

# Analysis of Artificial Intelligence Technology and Its Application in Improving the Effectiveness of Physical Education Teaching

Rui Guo, Henan University of Technology, China\*

## ABSTRACT

To promote the construction of public physical education online courses in colleges and universities and the evaluation of the effectiveness of course teaching, this article combines 3D reconstruction techniques in computer vision to construct a set of human body shape reconstruction models and apply them to physical training exercises and teaching effectiveness assessment tasks. Specifically, first, the joint point location information of the human body in the input image is extracted using the human skeleton analysis algorithm, and modeling the foreground and background pose information of the target region using the Pix2Pix image transformation algorithm; second, multi-scale features such as nodal location features, foreground and background features, high-resolution detail features, and low-resolution global features are fused and the extracted multi-scale features are also decoded with the help of pixel-aligned implicit functions to generate a 3D model of the human body representing the human form.

## KEYWORDS

Artificial Intelligence Technologies, Assessment of the Effectiveness of Physical Education, Body Reconstruction, Human Skeleton Analysis Algorithm

## INTRODUCTION

Since the beginning of the new century, rapidly changing internet technology has penetrated all aspects of the economy and society, and the internet has gradually developed into an important hub to promote the development of global economization and social progress. Internet plus physical education evaluation (Internet+) is a product of the times (Ding et al., 2020). The concept of Internet+ is fully utilized in the application of physical-education evaluation, which constantly plays a role in intelligence, data integration, and combing. The concept of Internet+ is becoming more and more popular (Lonsdale et al., 2019). Combining different fields in education with the new achievements of the internet and exploring new forms of physical-education teaching evaluation will help to continuously enhance its quality and form a new trend in the development of teaching evaluation carried out in the context of the network environment.

DOI: 10.4018/IJWLTT.335115

\*Corresponding Author

This article published as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

In recent years, with the outbreak of the Covid-19 epidemic, online teaching has become mainstream (Shi et al., 2021). To strengthen learning for students at home and effectively guarantee the synchronization of physical education in schools, online teaching has become an important part of the teaching content in colleges and universities (Gu, 2022). The vigorous development of online teaching and learning activities also requires corresponding teaching and learning evaluation activities to support and guide the development trends of public physical education. In the context of Internet+, the evaluation of public physical education in colleges and universities is also facing new problems and indicators; how to make the design of online courses more complete and how to guarantee the effect of online physical education are urgent problems to be solved.

Along with the continuous updating of the teaching system, the content of physical-education evaluation in colleges and universities also needs to keep up with the times. At the same time, with the continuous deepening of education, many problems of the original teaching system have been gradually revealed. An important tool to measure the milestones and overall effect of teaching is an effective teaching evaluation, which can not only reflect the strengths and weaknesses of physical-education teachers but also identify students' weaknesses in the learning process and improve them. This is a great help to improve the teaching of public physical education as well as the learning efficiency of students.

This paper combines Internet+, artificial intelligence, and other related resources to conduct a detailed study on the content of the teaching evaluation index system to provide relevant advice for the reform and development of college physical education and to promote the operation of advanced and forward-looking reform of college physical education in the post-epidemic era. The purpose of this study is to provide suggestions for the construction and application of public online physical-education courses in colleges and universities.

The combination of human body shape reconstruction models and deep learning-based behavior detection has been applied to various industries and achieved certain results. It is feasible to apply deep learning-based behavior-detection methods and human body shape reconstruction models to video data to perform online physical education teaching evaluation. Currently, there is still a lack of research in this area. Therefore, this article combines three-dimensional reconstruction technology and computer vision to build a set of human body shape reconstruction models and apply them to physical training and teaching effectiveness evaluation tasks.

## **RELATED WORKS**

To solve the specific problems in the development of education today, it is necessary to improve the educational function system, meet the actual needs of education stakeholders, promote the optimization and integration of teaching resources, strive to bring educational benefits to people in underdeveloped areas, and achieve modern educational equity. In 2019, relevant national departments gave instructions to accelerate the construction and development of the Internet+ education system (Uysal & Balci, 2018). Encourage regions to combine education with the development of online information. In the modern Internet environment, we should give full play to the advantages and role of Internet plus, lead the efficient evaluation of physical education teaching, and promote the reconstruction of social and campus education concepts (Feng, 2020).

## **Research Related to the Evaluation of Physical Education**

The emergence of online courses and online teaching has made the content and teaching resources of public physical-education courses in colleges and universities more abundant and diversified. The construction of new teaching evaluation indexes can provide constructive ideas for physical education teaching reform and clear teaching and learning ideas for public physical-education teachers and students and can play a positive role in monitoring the effectiveness of teachers and the learning outcomes of students (Reece et al., 2021).

13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/article/analysis-of-artificial-intelligence-technology-and-its-application-in-improving-the-effectiveness-of-physical-education-teaching/335115](http://www.igi-global.com/article/analysis-of-artificial-intelligence-technology-and-its-application-in-improving-the-effectiveness-of-physical-education-teaching/335115)

## Related Content

---

### Harnessing Computer Games in Education

Morris S.Y. Jong, Junjie Shang, Fong-Lok Lee and Jimmy H.M. Lee (2008). *International Journal of Web-Based Learning and Teaching Technologies* (pp. 54-61). [www.irma-international.org/article/harnessing-computer-games-education/3013](http://www.irma-international.org/article/harnessing-computer-games-education/3013)

### Strategies for Efficient, Meaningful, and Inclusive Online Learning Environments: It's About Time

Naomi Jeffery Petersen (2020). *Handbook of Research on Creating Meaningful Experiences in Online Courses* (pp. 187-226). [www.irma-international.org/chapter/strategies-for-efficient-meaningful-and-inclusive-online-learning-environments/238798](http://www.irma-international.org/chapter/strategies-for-efficient-meaningful-and-inclusive-online-learning-environments/238798)

### Intelligent Informatization Construction of University Libraries in the Environment of Multimedia Big Data

Nan Pang and Charles Crook (2023). *International Journal of Web-Based Learning and Teaching Technologies* (pp. 1-12). [www.irma-international.org/article/intelligent-informatization-construction-of-university-libraries-in-the-environment-of-multimedia-big-data/330244](http://www.irma-international.org/article/intelligent-informatization-construction-of-university-libraries-in-the-environment-of-multimedia-big-data/330244)

### Potential of International EMail Projects in the Process of Teaching a Foreign Language in Secondary School

Larisa Shapovalova, Natalija Koljada, Ekaterina Petrova and Julija Gorgennikova (2022). *International Journal of Web-Based Learning and Teaching Technologies* (pp. 1-20). [www.irma-international.org/article/potential-of-international-email-projects-in-the-process-of-teaching-a-foreign-language-in-secondary-school/298684](http://www.irma-international.org/article/potential-of-international-email-projects-in-the-process-of-teaching-a-foreign-language-in-secondary-school/298684)

## Online Higher Education for Nontraditional Adult Students: Best Cases of Public Universities

Junghwan Kim, Heh Youn Shin, Kim L. Smith and Jihee Hwang (2021). *Research Anthology on Developing Effective Online Learning Courses* (pp. 265-285).

[www.irma-international.org/chapter/online-higher-education-for-nontraditional-adult-students/271157](http://www.irma-international.org/chapter/online-higher-education-for-nontraditional-adult-students/271157)