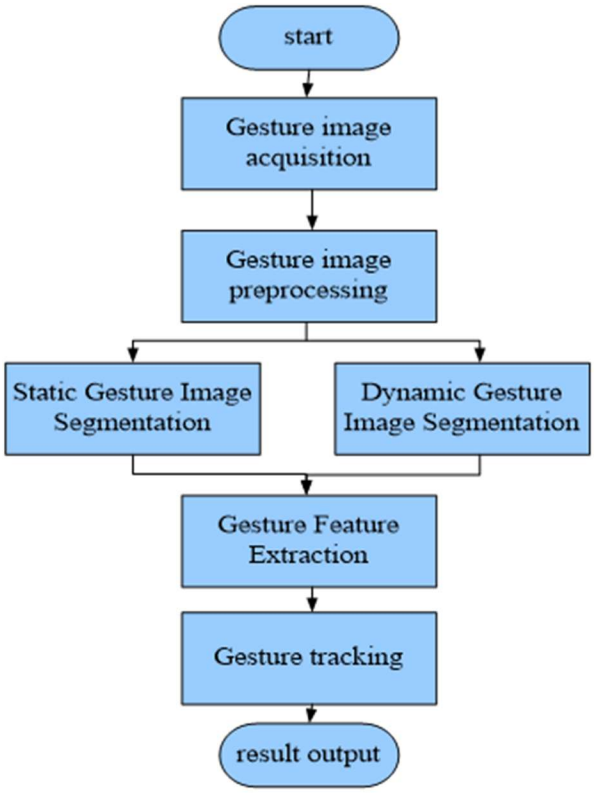


Figure 5: The process of hand target recognition in this paper

It can be seen from Figure 5 that based on computer vision technology, and hand recognition technology quality is directly related to the feature extraction of the hand. Since the imaging of the camera would inevitably generate

noise, noise reduction must be performed before hand image segmentation, and the influence of non-target regions on the extraction of feature points should be eliminated.

The algorithm would calculate the average value of the gray value of each point in the neighborhood of a certain pixel point of the image, and use it as the gray value of the point [20]. For example, an image can be defined as a pixel on an $f(x,y),(x,y)$ image:

$$g(x,y)=\frac{1}{n}\sum_{(i,j)\in M} f(x,y) \tag{1}$$

There are many kinds of template operators commonly used in mean filtering, such as 3x3, 5x5, etc.

$$\frac{1}{9}\begin{bmatrix}1 & 1 & 1\\ 1 & 1 & 1\\ 1 & 1 & 1\end{bmatrix} \tag{2}$$

$$\frac{1}{25}\begin{bmatrix}1 & 1 & 1 & 1 & 1\\ 1 & 1 & 1 & 1 & 1\\ 1 & 1 & 1 & 1 & 1\\ 1 & 1 & 1 & 1 & 1\\ 1 & 1 & 1 & 1 & 1\end{bmatrix} \tag{3}$$

Although the mean filter has the characteristics of simple and efficient calculation, it does great damage to the edge details of the image, and the mean filter would cause the edge contour of the hand image to be blurred.

Gaussian filtering is a common operation based on computer vision image processing. It is a linear smoothing filter. It has a significant effect on suppressing noise that obeys a normal distribution and is used for image noise reduction.

$$g(x,y)=\frac{1}{2\pi\alpha^2}e^{\frac{(x-m/2)^2+(y-a/2)^2}{2\alpha^2}} \tag{4}$$

σ is the standard deviation, and the larger the value, the blurrier the obtained filtered image. As the template size increases, the filtered image is gradually blurred.

The design idea of median filter is to arrange the pixels in the template in a certain order (rising or falling). In the case that the number of each pixel is odd, the center pixel of the template can be used as the center pixel. It can be defined that the image is $f(a,b)$ and the two-dimensional template is M. After median filtering is performed on the image $f(a,b)$ using the template operator, the obtained image is:

$$g(a,b)=Med_{(a,b)\in N} f(a,b) \tag{5}$$

By comparing the two filtering methods, it is found that in the case of salt and pepper noise, both filtering methods can achieve better noise reduction effect. Compared with the first two methods, the median filter has the best effect, which can remove the noise while preserving the edge information of the image. Therefore, a median filter method was chosen.

When a binary image is segmented, due to noise interference, the edges of the hand are not smooth, holes appear in the hand image, or there are independent spots and lines around the hand image. At this time, in order to obtain a complete hand image, the binary image must be morphologically processed.

The erosion algorithm targets the smallest area as a given pixel. Assuming that the objects to be processed are A and B as structural units, the local minimum point is obtained through the convolution calculation of A and B.

$$A\Theta B\left\{a,b\middle|B_{xy}\subseteq A\right\} \tag{6}$$

$$A\oplus B=\{a,b\cap a\neq\beta\} \tag{7}$$

It can be seen from the definition that when the central origin of structural element B moves in the expanded area, the intersection of structural element B and target area A is always not empty. The expand operation expands the white highlights in the image and can swallow the small dark noise in the white area, thereby eliminating the dark noise in the white area.

Open operation can effectively eliminate small high-brightness noise areas: it can cut off the tiny connecting lines of the target area, so that the object would not stick again. It can not only keep the area of the object unchanged, but also smooth the boundaries of large objects.

$$A \circ B = (A \Theta B) \oplus B \tag{8}$$

Open operation can effectively eliminate small-scale high-luminance noise. It cuts out tiny connection points in the target area so that the object no longer sticks. It can not only keep the area of the object unchanged, but also smooth the boundaries of large objects.

$$A \bullet B = (A \oplus B) \Theta B \tag{9}$$

In image processing, the closing operation can effectively remove small black holes and eliminate dark isolation in white highlight areas. It fills indents in the edge contour of the target area, thereby smoothing the contour.

As the most natural form of human language expression, body posture is rich in semantic information. Therefore, HCI based on body posture has important application value in augmented reality technology. On this basis, the body movements of the human body are identified and segmented.

The YCrCb color space is a relatively common skin color detection method. In skin color detection, Y represents the brightness component of the color, Cr represents the hue component, and Cb represents the saturation component. Because the luminance signal Y in the YCrCb color space is separated from the color signal CbCr, it is very convenient in skin color detection. Therefore, this paper used the YCrCb color space to ensure the stability of the detection and segmentation of hand-drawn images.

$$\begin{bmatrix} \mathrm{Y} \\ Cb \\ Cr \end{bmatrix} = \begin{bmatrix} 0.301 & 0.588 & 0.115 \\ -0.171 & -0.332 & 0.501 \\ 0.499 & -0.421 & -0.082 \end{bmatrix} \bullet \begin{bmatrix} R \\ G \\ B \end{bmatrix} \tag{10}$$

In the actual conversion, the value ranges of CT and Cb in the YCrCb color space are both $[-128.0,127.0]$, and the values of the Cr and Cb components may be negative. To facilitate encoding of Cr and Cb, appropriate offsets can be added to Cr and Cb to ensure that they are positive. The above formula can be expressed in the following form:

$$\begin{bmatrix} \mathrm{Y} \\ Cb \\ Cr \end{bmatrix} = \begin{bmatrix} 0.301 & 0.588 & 0.115 \\ -0.171 & -0.332 & 0.501 \\ 0.499 & -0.421 & -0.082 \end{bmatrix} \bullet \begin{bmatrix} R \\ G \\ B \end{bmatrix} + \begin{bmatrix} 0 \\ 128 \\ 128 \end{bmatrix} \tag{11}$$

In general backgrounds, skin-color-based texture segmentation methods can achieve hand segmentation well, but for faces with a large number of skin-like disturbances, such as faces, a single skin-color-based segmentation method cannot achieve satisfactory results.

Optical flow method is an image processing technology based on image processing. It can obtain moving pixels by analyzing the motion information of each frame in the image to achieve the purpose of detecting and tracking moving objects. This paper emphatically expounds the research of inter-frame difference and background difference method.

(1) Inter-frame difference

In a continuous image sequence, due to the movement of the target, the pixel values in the adjacent inter-frame moving regions change greatly. On this basis, a new method based on inter-frame difference method is proposed. The method first performs differential processing on two or more frames of video, and realizes the separation of motion regions through threshold filtering.

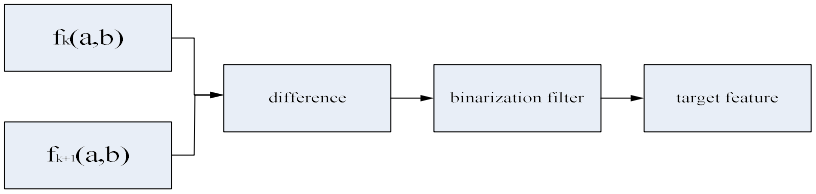


Figure 6: The basic flow of the inter-frame difference method

The Kth and K+1th frames (based on the difference between the two frames) in the image sequence are selected to perform the difference operation from Figure 6. For a certain point (a,b) in the image, the corresponding gray values in the two frames are fe(a,b) and f&t+(a,b), respectively, then the difference image D(a,b) can be expressed as:

$$D_k(a,b) = \left| f_{k+1}(a,b) - f_k(a,b) \right| \tag{12}$$

Then the moving target area I,(a,b) can be expressed as:

$$I_k(a,b) = \begin{Bmatrix} 256 & D_k(a,b) > T \\ 0 & otherwise \end{Bmatrix} \tag{13}$$

T is the segmentation threshold. In the differential image $D_k(a,b)$, the pixel value greater than the threshold T can be regarded as a moving target point. Those smaller than the threshold T are considered as background points, and binarized respectively.

(2) Background difference method

The detection of moving objects is carried out by differentiating one frame of image and the set background. First, the background model is constructed by using the average value of the grayscale images of the previous N frames. The description of the background difference algorithm can set the background image as $B(a,b)$, and the Kth frame image $f_k(a,b), D_k(a,b)$ are the difference result between the Kth frame and the background image, then the difference algorithm can be expressed as:

$$D_k(a,b) = \left| f_{k+1}(a,b) - B_k(a,b) \right| \tag{14}$$

Then the moving target area $I_k(a,b)$ can be expressed as:

$$I_k(a,b) = \begin{Bmatrix} 256 & D_k(a,b) > T \\ 0 & otherwise \end{Bmatrix} \tag{15}$$

T is the segmentation threshold. In $I_k(a,b)$, the gray value of the moving target is 256, and the gray value of the background area is 0.

(3) The adaptive background update method proposed in this paper

Due to the unsatisfactory effect of differential detection of fixed backgrounds, timely updating of backgrounds is particularly important. The update formula for the current background is:

$$B_k(a,b) = \begin{Bmatrix} B_{k-1}(a,b) & f(a,b) = 0 \\ \alpha f_k(a,b) + (1-\alpha) B_{k-1}(a,b) & f(a,b) = 1 \end{Bmatrix} \tag{16}$$

Among them, $B(a,b)$ is the current background image, $f_k(a,b)$ is the current frame image, and α is the background update speed, also called the weighting coefficient, $\alpha \in [0,1]$. When α is 1, the current frame image is used as the background image, and when α is 0, the background image is not updated.

Assuming that the number of moving target pixels detected in the Nth frame and the N-1th image is M_N and M_{N-1}, respectively, the growth slope W_N is expressed as:

$$W_N = \frac{\left| M_N - M_{N-1} \right|}{N - (N-1)} = \left| M_N - M_{N-1} \right| \tag{17}$$

Then, the background update formula used in this paper can be expressed as:

$$B_k(a,b) = \begin{Bmatrix} B_{k-1}(a,b) & f_k(a,b) = 0 \\ \alpha f(a,b) + (1-\alpha) B_{k-1}(a,b) & f_k(a,b) = 1, K_N > nT \end{Bmatrix} \tag{18}$$

Among them

$$]nT = n \times T, n > 0 \tag{19}$$

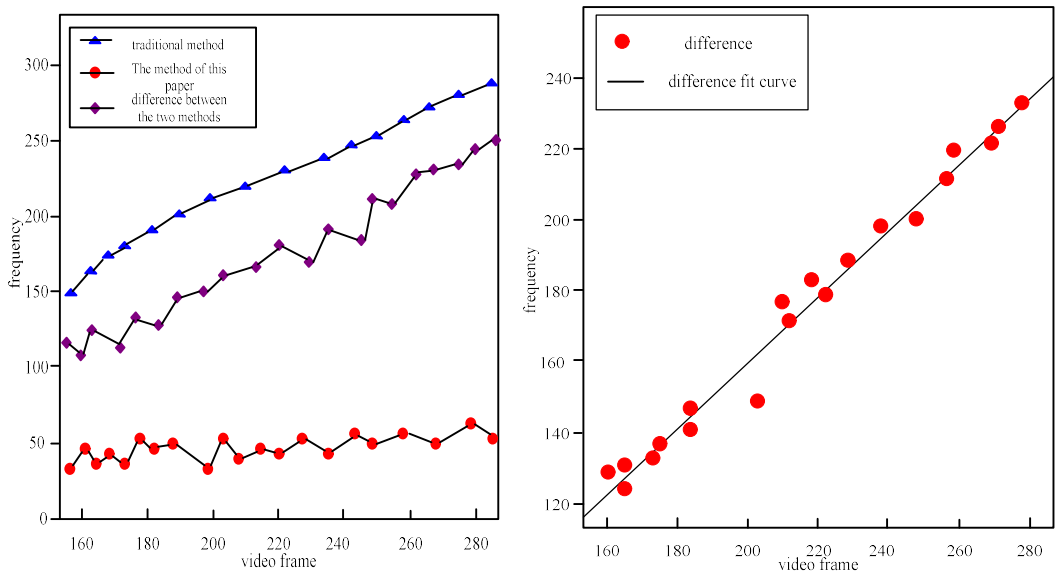
It can be seen from the above that in a certain frame, whether the background is updated is determined by K_N. When K_N is less than nT, the background update is not triggered; when K_N is greater than nT, the background update is triggered. In this paper, the threshold T is determined by the average number of target pixels in the previous N frames.

III. Experimental Analysis of Interactive System of IPE

III. A. Algorithm

In this paper, Matlab is used as an example to simulate the video from two aspects of background update and algorithm running time, and the corresponding experimental results are obtained.

The length of the video frame is used as an independent variable and background updates is used as a variable, as shown in Figure 7:

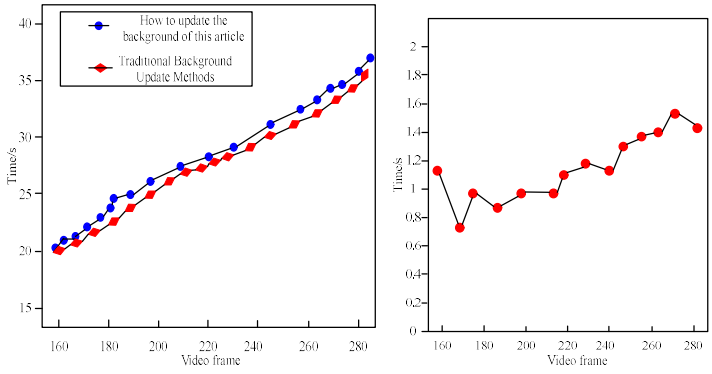


(a) The fitting curve of the difference in background updates (b) The background updates between the traditional and the proposed method

Figure 7: Two methods by curve fitting

As shown in Figure 7a, the background update rate of this method is significantly smaller than that of the conventional method. Two methods of curve fitting were used to obtain the curve fit of Figure 7b.

The traditional method is compared with the background replacement method in the running time, and the results shown in Figure 8 are obtained.



(a) Time consumption (b) Time curve

Figure 8: Runtimes in two different scenarios

In the case of short video length, the time overhead of these two algorithms is not much different in Figure 8a. Through the analysis and comparison of the above two aspects, it is proved that the algorithm can effectively reduce the unnecessary background replacement times in the process of dynamic gesture recognition, thereby improving the working efficiency of the system to a certain extent.

III. B. Investigation on Interactive System of PE students' I&P Classroom

(1) Experimental design and operationalization

In this study, the students' fixation time on the textbook is the main variable. The length of the "head up" is the main criterion for measurement. Include attention when the observer's eyes are on the teaching object (instructor or video). From the perspective of these two teaching reforms, the current educational reforms can be divided into four categories, as shown in Table 3.

Table 3: Classification of specific teaching types

		Content Strategy (Body of Knowledge)	
		Familiar knowledge (book knowledge)	New knowledge (extracurricular knowledge)
Tool Strategies (Teaching Styles)	Traditional Teaching (Oral Teaching)	1 group	3 group
	New media teaching (video playback)	2 group	4 group

As can be seen from Table 3, this study uses four different experimental methods to conduct experiments on four different teaching methods. The total duration of each experiment is 300 seconds, and the four different teaching methods are compared. The specific steps are as follows:

Group 1 test: The traditional oral teaching method is utilized, and the teaching content is the knowledge already mastered in the textbook. This section specifically selects the section "Basic Principles of Marxism" from the course "Basic Principles of Socialism with Chinese Characteristics".

Type 2 exams: The traditional oral language is still taught, but the content of the teaching is replaced by content other than textbooks. The historical event "Soviet Disintegration" is selected specifically, and the reasons for its occurrence are explained to the students in oral form.

Group 3 test: Video can be used, but textbook knowledge is played. This article selects a documentary highly related to textbooks, namely Deng Xiaoping's understanding of the nature of socialism in his live speech at the Third Plenary Session of the Eleventh Central Committee.

Test set 4: This is a form of video playback, in order to be consistent with sets of tests 2 and 3, so this section specifically selects the historical fragment of "the collapse of the Soviet Union" as a reference.

The knowledge of Group 1 and Group 3 has been described in detail in the textbook. The knowledge of Groups 2 and 4 is only mentioned in the textbook without detailed description, so this is a kind of "new" extracurricular knowledge.

(2) Data collection

A total of 518 students' case data were collected in this study, and each student was required to participate in four groups of experiments. Therefore, there are 2072 data on attention, excluding a large number of data with insufficient data collection, a total of 422 valid case data, 1676 attention data, the effective rate is 81%. Of these samples, 30 students remained focused after completing the test. Table 4 shows the specific assignments of the samples.

Table 4: Descriptive statistics of students' attention and influencing variables

dependent variable	mean	mislabeled	independent variable	sample	Proportion
attention	41.42	8.78			
independent variable	sample	Proportion	Growth Environment		
gender			City	143	33.88
Male	134	31.75	townships	279	66.10
Female	288	68.25	Exam pressure		
family economic status			under pressure	85	20.04
bottom layer	222	52.61	more stressful	173	41.05
middle and lower layers	200	47.39	generally	147	34.85
middle layer			easier	12	3.08
bottom layer	72	17.06	Easy	3	0.97
middle and lower layers	156	36.98	serve as a cadre		
middle layer	178	42.19	No	66	15.35
upper middle class	14	3.31	served	122	28.90
upper layer	2	0.47	in progress	234	55.75
total	422	100	total	422	100

Since this paper focuses on the changes in different teaching methods and learning time, the survival analysis is mainly used, and the factor analysis adopts the cox regression model in Table 4. The other is to use the cox survival regression model to compare the influence of each factor on the length of teachers' attention. In addition, the results of the survival analysis were used to estimate the attention span of the students. In order to achieve the "degree" of balancing the attention of teachers and students, it provides an effective solution for teaching reform.

(3) Data analysis

The cox survival regression analysis of student attention span is shown in Table 5:

Table 5: Student attention span

	Risk function of student loss of concentration		
		book	extracurricular
	total sample	Knowledge	Knowledge
Teaching content	-0.28***		
(Extracurricular knowledge = 1)	(0.05)		
teaching method	-0.16***	-0.39***	0.11*
(video playback=1)	(0.05)	(0.08)	(0.07)
gender	-0.03	-0.15*	0.08
(male=1)	(0.06)	(0.07)	(0.08)
specialized	0.01	-0.02	0
	(0.04)	(0.07)	(0.08)
family economic status	-0.02	-0.04	0.02
	(0.04)	(0.05)	(0.05)
from where	0.06	0.15*	-0.07
(city=1)	(0.07)	(0.08)	(0.08)
Exam pressure	0.07***	0.05	0.09**
(with pressure=1)	(0.04)	(0.04)	(0.0425)
Have you ever been a cadre	-0.03	-0.11*	0.04
(Never worked = 1)	(0.03)	(0.05)	(0.0481)
Log-likelihood	-11026	-4917	-4970
Pseudo R2	0	0	0
Prob > chi2	0	0	0.18
Observations	1676	838	838

As can be seen from Table 5, it is not difficult to see that no matter gender, major, family economic status, or growth environment (rural, township or urban), it would not have a significant impact on the length of time that students care about. Therefore, we have every reason to believe that adding "adding extra-curricular knowledge"

or "using video tapes" to teaching can indeed improve students' interest in learning in the classroom and promote teaching. This is similar to previous results on multimedia teaching. The improvement of content would affect the actual teaching effect. When the teaching method is to increase extracurricular knowledge, the probability of keeping students' attention is increased significantly by 23.67%. If video playback is used in teaching to improve the teaching effect, the probability of students keeping their attention would increase significantly by 14.78%. Therefore, there is reason to believe that "increasing extracurricular knowledge" in the teaching process can indeed effectively improve students' attention in the classroom.

In addition, "growth environment", "gender", "ideological factors" and other factors would also affect students' interest in learning. Especially in book teaching, these three factors have obvious effects on students' learning. From a gender perspective, boys' attention span is 13.06% higher than girls'. In terms of growing environment, students in urban areas have weaker attention in class, while students in urban areas have 16.18% less attention than those in rural areas. In terms of thinking, students who have served as cadres spend a longer time in the classroom, 9.52% more than students who have not served as cadres.

In a word, from the above conclusions, in the teaching reform of I&P theory courses in colleges, the effectiveness of the teaching mode should be considered. People should not only consider different teaching methods, but also consider the effects brought by different teaching methods. In teaching, we should pay attention to the "degree" of the method, so that the teaching reform of the I&P theory course can achieve due results.

IV. Conclusions

From the perspective of blended teaching, which is commonly implemented in I&P theory courses in Chinese colleges, this paper took Marxist theory, especially the theory of IPE, as the theoretical basis. This paper combined the research results of pedagogy, teaching theory, curriculum teaching theory, and network teaching, and goes deep into the mode and even the curriculum teaching level to discuss the reform of I&P theory courses in the new media environment. This paper tried to combine the advantages of traditional teaching and the new characteristics of online teaching to construct the I&P theory course in colleges. This provided pertinent and developmental suggestions for the reform of the I&P theory courses, so as to improve students' attention and improve the effectiveness of teaching and education of I&P theory courses. In the segmentation of human hand region, this paper adopted the fusion algorithm of static and dynamic human hand recognition, which removed the influence of the skin-like region in the image background on the recognition of human hand region. The experimental results show that a good hand segmentation effect is achieved. In hand image localization and tracking, the gray centroid method is used for hand localization. Through the tracking of the centroid of the hand, the judgment of the direction and distance of the hand movement is realized, so as to transform the position of the virtual model, and then realize the HCI based on the human hand.

Funding

Received Date: February 6, 2024 Fund Project: Teaching Reform Project of Colleges and Universities in Jiangxi Province: Research on the Reconstruction and Model Building of Digital Competence Elements of College Physical Education Teachers in the Context of Digital Transformation, No. (JXJG-23-24-15); Youth Project of Humanities and Social Sciences Research in Colleges and Universities of Jiangxi Province: Research on the Path to Improve the Digital Literacy of Physical Education Teachers in Colleges and Universities in Jiangxi Province Driven by Data, No. (JC23204); Exploration of Excavating and Integrating Ideological and Political Elements into College Public Physical Education Courses Based on the Theory of Event-Group, No. (JXJG-21-24-13).

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