Retraction

Retracted: The Implementation Path of Labor Education in Applied Universities Driven by Artificial Intelligence Technology

Mobile Information Systems

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

1. Discrepancies in scope
2. Discrepancies in the description of the research reported
3. Discrepancies between the availability of data and the research described
4. Inappropriate citations
5. Incoherent, meaningless and/or irrelevant content included in the article
6. Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article’s content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

References

Research Article

The Implementation Path of Labor Education in Applied Universities Driven by Artificial Intelligence Technology

Yingying Luo

Students Affairs Department of Sichuan University of Arts and Science, Dazhou (635000), Sichuan Province, China

Correspondence should be addressed to Yingying Luo; 15040140142@xs.hnit.edu.cn

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Labor education is an endogenous demand for the construction and development of applied colleges and universities, and it is of great significance for the times to promote the construction of applied colleges and universities. The labor spirit shaping of college students in applied colleges and universities is conducive to helping college students grow up to be the new man of the times, promoting the core task of transformation and development of applied colleges and universities and meeting the construction needs of a modern educational power with the socialism of Chinese characteristics. In view of the outstanding problems of cognitive bias, inaccurate positioning, one-sided means, and disregard of results in the process of shaping labor spirit in applied colleges and universities, the university should grasp the three key words of local, applied, and open system construction in the stage of spirit generation, use specific tactics to promote the combination of educators, educated and educational influence in the stage of spirit strengthening, and form the overall style and action of interpreting labor spirit by the struggle in the stage of spirit sublimation. In the stage of spiritual sublimation, the overall style and action consciousness of interpreting the spirit of labor by struggle are formed. Cultivating students’ technical application ability, nurturing quality spirit, and cultivating students’ sense of professional identity and responsibility are the value demands of labor education in applied colleges and universities. In view of the problems of the implementation path of labor education in applied colleges and universities, a labor education status assessment model based on artificial intelligence technology is proposed for establishing the value goal of talent cultivation in applied colleges and universities as the guide and promoting the effective labor education in applied colleges and universities in the new era by continuously solving various problems in labor education and cultivating qualified socialist builders and successors.

1. Introduction

Labor education is crucial to the growth of human beings. Cultivating students to establish a correct concept of labor, mastering labor skills compatible with the development of the country and society, and developing good labor habits have always been an important part of China’s educational work, as well as an important part of promoting students’ overall development in moral, intellectual, physical, social, and aesthetic aspects. As the anchor point of students’ literacy education, labor has a key role in feeding moral, intellectual, physical, and aesthetic development. The core of labor education lies in value recognition, i.e., value education, and the spirit of labor itself is a value existence, so shaping the spirit of labor is naturally at the center of labor value education [1–3]. Based on this, from the macro level, strengthening the cultivation of labor spirit among college students in applied colleges and universities is a key move to strengthen the education of labor spirit, which is of pioneering significance to promote college students to enhance the consciousness of revering and respecting labor. It is also conducive to the realization of the goals of labor for moral development, labor for education, labor for physical strength, and labor for beauty. At the micro level, strengthening the labor spirit is conducive to improving the education level of applied higher education and the personal growth of students, which is related to the progress of regional society and the long-term development of the country. The implementation path of labor education in applied colleges and universities is shown in Figure 1.
Strengthening the labor spirit of college students is conducive to improving the precise teaching level of higher education, which is in line with the strategic requirements of a strong education country [4–7]. It is conducive to helping college students of the new era grow up to be the new man of the times who is brave enough to accept the great responsibility, with the focus on cultivating the new man of the times who takes up the great responsibility of national rejuvenation. To grow into a new man of the times, the core of the new college students of the new era lies in taking up the great responsibility of national rejuvenation, and the fundamental lies in considering their actual situation and aligning with the standards. To accept the great responsibility of national rejuvenation, the new-age college students are required to have firm ideals and beliefs, cultivate strong skills and abilities and practical qualities, and embody the spirit of bearing for the country and the people. Labor is the source of all happiness. The spirit of labor, which is grounded in one's job and down-to-earth, is the concentrated embodiment of firm ideals and beliefs and the spirit of commitment. Therefore, from the core of cultivating the new man of the times, it is necessary to strengthen the shaping of the labor spirit of college students [8].

The new era needs to cultivate talents who can keep pace with the times and meet the development and social needs of the times, and the labor spirit of the new era, with its undertones of struggle, lean and innovation, reflects the characteristic requirements of labor itself in the new historical stage, and is conducive to solving the problem of what kind of people to cultivate. People create history and labor creates the future, and the process of college students’ participation in labor in the new era is also the process of their growth into the new man of the times. In conclusion, the labor spirit has positive significance at both general and sub-levels to help college students grow into new men of the times who are brave enough to accept great responsibilities. It is conducive to promoting the core task of transformation development of applied colleges and universities. In order to improve the quality of graduates, we should reduce the employment difficulties, so as to provide application and compound and innovative talents for industrial development. College graduates are increasingly becoming professional and application-oriented direction under the guidance of national macro policy documents. The main tasks of transformation and development of local general undergraduate colleges and universities are carefully analyzed, and each specific task revolves around technical skills, industrial innovation, and other keywords, indicating that while basic skill-based labor is valued, high-level innovative labor should be paid more attention [9].

In this context, strengthening the shaping of labor spirit of college students in applied colleges and universities and vigorously promoting labor education is conducive to two-way efforts to improve practical working ability and industrial docking level and connote pragmatic skills. On the one hand, the labor spirit directly points to concrete labor, which makes the education work dovetail with the actual job, promotes students’ work skills with stronger practicality and economic value, and maintains personal interests in employment, career selection, and entrepreneurship. On the
other hand, the struggle connotation contained in the labor spirit will make college students realize more value creation possibilities in labor, give more added value to general labor [10–13]. On the other hand, the spirit of labor contains the connotation of struggle, which will make college students realize more value creation in labor, give more added value to general labor, promote the further transformation of concrete labor to abstract labor and realize the transformation of labor to labor. In the interactive collision and consistency of labor force and labor mind, the application characteristics and industrial innovation characteristics of applied colleges and universities will be more prominent, and the task of transformation and development will be better realized.

Artificial intelligence technology-driven labor education implementation path is a technology that uses computer vision technology to extract features from labor education images across cameras for labor education matching, which is widely used in smart security, smart retail, and other fields, and is an important fulcrum for the combination of artificial intelligence technology and industry. In the early research on AI technology-driven labor education implementation paths, a large amount of work was based on traditional computer vision methods, using manually extracted image features into labor education work intelligence technology-driven labor education implementation paths. In recent years, with the successful application of deep learning in many fields, deep learning has been applied to artificial intelligence technology-driven labor education implementation paths and has achieved certain results. The main research idea is to use deep learning methods for feature vector extraction, then use metric learning to discriminate feature vectors, quantify the differences between images, and use a large amount of labeled data for training iterations of the model [14].

The implementation path of labor education driven by artificial intelligence technology is converted into a classification problem for research, and the ID of labor education is used as a label to label the data, and an image classification method is used to classify labor education. In subsequent studies, some scholars inspired by image retrieval methods proposed the CIR method, which uses image pairs as inputs and finally outputs the similarity between them. The method is based on twin convolutional neural networks, in which two images are input to two independent sub-networks to obtain the feature maps of the images, and then determine whether the image pairs belong to the same labor education by the metric learning method. Applying the twin convolutional neural network to the field of artificial intelligence technology-driven labor education implementation path, the original network of sharing weights is discarded, and the two sub-networks are made independent of each other, considering the difference in background, lighting, and other features of artificial intelligence technology-driven labor education implementation path image data. Based on twin convolutional neural networks, a deep network is proposed for AI technology-driven labor education implementation path, which takes image pairs as network inputs, calculates image feature map differences, and finally determines whether the image pairs belong to the same category. Person-Net deepens the network using multiple 3 x 3 convolutional layers on the original structure, which makes the effect significantly improved. The CIR method emphasizes the input interrelationship of two images.

The main contributions of this study are as follows. Firstly, applied colleges and universities as an important part of Chinese higher education, are the main position to implement, the combination of education and labor, the basic education policy, and shoulder the noble mission of cultivating high-quality workers and technical skill talents. Therefore, applied colleges and universities should carry out labor education from the elements of cultivating high-quality workers’ literacy, knowledge, and ability, so as to cultivate every young student to become advanced applied composite talents with strong adaptability and competitiveness to meet the needs of social and economic development, and finally promote the remarkable improvement of talent cultivation quality of applied colleges and universities, so as to respond to the expectations of the country, society, and high-quality people applied for colleges and universities. In this study, an analysis model of the implementation path of labor education in applied colleges and universities based on an artificial intelligence algorithm is proposed, and the accurate identification of mental state in labor education is achieved through the method of characterization learning is extracting features, combined with extracting local features, and introducing attention mechanism, and the relevant experiments prove the effectiveness of the method.

2. Related Work

2.1. Problems of Labor Education in Applied Colleges and Universities. Application-oriented colleges and universities, as the name implies, are undergraduate colleges and universities with application-oriented rather than research-oriented orientation, focusing on application, which is an important initiative of China to promote the transformation and development of colleges and universities [15–17]. At present, although many local colleges and universities have been transformed into application-oriented colleges and universities according to the requirements, they have not been fully implemented in many aspects such as school philosophy, talent cultivation, faculty construction, scientific and technological innovation, and docking with local enterprises, etc. Some colleges and universities still stay in the old mode, and the progress of transformation is slow. The practical ability of graduates has not been significantly improved, and the current situation of difficult employment and low employment quality has not been effectively improved. There is a deviation in the understanding of the value of labor education, which has been neglected and underestimated to some extent due to the long-term dilution and weakening of labor education.

Although most college students can recognize the importance of labor, they lack the consciousness to practice it. A small number of college students are influenced by the bad
social culture, they are greedy for pleasure, good for leisure and bad for work, advocate consumerism, despise laborers, hope to get rich overnight, make quick money and get something without working. Some students mistakenly believe that the purpose of studying in university is to learn professional knowledge and develop the professional ability, not to work, and they are resistant to labor education and do not want to refine their body and mind and sharpen their will through labor, so they just get by. Some teachers also have some deviations in their understanding of the value of labor education, believing that the main function of labor education in college is to cultivate and improve students’ professional and technical abilities, and that physical labor and social service are meaningless and a waste of time for education in college.

Although the teaching contents of labor education in some universities are in various forms, such as internship training, engineering practice, professional service and job practice, there is no overall planning in the top-level design of labor education, the contents are scattered and not concentrated, and no synergy is formed, and the education of strengthening the Marxist concept of labor is not organically combined with the knowledge of labor science, daily labor habits, and production labor practice. As a result, it is difficult to achieve the overall goal of labor education. At the same time, schools lack a perfect evaluation system and incentive mechanism for labor education, which makes some students lack proper attention and enthusiasm for labor education and teachers lack the enthusiasm to engage in labor education.

Lack of a professional teacher team overall, labor education teachers in colleges and universities are weak, with unreasonable structure and uneven quality, and the construction of a talent team needs to be strengthened. At present, most colleges and universities are not equipped with full-time teachers for labor education, and often rely on personnel engaged in ideological and political education and student management, such as counselors or other professional teachers, to teach part-time. In addition, due to the lack of necessary training for teachers, the effectiveness of labor education is reduced.

As for how to carry out labor education in general colleges and universities, the Guidance Outline clearly points out that it should focus on innovation and entrepreneurship, carry out production and service labor in conjunction with academic disciplines, and improve the ability to find problems and solve them creatively in production practice. At present, some colleges and universities only position labor education in the traditional nature of public welfare practice, divide the teaching content of labor education into simply theoretical teaching and labor practice, without deeply exploring the connotation of labor education in applied colleges and universities. They have not yet organically combined the content of labor education with serving local economic and social development, and still have deficiencies in highlighting the integration of industry and education, school-enterprise cooperation, and cultivating applied technical skill talents.

2.2. Strategies for Implementing Labor Education in Colleges and Universities. There are many problems in labor education in applied colleges and universities, both common problems with research universities and individual problems in applied colleges and universities, which should be solved and improved in different and targeted ways. To clarify the goal, run with characteristics and focus on innovation, applied colleges and universities should actively adapt to the new normal of China’s economic development and comprehensively improve their ability to serve regional economic and social development and innovation-driven development. Therefore, Liaoning colleges and universities should closely meet the needs of economic and social development of the old industrial base in Northeast China in terms of talent training objectives and labor education curriculum setting, innovating labor education mode according to local natural, economic and cultural conditions, combine with the school’s own characteristics, fully explore the available resources such as industry enterprises, run special features, vigorously cultivate innovative talents, meet the requirements of regional economic restructuring and industrial upgrading and serve the old Northeast China.

The university will also be able to meet the requirements of regional economic restructuring and industrial upgrading and serve the revitalization of the old industrial base in the Northeast. In the implementation of labor education, we should always take the inheritance of the red gene of soldier spirit as the core, focus on the institutional mechanism of school-enterprise cooperation to cultivate soldier heirs, introduce enterprises into education, integrate industry and education, integrate soldier spirit into the whole process of labor education, cultivate senior applied talents, and contribute to the enhancement of comprehensive economic strength of northeast China.

Restore the value of labor, reshape the labor culture, and enhance the recognition of the value of labor. The Marxist view of labor holds that labor creates man himself, labor is the first historical activity of human beings, labor creates the world, labor promotes the continuous sublimation of human understanding, and labor promotes the liberation and comprehensive development of human beings. The construction of campus labor culture should be based on the core concept of labor is the most glorious, labor is the noblest, labor is the greatest, and labor is the most beautiful. We also make use of new media such as campus micro-letter, school radio station, propaganda board, etc., and various forms such as reports and lectures to widely publicize the advanced deeds of labor role models and labor models, correct the labor dynamics of college students, improve their labor literacy, discard the wrong thoughts of despising and hating labor, establish correct labor values, cultivate the excellent quality of college students who respect labor, respect labor and love labor, stimulate their inner demand and motivation of labor, and realize To achieve the unity of knowledge and action in labor education.

To improve the curriculum system of labor education, the guiding outline points out that schools are the main body of labor education implementation, and they should make
overall design and systematic planning of labor education and form the overall implementation plan of labor education, according to the relevant national regulations and combining with the actual situation of local and our school. Therefore, schools should comprehensively sort out the curriculum system according to the talent training objectives and training standards, continuously integrate and optimize the existing teaching resources, integrate labor education into the entire process of talent training, set overall goals of labor education, implement them at all levels, and achieve effective results. To this end, labor education should be conducted from two aspects: theoretical teaching and practical teaching. In terms of theoretical teaching, first, we should set up compulsory courses on labor education in accordance with the requirements of the guiding outline, educate college students systematically on the Marxist concept of labor, and guide students to arm their minds with the Marxist concept of labor and correctly understand the value and significance of labor from a theoretical point of view. Second, we should give full play to the role of the main channel of Marxist basic principles, ideological and moral cultivation, and legal foundation, etc., to shape positive labor dynamics and emotions, encourage students to devote themselves to labor and make their dreams come true with labor.

In terms of practical teaching, a module of labor education should be set up in the curriculum, and the main practical teaching links of labor education, such as internship training, social practice, and work-study, should be clearly defined, while the relevant contents of labor education should be organically integrated into teaching practice and course design and graduation design, so as to realize the organic combination of theory and practice of labor education. The combination of the case study teaching method and group discussion has been proved to be an effective teaching method. The specific practice is to divide students into learning groups and give them 10 minutes to discuss with the teaching content, then each group sends a representative to share the results of group discussion, and finally, the teacher summarizes. The teacher should reflect on the students’ learning, identify problems, and make improvements.

The key is to design the discussion questions in a way that is relevant to the students’ thinking and not abstract and empty. For example, when teaching the cultivation of positive labor spirit, you can raise questions by watching the video of the advanced deeds of typical figures of great craftsmen, so that students can feel the labor sentiment of model workers and have a more comprehensive and profound understanding of labor spirit. In addition, for students’ bad behaviors such as wasting food and not cherishing the fruits of others’ labor, they can use the teaching activities of having students create their own school plays to make them understand right and wrong and correct their mistakes. In conclusion, teachers should choose a variety of mixed teaching methods such as participatory, interactive, and debating according to the different course contents of labor education, and continuously optimize the teaching methods to improve the teaching effect.

2.3. Artificial Intelligence Technology. Artificial intelligence technology-driven labor education implementation path is the core technology of long-time, cross-domain multi-objective tracking, whose main goal is to re-identify the same labor education across cameras. In the study, usually given a target labor education image or video clip, the target labor education is identified in the image sequence or video clip to be matched, and the similarity between the target image and the matched image is given [19]. Two surveillance cameras with non-overlapping fields of view, which capture some labor education images at different time periods, select one image from the images captured by camera one as the target image. The goal of the artificial intelligence technology-driven labor education implementation path is to achieve cross-camera tracking of labor education by finding the image with the highest match to the target image and identifying that person again among the images captured by second camera.

For artificial intelligence technology to drive the labor education implementation path, it is necessary to first obtain the feature vector of the labor education image using a feature extractor, and then judge the similarity between the target image and the image to be matched using a metric learning method. Metric learning is a common method of machine learning to determine the degree of similarity of feature vectors through quantitative methods. In the training process of the network, the metric learning method is mainly embodied in the loss function, which is used to update the parameters of the deep network, so as to extract more discriminative image features. The main loss functions used in artificial intelligence technology-driven labor education implementation paths are as follows. Feature extraction at multiple scales is accomplished using null convolution, which makes full use of the contextual information of the image. STN is introduced for image segmentation, local features are extracted using MSCAN networks, and the extracted global features are fused with local feature vectors. SP-ReID architecture uses semantic segmentation methods to replace the commonly used detection methods to determine the target region to avoid the interference of background information for local feature extraction. The recognition performance of the network is improved by fusing global information with multi-scale local information using a multi-task pyramid overlap matching approach and combining the edge information of each chunk. The human body semantic parsing approach is used to localize and classify the labor education body parts at the pixel level by human identity labels only [20].

Let each input image go through two independent convolutional layers to generate two feature maps and fuse them to obtain the respective feature maps of the two images. Combining the single-image feature approach for the input image pairs, extracting their respective features using separate convolutional neural networks, and extracting the feature maps from the feature extraction process for fusion, this approach combines the high efficiency of extracting single-image features with the advantages of the CIR approach for inter-image information extraction. The deep feature fusion AI technique drives the path model of labor.
education implementation, using convolutional and pooling layers to extract deep features of the network multiple times, and using the fused deep features as feature attributes of labor education, which improves the ability of the network to extract global features. With the same idea, the feature maps extracted from the last three convolutional layers of the feature extraction network are stitched together, and then the deep features are extracted using the convolutional neural network, which improves the deep feature extraction ability of the network [21]. The cross-modal fusion method is used to fuse the visual features as well as the spatial-temporal features of the images, and the method achieves better performance on several datasets.

3. Methods

3.1. Model Architecture. Based on the attention mechanism, this study proposes the diverse local attention network model shown in Figure 2, which contains four modules: backbone network, multi-branch LAN, classification recognition network, and CAP network. In Figure 2, \( F_g \) denotes the input of global branch, \( F_k \) denotes the input of the \( k \)-th LAN branch, \( F \) denotes the input of global or local classification recognition network, \( f \) denotes the normalized feature, \( U^* \) denotes the activation graph generated by LAN, \( L^* \) denotes various loss functions; GAP stands for global average pooling and \( BN \) stands for batch normalization. The detailed elaboration of each symbol in Figure 2 is described later. In addition, for the purpose of algorithm description, the training set is assumed to be \( S \), where \( x_i \) denotes the \( i \)-th labor education image, \( y_i \) is the label of \( x_i \), and \( C \) and \( N \) denote the number of pedestrians and the training set size, respectively. Each module is described in detail below separately.

For deep learning networks, the learning ability of the network theoretically increases as the depth increases. The residual network architecture is easy to optimize and solves the degradation problem well. Since deep features contain rich semantic information, existing methods prefer Resnet as the backbone network, and so does this study, as shown in Figure 2. Resnet-50 contains one convolutional layer (Conv1) and four residual modules, and each residual module contains multiple convolutional layers, BN layers, and ReLU activation functions. To obtain a more comprehensive representation of labor education features, the network is divided into multiple branches after Conv4 as global and local branch inputs, and no further down-sampling operations are performed in \( F \). Specifically, the feature map obtained after inputting the labor education images into the backbone network, \( D, H \) and \( W \) denote the number of channels, height, and width of the features, respectively.

3.2. Multi-Branch LAN. Unlike the rigid spatial division of the predefined input image, the multi-branch LAN can adaptively locate multiple non-intersecting salient regions in the image. The multi-branch LAN consists of multiple LAN models, and the detailed structure of the LAN is shown in Figure 3. First, each LAN passes through a \( 3 \times 3 \) convolutional layer (denoted by Conv1) and a \( ReLU \) layer to nonlinearly map the features \( F \) into a more compact feature space. Next, another \( 1 \times 1 \) convolutional layer (denoted by Conv2) is passed to obtain the spatial attention score \( e_k \). Assuming that \( e_{k,i} \) is the basic element of \( e_k \), where \( e_k \) denotes the spatial location index, then \( e_{k,i} \) is the attention score of the \( i \)-th spatial location of the \( k \)-th branch. Then, \( e_k \) is subjected to the SoftMax activation function to obtain the \( L \)-dimensional spatial attention weight vector \( w_k \). In addition, the reorganization operation is performed on \( w_k \), and each LAN model simultaneously outputs spatial attention weights \( w_k \). Finally, the input features \( F \) are weighted and summed according to \( w_k \) to obtain the output features for the \( k \)-th LAN model.

3.3. Classification Recognition Network. Based on the idea of combining global and local, the classification recognition network is designed as two major branches, global and local. For the global branch, firstly, the feature \( F_{\text{FERD}} \) is obtained by GAP operation on the feature input \( F_{g,i} \); and then the final global total loss function is obtained by the top and bottom structure. \( F_g \) and \( F_{g,i} \) belong to different labor education, and the triadic loss \( L \) function is

\[
L_{tri}^g = \frac{1}{N_{tri}} \sum_{i \in T_{tri}} \max \{ 0, d(F_{g,i}^\prime, F_{g,i}^\prime) - d(F_{g,i}^\prime, F_{g,i}^\prime) + \delta \},
\]

where \( T_{tri} \) denotes the set of triads, \( N_{tri} \) is the potential of \( T_{tri} \), i.e. the number of triads, \( d(\cdot) \) is the Euclidean distance, and \( \delta \) is the distance interval parameter. The lower branch of the global branch to \( F \) first performs the BN operation to obtain the normalized feature, and then uses the fully connected layer and SoftMax function to obtain the probability of the class to which the sample belongs, and further calculates the cross-entropy loss \( L \) as the final classification loss. To prevent the model from overfitting, the label smoothing (Label Smoothing) technique can be used during training, so the specific process of the lower branch can be expressed by the formula as

\[
q_i^g = \text{soft max}(W_g f_{g,i}),
\]

\[
p_i^g = y_i(1 - \varepsilon) + \varepsilon \frac{C}{N},
\]

\[
L_{id}^g = -\sum_{i=1}^{N} p_i^g \log q_i^g.
\]

where \( W_g f_{g,i} \), and \( p_i^g \) denote the weight matrix of the fully connected layer, the normalized feature of the \( i \)-th sample and the smoothed label of the \( i \)-th sample, respectively, and \( \varepsilon \) is the smoothing factor. So far, the total loss function \( L_{\text{global}} \) is the local classification recognition network is like the global branch, first, the output \( F \) of the \( k \)-th LAN is subjected to GAP operation to obtain the feature, and the subsequent processing of each local branch is the same as the global branch, so it will not be repeated (just replace the symbol \( g \) with \( k \)).
in the above formulas with \( k \). Therefore, the total loss of local branches is \( L_{\text{local}} = \sum_{k=1}^{K} (L_{\text{al}}^k + L_{\text{tr}}^k) \).

3.4. CAP Network. For a given labor education image, if the multi-branch LAN module is left unconstrained, it will cause the branches to converge, i.e., multiple LAN models can easily focus on the same significant regions and thus ignore other sub-significant regions that also have discriminative power. The CAP structure diagram is shown in Figure 4. Therefore, it is necessary to ensure that each of the \( K \) branches focuses on a different region of the image during model training, i.e., each local branch has a different high activation region for the feature response. To this end, a CAP network is proposed to achieve local feature diversity, which is the core of the DLAN model. In short, the CAP network uses the spatial attention weights \( w_k \) from the LAN output to guide each local branch to focus on different salient regions of the human body. Specifically, this study uses the Hellinger distance \( H(\cdot) \) to measure the consistency of \( w_i \) and \( w_j \) of any two LAN branch outputs, i.e.,

\[
H(w_i, w_j) = \frac{1}{\sqrt{2}} \sqrt{|w_i - w_j|}
\]

\[
H^2(w_i, w_j) = 1 - l = 1 - \sum_{l=1}^{L} \sqrt{|w_{il}w_{jl}|}.
\]

In order to ensure that the highly activated regions of different attention models do not overlap each other, it is necessary to maximize the distance between \( w_i \) and \( w_j \), which is equivalent to minimizing 

\[
1 - H^2(w_i, w_j) = \sum_{l=1}^{L} \sqrt{|w_{il}w_{jl}|},
\]

and construct the following CAP loss:

\[
L_{\text{CAP}} = \Omega^T - I_F^2,
\]
where $\mathbf{w}_i$ denotes the Frobenius parametrization and $I$ is the $K$-dimensional unitary array. Obviously, minimizing $L_{\text{CAP}}$ is equivalent to minimizing $\sum_{l=1}^{L} \mathbf{w}_{i,l}^T \mathbf{w}_{j,l}$. If the region is a significant feature, the $\mathbf{w}_{i,l}$ and $\mathbf{w}_{j,l}$ of different branches in the optimization process one tends to be extremely small and the other tends to be extremely large; if the region $l$ is a background feature, the $\mathbf{w}_{i,l}$ and $\mathbf{w}_{j,l}$ of different branches will both tend to be extremely small values. In other words, smaller loss values will be obtained when the high activation regions of the attention maps obtained from different LAN branches are not consistent. Therefore, the optimized LCAP can control the update direction of $\mathbf{w}_{i,l}$, i.e., iterative update along the feature diversification direction.

4. Experiments and Results

4.1. Experiment Setup. This section will verify the effectiveness of the proposed algorithm (DLAN) through various experiments. All experiments are conducted using the PyTorch deep learning framework with a GPU workstation configuration of an Intel Core i7-type CPU, 32 GB of RAM, and a 1080Ti graphics card with 12 GB of video memory.

In this study, experiments were conducted using four commonly used AI technology-driven labor education implementation pathway datasets. Each dataset is divided into two parts: the image library and the query set. Among them, Market1501 contains a total of 12,936 training images and 23,100 test images from 1501 labor education in 6 cameras, Duke-MTMC-reID contains a total of 16522 training images and 19,889 test images from 8 cameras, CUHK03 contains a total of 7365 training images and 6732 test images from 10 cameras and Partial-REID contains a total of 300 training images and 300 test images. The standard performance evaluation metrics of the artificial intelligence technology-driven labor education implementation path method include the mean average precision (mAP) and the 1st matching rate Rank-1 of the cumulative matching characteristic curve (CMC), so these two metrics are also used in this paper to measure the ability of the DLAN model to retrieve the labor education images to be queried from the image library. For the DLAN model, the size of the input image is $256 \times 128$; random horizontal flipping and random erasure are used to achieve data enhancement during the model training. The optimal or better values of the number of branches and hyperparameters were determined. The training settings are shown in Table 1.

The training process loss convergence and performance enhancement are shown in Figures 5 and 6.

### Table 1: Training parameters.

<table>
<thead>
<tr>
<th>Training parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Momentum</td>
<td>0.9</td>
</tr>
<tr>
<td>Initial learn rate</td>
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</tr>
<tr>
<td>Learn rate drop factor</td>
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<tr>
<td>Learn rate drop period</td>
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</tr>
<tr>
<td>L2 regularization</td>
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<td>Max epochs</td>
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<tr>
<td>Mini batch-size</td>
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</tr>
<tr>
<td>Validation frequency</td>
<td>30</td>
</tr>
</tbody>
</table>

![Figure 5: The training process loss convergence schematic.](image)

4.2. Experimental Results. The proposed method in this study aims to improve the accuracy of AI technology-driven labor education implementation paths on the processed dataset. To verify the effectiveness of the network, the obtained experimental results will be compared with the training results under two basic networks. Network 1 (Baseline1, B1) is fine-tuned on the trained GoogLeNet by setting the number of neurons in the last fully connected layer to the number of labor education being used for training. The test process extracts 1024-dimensional feature vectors obtained from pool5 layers for each image in the reference set and test set, and then calculates the Euclidean distance between the vectors. Network 2 (Baseline2, B2), on the other hand, directly uses the comparison method in which only the segment quality of the images is evaluated. Tables 2 and 3 show the results of the experimental evaluation on the datasets iLIDS-VID and PRID2011. The partial cropping of the images in the dataset at the bottom increases the difficulty of the AI technology-driven labor education implementation path, so all three methods have reduced results compared to the direct application on the standard dataset. However, the proposed method in this study is less affected and has a higher accuracy than the other two methods. On the dataset iLIDS-VID, B1 has an accuracy of 50.7% on rank1, and B2 has a 4% increase over the results of B1 due to the addition of the quality assessment module. The proposed method in the study incorporates attribute local features and can achieve an accuracy of 63.3% on rank 1, which is an increase of 12.6% and 8.6% over the results of B1 and B2, respectively. In addition, on the dataset PRID2011, the results of the comparison experiments show that the accuracy of the proposed method increases by 10.0% and 4.4% over B1 and B2, respectively.

Since the dataset MARS was not used for experiments in the comparison method, only the results obtained by the...
the proposed method on this dataset are compared with those obtained by other existing methods in this paper. From the accuracy of the AI technology-driven labor education implementation paths, the proposed method in this study still has a higher recognition rate than other methods, despite the pre-processing work on the dataset in this study, which crops out some of the labor education bottom and increases the difficulty of AI technology-driven labor education implementation paths. Figure 7 shows that on the dataset MARS, the proposed method in this study improves the accuracy of rank1 by 4.8% over the existing methods. Figures 8 and 9 show that the accuracy of rank1 improves by 5.3% on dataset iLIDS-VID, while the accuracy improves by 9.6% on dataset PRID2011. This result demonstrates that the inclusion of attribute features can effectively improve the effectiveness of AI technology-driven labor education implementation pathways.

A network structure that combines image-based local region quality assessment and attributes recognition can learn both global and local features of images. The method remains dependable in the problem of misalignment due to missing images in some datasets and can address the limitations when using only segmented assessment networks into labor education AI techniques to drive labor education implementation paths. To confirm the effectiveness of the proposed method in this study, labor education in the dataset is labeled separately. The experimental results show that the network with the
introduction of attribute features can improve the accuracy of the labor education implementation path driven by artificial intelligence techniques. There are still many areas for further improvement in the method of re-identification using attribute features, such as selecting more representative attributes and assigning larger weights to them during network training, which will be investigated subsequently.

5. Conclusion

Labor education is an important content of the socialist education system with Chinese characteristics, which directly determines the labor spirit outlook, labor value orientation and labor skill level of socialist builders and successors. To carry out labor education in new era of applied colleges and universities, it is necessary to constantly
update the concept of labor education, focus on the effectiveness of labor education, grasp the law of students’ growth and the law of labor education, fully explore the value of ideological and political education, the value of labor skill cultivation and the value of comprehensive quality improvement in labor education, and build a labor education system supported by daily life labor, service labor and production labor with the advanced concept, rich carrier and distinct levels.

The system of labor education is supported by the content of daily life labor, service labor and production labor, with advanced concept, rich carrier and clear hierarchy, and cultivates the Marxist concept of labor among college students. In the actual application scenario, the AI technology-driven labor education implementation path faces the problems of gestalt change and local obscuration. To this end, this study proposes a diverse local attention network model based on joint global and local learning, which relies on spatial attention networks to locate and enhance activation responses in salient regions and enables each local branch to focus on non-overlapping body parts through diverse canonical constraints, thus improving the re-identification accuracy. On four public datasets, ablation experiments, visualization experiments, occlusion experiments, and comprehensive comparison experiments with existing advanced methods have been carried out successively, fully verifying the robustness and excellent recognition performance of the proposed method. In future work, the consistency constraint will be further utilized to obtain multi-granularity features of global branching and consider learning the spatial relationship among the features to obtain higher accuracy.

**Data Availability**

The datasets used during the current study are available from the corresponding author on reasonable request.

**Conflicts of Interest**

The author declares that there are no conflicts of interest.

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**References**


