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Research Article

Research on Simulation Analysis of Physical Training Based on Deep Learning Algorithm

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Aging is the trend of the global population in the 21st century. Physical degradation of the elderly and related care is a major challenge in the face of an aging society. Exercise can delay physiological aging and promote the metabolism of body functions. Although aging is an irreversible natural law, proper physical training can help prevent aging. Therefore, relevant personnel attach great importance to the training of physical fitness. To this end, a 12-week elderly functional fitness training experiment was conducted with elderly residents in a village in Nanjing. In the detection process, the gait analysis system is mainly used for the subject's motion detection and recording and records the data into the gait analysis software system based on the improved deep learning algorithm for sports training simulation analysis. After completing the physical training simulation experiment, the RTM model is used for simulation analysis. The results were evaluated. The evaluation data show that the homogeneity test results of the designed physical training simulation experiment are very reasonable. Since the result is much larger than 0.10, it can be inferred that the results of the physical training simulation analysis have been expected and also meet the national GB/T 31054–2014 standard requirements.

1. Introduction

Physical fitness is the basis of all sports. Only when people have excellent physical fitness can they perform better technical movements and maintain their competitive ability. With the development of modern sports, people pay more and more attention to people's physical training (Li) [1]. Reasonable physical training for people can not only keep people enthusiastic about sports all the time but also lay a good foundation for people's future technical training and competitive ability. Nowadays, with the rapid development of modern science and technology, more and more new technologies have been introduced into physical fitness training, and its training theory has maintained a relatively rapid development speed (Qiu et al.) [2]. With the deepening of physical training, its research direction is not limited to the traditional training methods and testing methods. The research direction has become more extensive, and the research system has become more abundant. More comprehensive and systematic research is carried out, and research work is no longer carried out for individual projects [3]. Moreover, physical training has become more focused on the comprehensive effects of its training, introducing more new ways of thinking and developing a lot of creative research directions. In the field of physical fitness training, it has attracted wide attention, which makes the traditional training mode suffer a great impact (Zhang) [4]. Nowadays, physical training is in a new period of development and transformation. Experts and scholars have different understandings of them, and they all have their own opinions. All kinds of new thinking modes have been introduced into physical training, which has completely changed the traditional physical training mode. It has injected a new direction of development into physical training, and the recognition of this new direction of development, considering that it is still in the initial stage. Neither theorists nor

front-line staff who are engaged in relevant research work have formed a unified and complete cognitive system for them, and they are still in the primary exploratory stage (Zhou and Chang-Hui) [5]. However, it can be confirmed that, with the development of modern sports, the traditional physical training mode can no longer meet the physical needs of people, especially for the elderly. Aging is the trend of global population in the 21st century, and the problems associated with the aging society follow. For example, the physical deterioration of the elderly, the care of the elderly, the health care of the elderly, and the social problems of the elderly are issues that need to be valued and considered. Physical degradation and related care for the elderly is a major challenge in the face of an aging society (Akhigbe et al.) [6]. Exercise can delay physiological aging and promote the metabolism of body function. Although aging is an irreversible natural law, proper physical training is beneficial to prevent aging. Therefore, we need a better physical training mode to help the elderly improve their physical fitness and to maintain a higher physical fitness for a longer period of time while not causing greater damage to the body.

Although physical training has developed to the present day, a large number of excellent research results have emerged, and physical training has undergone several generations of improvement. But with the development of sports and the improvement of sports level, traditional physical training has been unable to meet the current training needs. In the context of rapid development, physical training also needs to be developed rapidly to carry out technical iterations to meet real-world needs. It is urgent to improve the traditional physical training. Only further in-depth research on physical training can provide a solid foundation for the development of sports and better help people improve their physical quality. Therefore, based on the depth-oriented learning algorithm, the physical training is deeply analyzed, the physical training mode is improved, and the effect of physical training is comprehensively improved.

The deep learning technology is used to analyze the effects of 12-week elderly functional physical training with elderly residents in a village in Nanjing. Deep learning technology is mainly used in the processing of complex data models. In the process of research, it can be analyzed by program modeling. There are two common models: the basic model and the empirical model. The so-called basic model is based on the basic physics and chemical laws of the program. This mode is often caused by an internal organization that is too complex or where there are unknown or uncertain parameters that result in failure or unsatisfactory verification results. Therefore, there is an empirical mode. The empirical mode is to treat the program as a "black box" without any knowledge of the program organization under study. It is determined by mathematical techniques only by the input and output data of the program. The representative in the empirical mode is artificial intelligence technology. The so-called artificial intelligence technology is the technique of copying the thinking and operation of human beings. Among them, it can be divided into the neural network, the genetic algorithm, and the fuzzy theory, which are currently more concerned about development. The deep learning technology mainly uses intelligent algorithms to train different network architectures such as optimization neural network link weights through the common factors of factor analysis and is used for the processing of abnormal data in the data model.

The paper mainly has the following innovations in several major areas: (1) Based on the deep learning algorithm, the multiangle analysis of physical training, using the technical advantages of deep learning algorithm, comprehensive analysis, and processing of various factors in physical training, it comprehensively improves the actual training effect of physical training and optimizes the physical training model to conduct targeted demonstration. (2) It improves the actual training effect of physical fitness training in an all-round way, optimizes the physical fitness training mode, and demonstrates the results.

The organizational structure is as follows. The first section mainly describes the research background and the organizational structure of the paper. The second section mainly describes the research status of deep learning technology in physical training. The third section mainly describes the design process of the algorithm model. The fourth section mainly describes the practical research of deep learning technology in the simulation analysis of physical training. The fifth section mainly summarizes the research results.

2. Related Work

In the early days, because sports were relatively simple, the requirements for physical training were relatively simple, and the demand for physical training was relatively simple. Most of them are training on a single quality requirement, and in the early stage, they lack the consideration of physical tolerance. As a result, unscientific training volume arrangement has brought a great load to the athletes' bodies and affected their physical function and health. Lian proposed that athletes should be trained in comprehensive physical fitness, not in a single technical movement or in a single part of the strength training, but in overall physical fitness training. Then, according to the different sports, we analyzed the physical weaknesses and made up for them with scientific training (Lian et al.) [7]. After this training idea was put forward, it was widely concerned and recognized by the industry. More and more scholars began to carry out various research work based on all-round physical training ideas. Cheng proposed that, in physical training, it is necessary to pay attention to the practice of self-balance control and strengthen the athlete's ability to control the stability of his body. As far as possible, based on itself, without the help of outside training equipment, the body is treated as a load to complete the training in order to achieve the ability of training to control the body's stability (Cheng et al.) [8]. Jia proposed that when performing physical training, it is necessary to take into account the acceleration or deceleration of the body when the athlete performs the training action. It is necessary to strengthen the athlete's control over his own stability according to the specific action (Jia et al.)

[9]. Yang proposed that physical training should be to train the overall physical fitness, and the training method should conform to the physiological structure of the human body and simulate the exercise mode of the actual sports as much as possible (Yang et al.) [10]. Li proposed that the main purpose of physical training is to enable trainees to have better physical performance in their normal life or to enable professional athletes to have better physical fitness when performing competition (Li et al.) [11].

The core of the training is not single muscle strength, but it is to allow the body strength to effectively cooperate and strengthen the actual control of the body, so it is not to train the muscles but to exercise.

Combined with the corresponding body movements, strengthen the body muscle fit, so that the body has a better balance and power (as shown in Figure 1).

The model of physical fitness training should not be too single, and reasonable movement design should be carried out for sports events. This can not only strengthen the body strength but also exercise the stability and coordination of the body and train the physical fitness suitable for the sport (Zhong et al.) [12]. In the process of training, we can use external training equipment to design training movements. We can also combine it with yoga, gymnastics, and other ways to exercise the coordination of the body. Through rich training forms, improve the enthusiasm of coaches, help them understand sports skills, and improve specific physical fitness. Scholars suggest that we can strengthen the whole body strength through scientific and perfect movement training without significantly enhancing the local muscle strength. Wu suggested that physical training should also be carried out to strengthen people's willpower. Through reasonable psychological hints, it can enhance the control ability of trainers to the body, promote the strengthening of body adaptability, and help trainers to improve their sports ability (Wu et al.) [13]. At the same time, for different groups of people, we should adopt different training methods, not completely in accordance with a standard; we should adjust the degree and difficulty of willpower training according to the actual situation. Guo-Qing argued that the human body did less movement in one direction and more comprehensive movement in many directions. In these movements, the body is accomplished mainly by rotation so the training movement cannot be a single direction of action. The body movements in the actual exercise to be considered and the training of the body's ability to rotate are enhanced to enhance the ability of the body to exercise in combination (Guo-Qing) [14] (as shown in Figure 2).

3. Algorithm Model Design

3.1. Deep Learning Technology. At present, deep learning technology is mainly used in the processing of complex data models. In the process of research, it can be analyzed by process modeling. There are two common patterns: Fundamental Model and Empirical Model. The representative of experience mode is artificial intelligence technology, and the so-called artificial intelligence technology is to imitate human thinking, operation, and other skills. It can also be divided into Artificial Neural Network, Gene Algorithms, and Fuzzy Theorem, which are paid more attention to at present. The deep learning technology mainly uses intelligent algorithms to train different network architectures such as optimization neural network link weights through the common factors of factor analysis and is used for the processing of abnormal data in the data model (Yang et al.) [15]. The deep learning technique is a data calculus method that obtains a mathematical model by using an iterative random sampling method to extract and screen abnormal data. The implementation principle is mainly based on the assumption that there are two different data types in the sample data: (1) a normal data model; (2) a noise and anomalous data model. The algorithm believes that the reason why it cannot adapt to the mathematical model is mainly that the abnormal data may be caused by wrong assumptions in the process of mathematical model calculation (as shown in Figure 3). However, these erroneous data often lack enough parameters to restore them. For this reason, the algorithm restores its real data through multiple iterations. Its basic implementation process is as follows.

Firstly, we need to obtain the necessary data model information. The main way to obtain data is to traverse the SPSS data statistics software (as shown in Figure 4). According to the different domains of use, it can be divided into two kinds: one is spatial processing, and the other is frequency processing. The former deals directly with the data model itself, while the latter deals with the data model in a special way and carries out various calculations and analyses. The processing formulas for airspace are as follows:

$$g(x, y) = EH[f(x, y)]. \tag{1}$$

Among them, $f(\cdot)$ is the data model before enhancement, $g(\cdot)$ is the data model after enhancement, and EH represents the enhancement operation.

For a continuous function $f(x, y)$, its gradient at position (x, y) can be expressed as

$$\nabla f(x, y) = G(x, y) = \left[G_x G_y\right]^T = \left[\frac{\partial f}{\partial x} \frac{\partial f}{\partial y}\right]^T. \tag{2}$$

The gradient is a vector whose magnitude and direction angles are, respectively,

$$\begin{aligned} |\nabla f| &= |G(x, y)| = \left[G_x^2 + G_y^2\right]^{1/2} \\ \phi(x, y) &= \arctan\left(\frac{G_y}{G_x}\right) \end{aligned}. \tag{3}$$

The approximate expression of the gradient is as follows:

$$\begin{aligned} G_x &= f[i, j+1] - f[i, j], \\ G_y &= f[i+1, j] - f[i, j]. \end{aligned} \tag{4}$$

Usually, in order to reduce the amount of calculation, the absolute approximate gradient amplitude is often used to calculate.

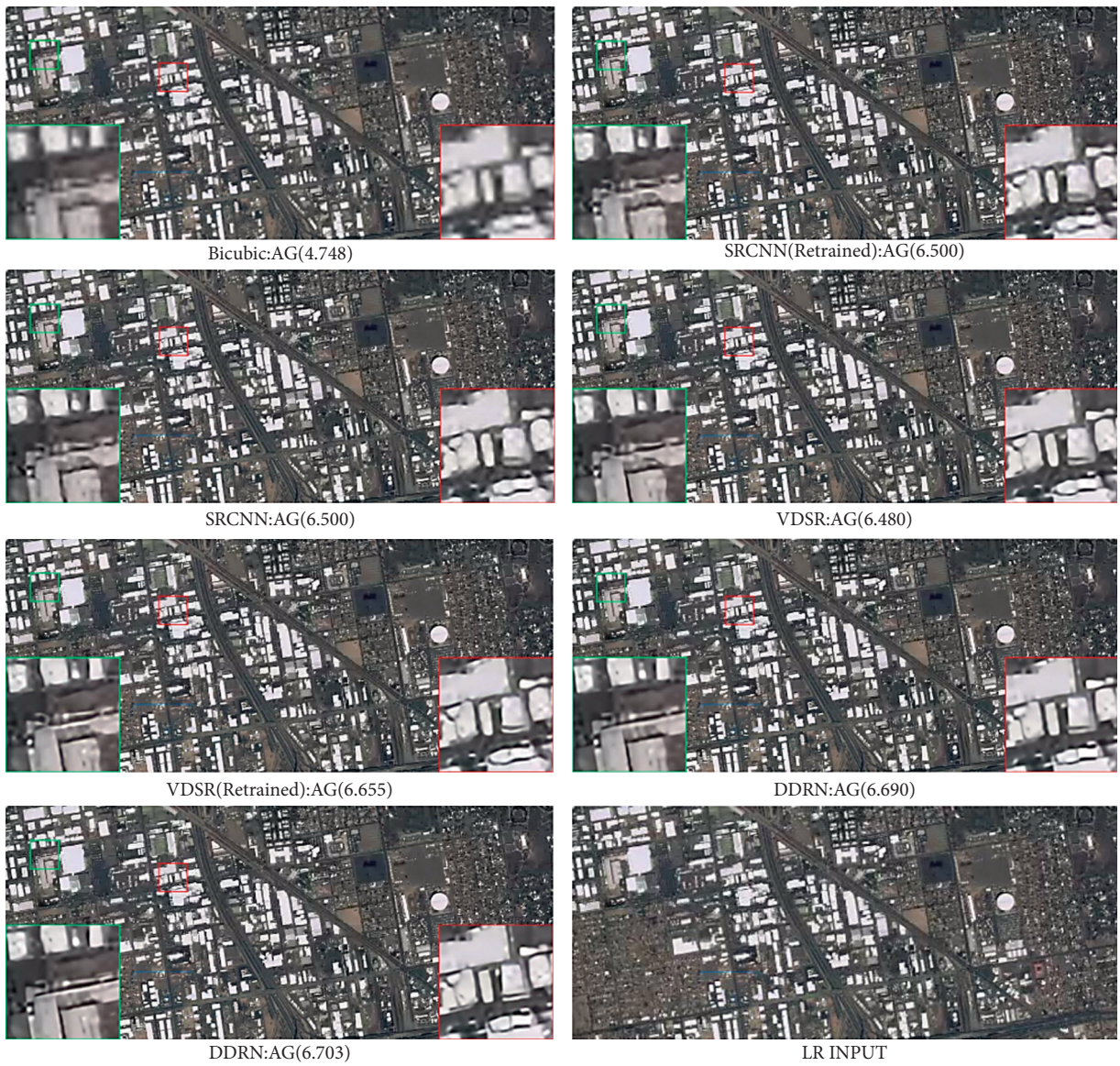

Figure 1: The schematic diagram of the algorithm model.

$$|G(x, y)| = |G_x| + |G_y|. \tag{5}$$

When analyzing the data model, the approximation is usually calculated by using a small area template tape (as shown in Figure 5). For G_x and G_y, one template is used, which requires two templates. According to the size of different templates, the computational attributes are also different.

Then, it extracts the corner points of the data model content which has completed the preliminary processing. Suppose that there are variables I_x and I_y used to represent the data and the first-order partial derivatives of the model I in two different aspects of the x-axis and the y-axis of Cartesian coordinates. Then, function $w(x, y)$ can be used to represent a two-dimensional Gaussian smoothing function on Cartesian coordinates. The calculation process of this function is shown in the following two formulas:

$$M = \sum_{x,y} w(x, y) \begin{bmatrix} I_x^2 & I_x I_y \\ I_x I_y & I_y^2 \end{bmatrix}. \tag{6}$$

Solving formula (4) can get the specific number of each corner R in the data model. Then, using the corner points calculated by the normalization idea to match, the data model corner point value can be obtained. The matching calculation equation is as follows:

$$NCC = \frac{\sum_i (I_1(x_i, y_i) - u_1)(I_2(x_i, y_i) - u_2)}{\sqrt{\sum_i (I_1(x_i, y)_i - u_1)^2 \sum_i (I_2(x_i, y_i) - u_2)^2}}. \tag{7}$$

At the same time, the deep learning data analysis algorithm can be used to purify the data model corner values (as shown in Figure 6). In the process of purification, the data model needs to be purified according to the hierarchical

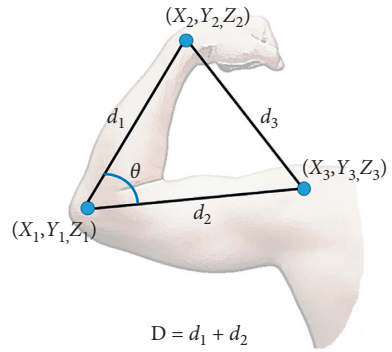

Figure 2: Network distance teaching based on streaming media technology has a wealth of research.

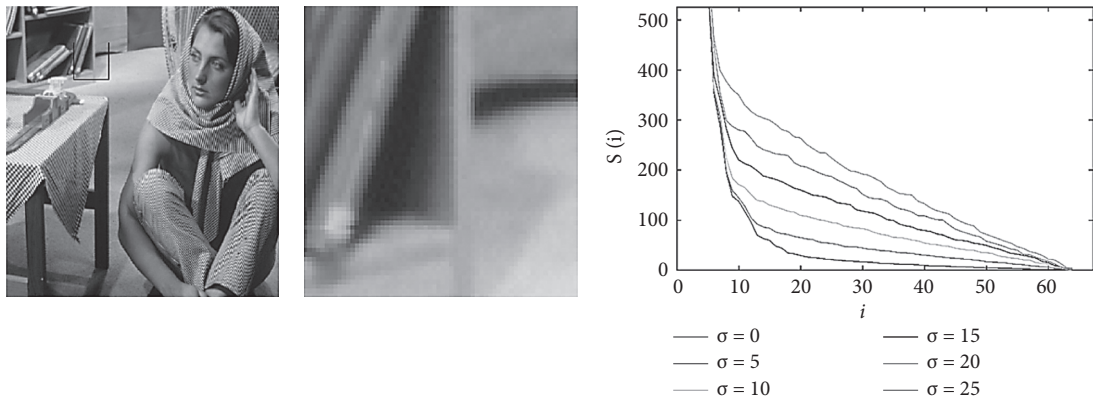

Figure 3: The healing of tendon injury was obtained by medical image analysis.

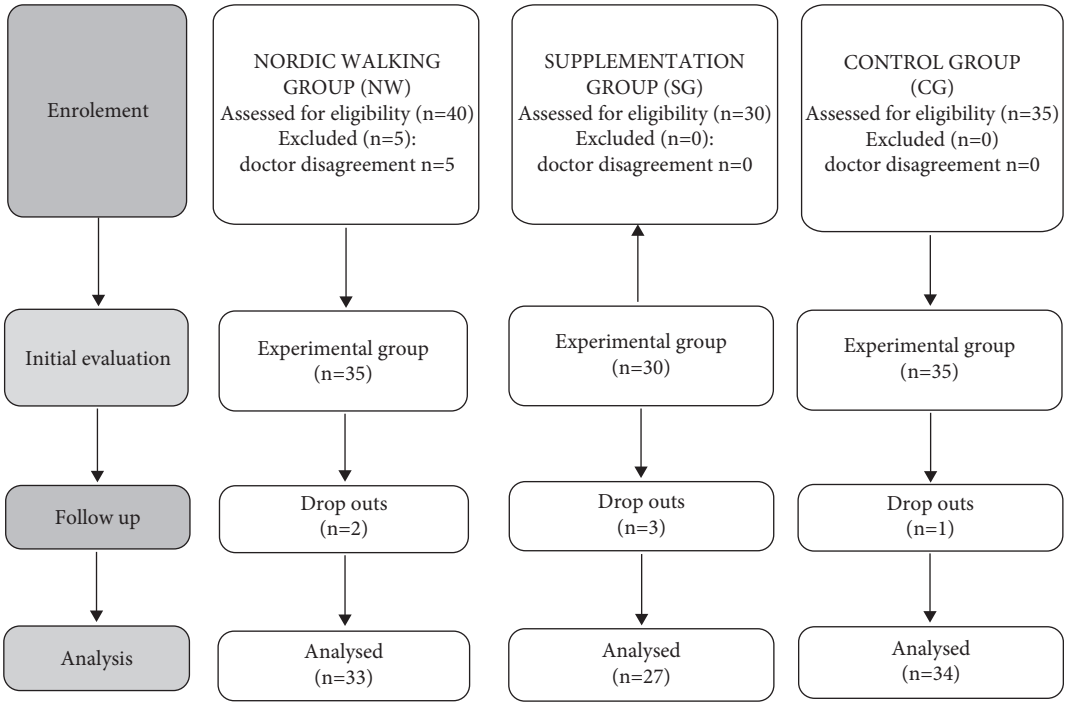

Figure 4: Local image information for the first derivative operator.

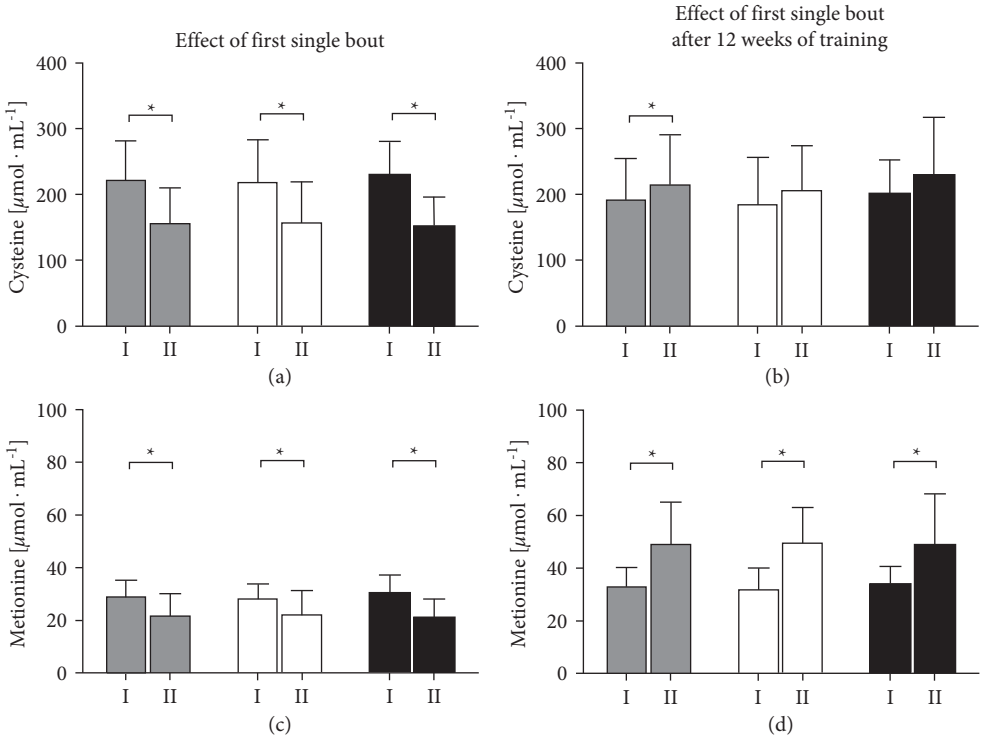

Figure 5: The operator approximates the amplitude of the continuous gradient of the edge point.

channel mode, so there is the following linear algebraic equation:

$$\begin{pmatrix} R_2 \\ G_2 \\ B_2 \end{pmatrix} = \begin{pmatrix} c_r & 0 & 0 \\ 0 & c_g & 0 \\ 0 & 0 & c_b \end{pmatrix} \cdot \begin{pmatrix} R_1 \\ G_1 \\ B_1 \end{pmatrix} + \begin{pmatrix} d_r \\ d_g \\ d_b \end{pmatrix}. \tag{8}$$

EKF truncates the Taylor expansion of nonlinear function by first-order linearization and ignores other higher-order terms so as to transform the nonlinear problem into linear. The Kalman linear filter algorithm can be applied to nonlinear systems. In this way, the nonlinear problem is solved. Although EKF is applied to nonlinear state estimation systems, it has been recognized by academia and is widely used. In order to solve the problem that the constant matrix cannot accurately describe the system noise of permanent magnet synchronous motor (PMSM) under different operating conditions, an adaptive extended Kalman filter algorithm (AEKF) based on innovation sequence and state residual is proposed. The simulation results show that, compared with the traditional extended Kalman filter algorithm, AEKF has better convergence speed and convergence accuracy and better parameter robustness.

In the above formula, variable R_2, variable G_2, and variable B_2 represent three different levels of channels of the data model, respectively. The variable (c, d) is mainly used to represent the transformation parameters of the linear equation.

The calculation is performed using the R channel as an example. It is assumed that there are corner data of different data models of group n, and variable d_n represents the absolute distance of different data points $(R_2, R_1)_n$ to straight line (c, d). At this point, the purification is done by iterative summation as follows:

$$E = \sum T\left(d_n^2\right). \tag{9}$$

In the above formula, when the condition satisfies $d_n^2 < Thre^2$, then $T(d_n^2) = d_n^2$. Otherwise, $T(d_n^2) = Thre^2$. The corners of the data model satisfying the conditions are screened out, and the iterative calculation is continued. The whole purification process is completed until the value of E does not change significantly (as shown in Figure 7).

After the data model is segmented, the similarity between the data model and the established data model in the database is calculated and matched according to the calculated results. The matching result of the data model is very characteristic. The following functions are used to measure the similarity between T and f:

$$SE(x, y) = \sum_{i=1}^{N} \sum_{j=1}^{N} [f(x - i, y - j) - T(i, j)]^2. \tag{10}$$

Among them, the size of the data model is $N \times N$. The formula provides a measure of the degree of matching between the data model T and f at (x, y) coordinates. The matching result can be calculated by expanding the above formula:

$$\begin{aligned} SE(x, y) = &\sum_{i=1}^{N} \sum_{j=1}^{N} f^2(x - i, y - j) \\ &- 2 \sum_{i=1}^{N} \sum_{j=1}^{N} f(x - i, y - j) T(i, j) + \sum_{i=1}^{N} \sum_{j=1}^{N} T^2(i, j). \end{aligned} \tag{11}$$

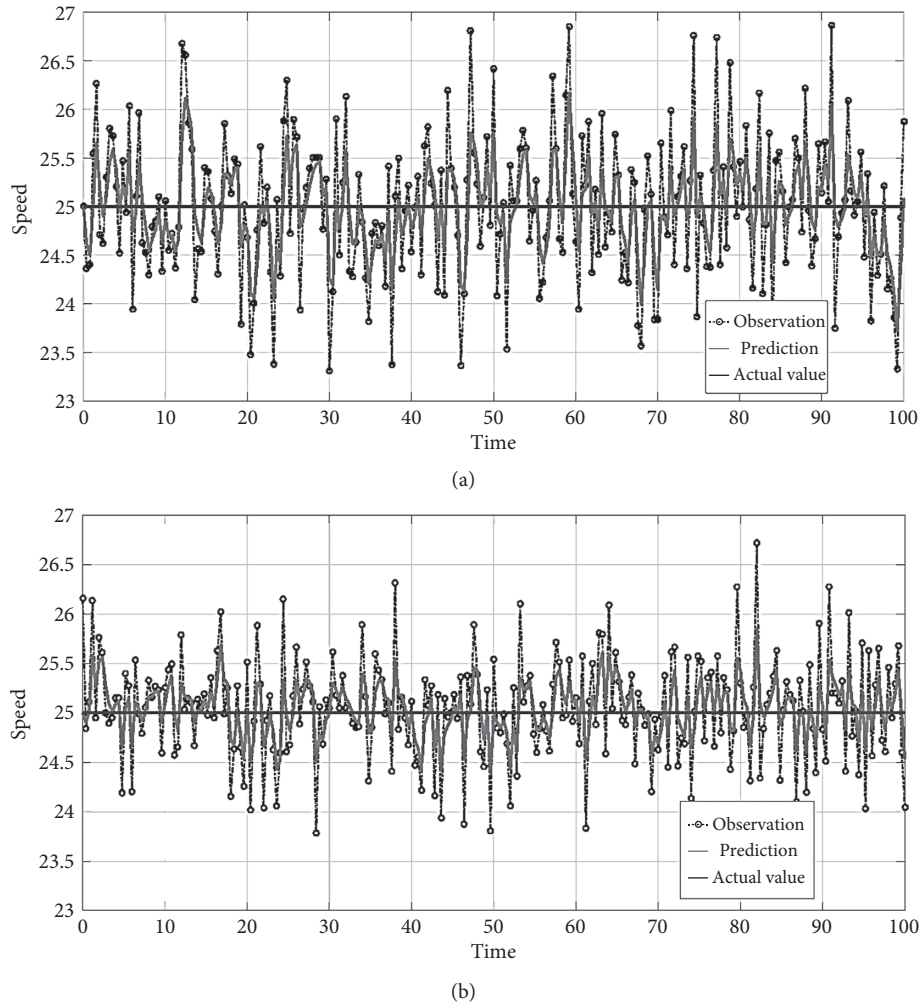

Figure 6: In the process of purification, the image should be considered separately according to the red, green, and blue color channels. (a) EKF algorithm. (b) AEKF algorithm.

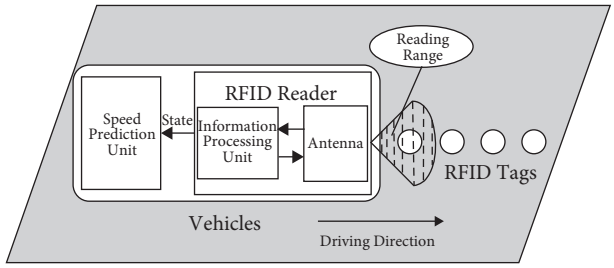

Figure 7: Image segmentation technique image segmentation technology.

3.2. Deep Learning Algorithms. At present, the common deep learning algorithms mainly include the following: conditional random fields, convolutional neural networks, recurrent neural networks, and memory networks. Conditional random fields (CRFs) in deep learning algorithms mainly belong to the field of natural language processing (NLP). Natural language processing is a very popular field in artificial intelligence. Named Entity Recognition (NER) is a subtask in the field of natural language processing. Its main purpose is to classify unstructured text into predefined categories by identifying Named Entity, such as Personal Name (PER), Place Name (LOC), and Organizational Name (ORG). In the task of conditional random field (CRF) in Sequence Labeling of natural language, CRF is the choice of most people and is widely used. However, according to the research, conditional random field (CRF) can only capture a small range of article information, and the key limitation of CRF is to obtain the information in the whole article (as shown in Figure 8).

Convolutional neural networks (CNN) is a feed-forward neural network, which is usually composed of convolutional layer, pooling layer, and fully connected layer. Compared with other networks, convolutional neural network (CNN) needs fewer parameters, which makes it an attractive in-depth learning model. Convolutional neural network (CNN) has the advantage of automatically capturing adjacent features. Firstly, it is applied to sequential markup tasks in natural language processing, and good results have been achieved. Recently, the convolutional neural network (CNN) combined with the Gated Linear Unit (GLU) is used, and in

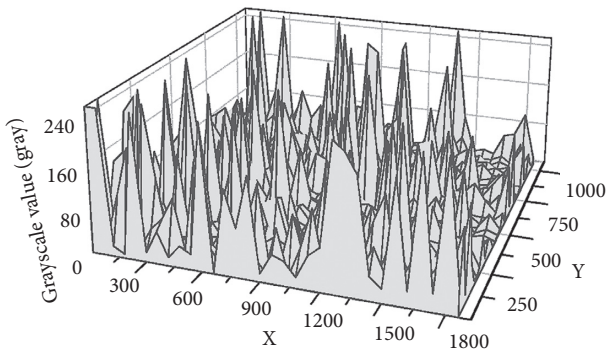

Figure 8: Receive feedback from participating nodes.

order to avoid the loss of text information, the pooling layer is abandoned and applied to the Chinese Word Segmentation task.

Natural language processing (NLP) usually considers the context before and after the article so as not to take the meaning out of context, in other words, to train the language model. If the context information can be provided to the model as training data, the effectiveness of the model will be improved. Therefore, recurrent neural network (RNN) is widely used in the deep learning method of natural language processing (NLP), which leads to the widespread use of recurrent neural network (RNN). Based on the universal use of recurrent neural network (RNN), many researchers have developed some changes in order to expand the function of RNN. The proposed LSTM (Long Short-Term Memories) uses memory as a reference factor to enhance current decision-making, while Gated Recurrent Units (GRUs) improves LSTM (Long Short-Term Memories). Recently, the concept of Bidirectional has been introduced to retrieve forward and backward information by using long-term and short-term memory (LSTM) in sequential tagging tasks. At the end of the model, combined with conditional random field (CRF), it has been applied to English data sets and achieved very good results. However, with the increase in the length of the input sentence, the efficiency will deteriorate. Although time series markers have been added, they still prefer adjacent character information and perform poorly in judgments involving remote context dependence. Because the traditional conditional random field (CRF) has no ability to capture the features of articles beyond a long range, the recursive neural network (RNN) is not very effective in long-distance article information retrieval. Therefore, memory network can be used to enhance the performance of retrieving features of long-range articles and applied to QA tasks. It proves that the increase of memory is essential for performing reasoning that requires constant-distance article information (as shown in Figure 9).

4. Practical Application

4.1. An Overview of Experiments. Aging is the trend of global population in the 21st century, and the problems associated with the aging society follow. For example, the physical deterioration of the elderly, the care of the elderly, the health care of the elderly, and the social problems of the elderly are issues that need to be valued and considered. Physical degradation and related care for the elderly is a major challenge in the face of an aging society. Exercise can delay physiological aging and promote the metabolism of body functions. Although aging is an irreversible natural law, the timing of exercise intervention and the effect of mode on prevention will still cause differences. Based on the above background, the effects of 12-week old functional physical training were simulated using deep learning techniques (as shown in Figure 10).

The elderly residents of a village in Nanjing were used as subjects. They were over 65 years old. There were no serious illnesses or inconveniences in lower limbs. There were 14 subjects, 5 males and 9 females, with an average age of 72.5 years, an average height of 155.6 cm, and an average weight of 58.7 kg. The study was conducted from March 26 to June 16, 2018, for a total of 12 weeks. Research tools mainly include (1) tape measure, detecting the maximum balance range; (2) stopwatch, detecting open-eye standing, closed-eye standing, open-eye cushion standing, closed-eye cushion standing, and obstacle test completion time; (3) 30 cm ruler, detecting the predumping aids; (4) 15 cm high steps, detecting straddle aids; (5) gait analysis system (L2Sens-B Free4Act System, 4Act WALK versione Base e XL, LorAn, Castel Maggiore, Italia): detecting gait parameters for ten-meter gait and obstacle test; (6) improved gait analysis software system based on deep learning algorithm; (7) balance pad (3240 body-balance, Carnegie fitness, Tainan, Taiwan): detecting open-eye cushion standing and closed-eye padded standing aids; (8) obstacle: self-made test obstacles test.

4.2. Experimental Simulation. A briefing session was held before the experiment, and the consent form and experimental instructions were given to the subject, indicating the purpose and method of the experiment; the subject was asked to sign the consent form and then returned, indicating that they agreed to participate in the experiment. On the other day of the test, the subject is explained and answered with questions related to the experiment. In the experiment, the subject can ask questions at any time, but the subject is required to observe the test time: (1) Maintain daily routine during the experiment. (2) It is forbidden to drink any caffeine-containing alcoholic beverages before, during, and after the test; alcoholic beverages. (3) 30 minutes before the test, light clothes arrived at the test site, and researchers warmed up to participate in the experiment. (4) At the first class, the subject is required to wear a wrist unit and test the training intensity (as shown in Figure 11).

In the detection process, the different color exploration gait analysis system is used to detect and record the subjects' movement, and the data are recorded in the gait analysis software system based on the improved deep learning algorithm. Finally, the physical training simulation analysis is carried out through the incremental value (gray). Specifically,

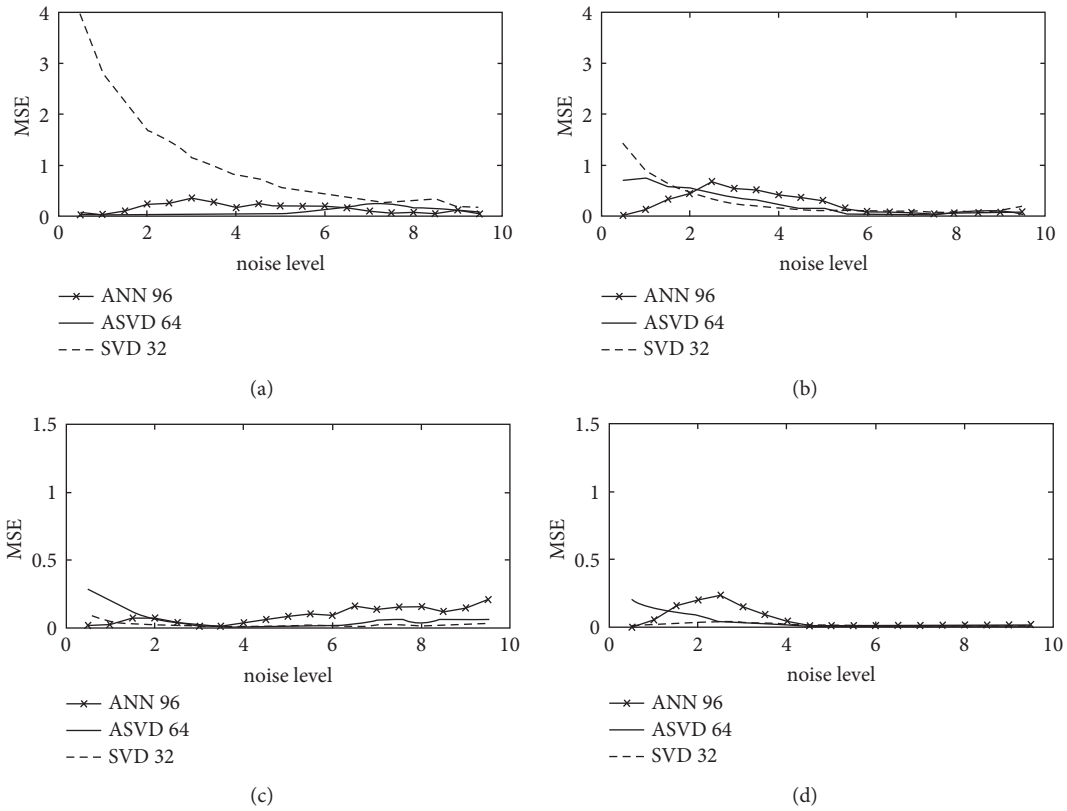

Figure 9: Multicast is the sending of data packets to a host group represented by a unique IP address.

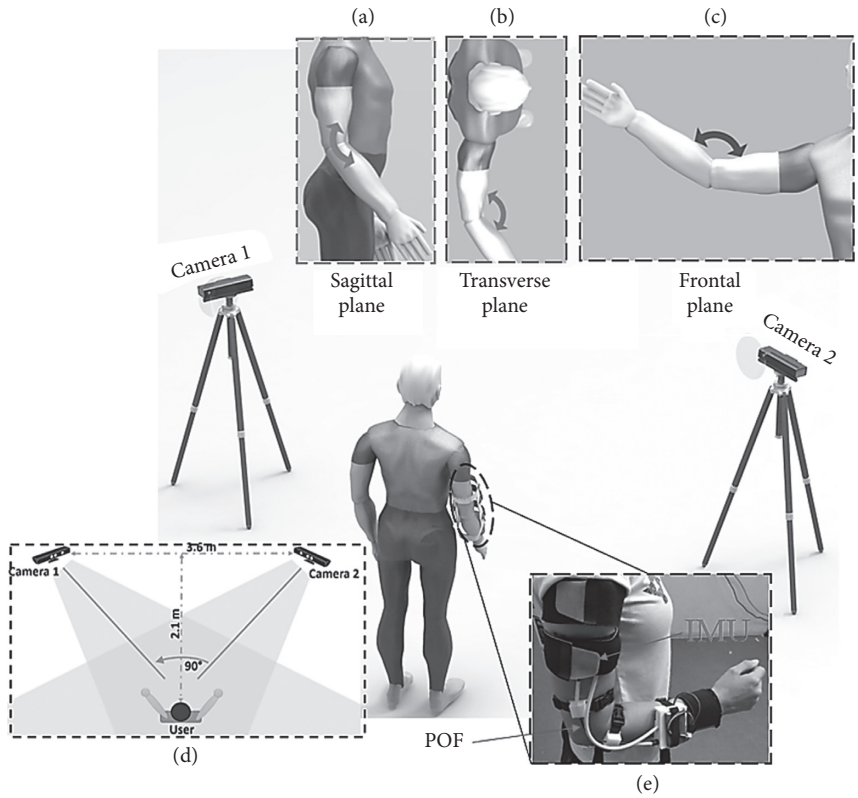

Figure 10: The expert model of building energy intelligent management is applied to the energy management of the building garden.

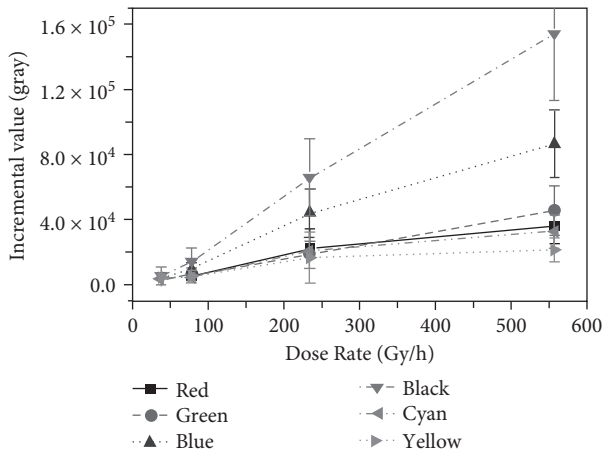

Figure 11: Actively issue abnormal energy consumption and alert to reduce wrong energy consumption.

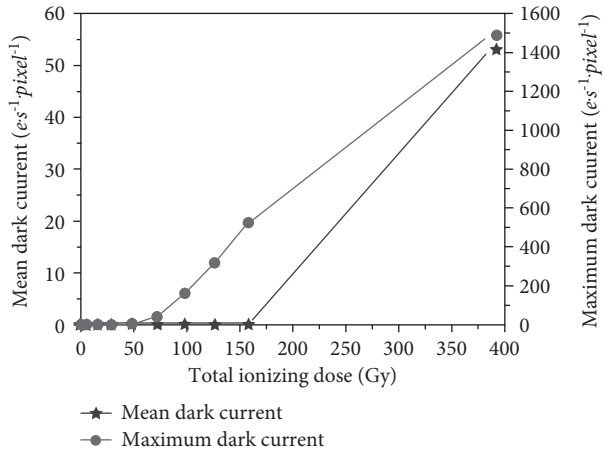

Figure 12: Precision instrument of watt-hour meter tester with fault in transmission system.

it includes the following aspects: (1) Standing on one foot: subjects were lifted off the ground for a single second, with a maximum of 20 seconds, and scored. (2) Open eyes: the subjects stood naturally on both feet and embraced their chests with both hands. Measure open eyes, perform three times, and record time, each time limited to 30 seconds. (3) Close your eyes and stand on your legs. When the subject's heels are close together and when they close their eyes, they start timing at the same time. When the subject loses balance or opens both eyes, stop timing, time up to 30 seconds, and score. (4) Stand with your eyes closed. The subjects naturally stand on their feet, hold their chests with both hands, close their eyes when starting the test, measure the closed eyes, perform three times, and record the time to take the maximum value; each time is limited to 30 seconds. (5) Open the eye cushion. The subjects stood naturally on both feet and embraced their chests with both hands. Measure the opening of the eye station cushion, each item is executed three times, the time is recorded, and each time is limited to 30 seconds. (6) Closed-eye cushion standing: the subjects stood naturally on both feet and embraced their chests with both hands. Measure the closed-eye station cushions, perform three times each, record the time, each time limited to 30 seconds, and score. (7) Swinging head walking: the subject turned his head at a frequency of 100 beats/min and took a straight line ten steps forward to score. (8) Circling in place: subjects were asked to turn right 1 turn, pause at the original position, then turn left 1 turn to record the number of steps in the process, and score.

4.3. Experimental Evaluation. The elderly residents in a village in Nanjing were used as subjects, and the effects of 12-week-old functional physical training were simulated by deep learning techniques. In the detection process, the gait analysis system is mainly used for motion detection and recording of the subjects, the data is recorded into the gait analysis software system based on the improved deep learning algorithm for physical training simulation analysis, and the RTM model is used for simulation analysis.

After completing the physical training simulation experiment, the RTM model was used to evaluate the analysis results. The execution steps are as follows: find different evaluation indicators of the evaluated objects and establish an evaluation weight matrix R. The product of each row element of the judgment matrix R is calculated, the actual weight value of the different indexes of the object to be evaluated can be obtained, and the evaluation score can be calculated by calculating the weight value and the evaluation content data.

The evaluation results can be obtained by calculating the data information recorded during the experiment according to the above calculation method (as shown in Figure 12). The data in the figure shows that the homogeneity test results of the designed fitness training simulation experiment are $P = 0.662 > 0.10$. Since the result is much larger than 0.10, it can be inferred that the results of the physical training simulation analysis have been expected and also meet the national GB/T 31054-2014 standard requirements.

5. Conclusion

In the face of an aging society, physical degradation and related care of the elderly is a major challenge. Appropriate physical exercise can help prevent aging. Therefore, relevant personnel attach great importance to the training of physical quality. Therefore, this paper conducted a 12-week functional fitness training experiment on elderly residents in a village in Nanjing. In the detection process, the gait analysis system is mainly used for motion detection and recording of subjects and records the data into the gait analysis software system based on the improved deep learning algorithm for motion training simulation analysis. After completing the sports training simulation experiment, the RTM model is used for simulation analysis. The results were evaluated. The evaluation data show that the homogeneity test results of the designed physical training simulation experiment are as follows. Since the result is far greater than 0.10, it can be inferred that the result of sports training simulation analysis is expected and meets the requirements of the national GB/T 31054-2014 standard. Based on the deep learning algorithm,

this paper makes a multiangle analysis of physical training and makes use of the technical advantages of deep learning algorithm to comprehensively analyze and deal with various factors in physical training, comprehensively improve the effectiveness of physical exercise, optimize the physical exercise mode, and carry out targeted demonstration, and comprehensively improve the actual training effect of physical training, optimize the physical training mode, and show the sports effect. However, this study does not conduct multiangle combined research and analysis on the subjects' living habits, which leads to the fact that the technical advantages of deep learning algorithm may not accurately grasp the focus of the research, which needs further analysis in future research.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding this work.

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