AI in Sports

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Analysis of Artificial Intelligence (AI) Application in Sports

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Abstract. The proposal of "Internet Plus Sports" initiative signifies that it has become a national will to take forward the research and development (R&D) as well as the application of AI technologies in sports, and it also plays an important strategic role in China's development towards a sports powerhouse. This paper analyzes the significance of AI application in sports and the current AI adoption in the Chinese sports sector, putting forward some suggestions on the application of AI technologies to the sporting industry.

1. Introduction

As a frontier subject mainly based on computer science, information theory and systematic science, AI is about the simulation, extension and expansion of human intelligence. Meanwhile, the enforced AI application research is helpful to improve the human brain functions, further unleash human intelligence, and give a great boost to the overall technological and reform innovations. The flexible application of AI in sports can both avoid sports disputes, record wonderful moments of sports events, and provide directions and guidance for sports scientific research.

2. Value Analysis of AI Application in Sports

First, it makes sports competitions more professional. In sports events, the scientific application of AI technology makes it possible to accurately monitor athletes' physical conditions before, during and after the game, and provide strong support when coaches make real-time adjustments to technical tactics. It also helps to develop personalized training models and promote more scientific and effective competition strategies, thus increasing the competitiveness of athletes [1].In this way, big data is able to provide a strong support in China's pursuit of a strong sports power. In addition, with the strong support of intelligent technology, competitive sports can also have a more ideal and efficient development prospect.

Second, it further strengthens the transformation and upgrading of the sports industry. The sports sector is a sunrise industry with favorable economic and ecological returns. With the support of AI technologies, the industry will see better utilization of capitals, helping build a more scientific and innovative business model and enhance customer service experiences. This will lay a solid foundation for the high-quality development of the sports industry, helping the traditional sports industry see an intelligent upgrading and enhancing the international competitiveness of China's sports industry [2].

Third, the introduction of AT will promote personalized physical education. Through the support of AI, big data and other information technologies, schools can establish a novel and scientific physical education ecosystem, organize students to carry out personalized sports learning and training activities, and help teachers to provide students with more scientific teaching guidance [3]. Big data greatly facilitates the harmonious communication between schools, society and the family.

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3. Analysis of the Status Quo of AI Application in the Chinese Sports Sector

Firstly, AI technology is yet to be improved and upgraded. At present, AI development in China is still in the stage of perceptual intelligence, in which machines fail to conduct independent thinking and actions, which, to a certain extent, brings many obstacles to the application of this technology in sports. Without the input of relevant background knowledge, or the collection of information from books, it is impossible to have a systematic master of the technology, or result in errors in calculation, which, to a certain extent, might bring many obstacles to the progress and development of AI sports [4].

Secondly, supporting and guarantee systems are far from satisfactory. On the one hand, coaches and athletes generally fail to realize the importance of AI application in sports, which hinders the further development of sports intelligence; on the other hand, uniform standards and norms of sports and health data collection, teaching and analysis have not yet been formulated. This also brings obstacles to the efficient dissemination and sharing of all kinds of sports data[5]. Attention from various departments is not enough in terms of the training of high-quality AI sports personnel.

Finally, the establishment and implementation of relevant laws and regulations need to be improved. lthough AI has brought benefits to the development of sports at different levels, it also brings many challenges in the aspects of sports fairness and safety.There are many challenges concerning sports fairness and security when it comes to AI application in sports. In particular, technical loopholes and athlete privacy disclosure even threaten the security of national sports information. Currently, sound laws and regulations in China are yet to be enacted [6].

4. Strategies to AI Application in Sports

4.1. Clarify the Responsibilities of Governments and Sports Departments, and Strengthen Policy and Financial Support

At present, there are still many parts that need to be improved in terms of AI application in sports in China. Therefore, governments at all levels and sports departments are supposed to make clear the division of their work and focus on policy and capital, creating favorable conditions for AI's scientific and effective application in the sports field. At the national level, the focus should be top-level design. Policies and measures should be developed with regard to AI application guidance in the field of sports to promote the innovative development of sports artificial intelligence from the overall point of view [7].

Suggestive policies are supposed to be adopted according to the application of AI in the field of sports, in a bid to further standardize the unsatisfactory AI application in the early stage of industry development, thus promoting the innovative development of AI sports in a holistic way.

Governments at all levels are supposed to strengthen support for potential intelligent enterprises, attach importance to and optimize the establishment of AI sports experimental base as well as the building of research centers, provide strong support for the smooth development of basic and applied research projects, and offer a more ideal pragmatic platform for the innovative application and in-depth research of AI sports. Sports departments should also appropriately increase the financial support for the application of AI technology in sports programs.Meanwhile, on the basis of fairness, sports sector institutions at all levels are supposed to appropriately increase the financial support for AI technologies used in a series of sports programs, and also give full play to their own regulatory responsibilities [8].

4.2. Improve the Standard of Sports Application of Intelligent Products, and Uphold Sports Fairness

At present, in terms of the ethical problems emerge during AI research and development, the following are some suggestions.

First, it is required to organize experts and scholars in the field of sports and artificial intelligence to formulate sustainable national standards for the application of intelligent sports, introduce specific application principles of AI technology in sports training and competitions, and develop norms on a series of permission requirements [9].

Second, it is required to build a fairer, standard and clear system of AI supervision based on specific circumstances. It's not only required to make reasonable norms with written rules, but also

emphasize the integration of the state, all levels of government, and sports management departments to strengthen supervision and management. Only through the scientific integration and coordinated development of various parties, can we promote the significant improvement of the effectiveness of the supervision of intelligent products [10].

Third, attention shall be paid to relevant laws and regulations on AI sports applications, and the formulation and improvement of ethical and moral codes. Through the scientific and flexible use of block-chain and other technologies, it aims to provide a strong protection for users ' privacy, rights and interests. Only in this way can we have a positive impact on the further development of smart sports.

4.3. Establish Scientific and Sound Data Specification and Information Standard for AI Sports
For artificial intelligence, data serve as its source of development and important core driving force. In addition to fully protecting sports information security, intellectual property rights and personal privacy, the state and sports departments at all levels should appropriately open to public relevant sports and health data, thus bringing positive influence to the future research and development of AI sports. At the same time, it is necessary to strengthen in-depth cooperation with the industry, develop uniform standards for sports data, to effectively break limitations of the previous development model and create beneficial conditions for the healthy and sustainable development of AI sports [11].

4.4. Improve Intelligent Training of Sports Staff and Enhance the Ability of AI Application
Coaches and athletes have encountered some problems that need to be solved urgently, and they are also most clear about which links in sports training and competitions need to be further optimized. The existence of these questions also reflects the practical demand of AI application in sports, which provides momentum for the institutional design [6]. However, for coaches and athletes, their focus is usually on training, and they are rarely exposed to AI technologies [12].

It's needed to pay full attention to and appropriately intensify the communication among AI workers, enterprises and coaches and athletes. Through professional and systematic training activities and demonstration of specific cases, coaches and athletes are supposed to understand the importance of scientific application of AI in sports development, thus improving their overall qualities. At the same time, enterprises and AI professionals can also obtain more innovative product design inspiration and information, thus offering strong guidance for the R&D of AI sports, so that the deep integration between AI and sports can be further achieved.

For sports managers, they should also understand more about AI sports application, and provide a strong reference for the formulation of related policies, as well as the optimization and integration of sports resources.

4.5. Actively Introduce High-Quality AI Talents And Optimize the Organic Integration of Production, Learning and Research
Both the application research and innovative development of AI sports are inseparable from the strong support of professional talents. Relevant departments should pay full attention to and constantly improve the scientific training of compound talents of sports and artificial intelligence. At the same time, the government, enterprises, and colleges and universities should give full play to their positive role in the training of high-quality personnel [13].

For the government, it should focus on providing strong support for the application and development of AI in sports from policy guidance and financial support. For example, they could provide strong financial support for institutions and organizations that carry out AI sports education and research. In particular, as important bases for personnel training, colleges and universities can also serve as a powerful source for the research and application and innovational development of AI technologies. As sports is a subject features educational functions, in the training of high-quality AI sports personnel, colleges and universities should fully unlock their own sports advantages from different aspects, and create good conditions for the organic integration of advantageous sports projects and artificial intelligence in response to social needs, and open sports engineering majors based on their own strengths [14].

In terms of curriculum setting, it's necessary for students to not only learn human science, sports training and other theoretical knowledge, but also study advanced mathematics, image recognition, machine learning and other AI knowledge. Importance shall also be attached to skills training. It is also necessary to utilize all kinds of opportunities for the proper popularization of humanistic education theories such as social morality and privacy protection, thus encouraging students to establish better ethical and moral norms, as well as codes of conduct. On the basis of this, schools are supposed to provide students with as many opportunities as possible in participating in a series of functional scientific research projects and competition activities such as university robot competitions and innovative entrepreneurship projects, to improve student's ability in problem analysis, resolution ability, as well as innovative thinking [15].

The cultivation of AI sports talents usually focuses on the improvement of students ' application and R&D ability. Enterprises can provide students with a more ideal platform for practice and innovation. Colleges and universities should attach importance to and continuously optimize the cooperation and exchange during the school period, and provide students with the opportunity of innovative research and practical exploration as much as possible. Meanwhile, enterprises should also make full use of their own advantages. Giving students free visits to AI product design workshops might be a way to help cultivate high-quality personnel. Apart from shouldering their own social responsibility by organizing regular AI training courses, they can also provide targeted educational guidance for the training of related personnel.

5. Conclusion

It is expected AI will be extensively applied in the field of sports. However, if the technology is applied to all sports links, the sports industry may lose some beauty of regret while ensuring the fairness of judgment results. In fact, it is the existence of some "faults" that makes some sports events draw much attention. Therefore, it still requires in-depth and comprehensive research before AI can be scientifically and properly applied in sports.

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