

# Research on Application of Computer Artificial Intelligence Technology in Sports Economic Big Data Analysis

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**Abstract.** People's fitness concept is becoming more and more mature. The general public has also begun to pursue a higher quality of healthy life. The improvement of physical fitness has become an important part of a healthy life. Sports shoes and clothing, exercise equipment, health management, etc. have become people's daily sports and fitness consumption. At the same time, "intelligence + sports economy" makes more and more people look forward to sports. Intelligent sports that are in line with emerging technologies enter people's lives. Various sports apps, wearable smart devices, etc. not only make people Sports information is digitized, and big data technology can be used to analyze the collected data. For example, the detection of user's fat consumption and sleep quality provides scientific support for users' physical fitness. Sports consumption has become a driving force for the upgrading of the sports industry. Important grip.

**Keywords:** Artificial intelligence, sports economy, big data.

## 1. Artificial intelligence technology

Artificial intelligence technology is also an indispensable technical support in the intelligent era. It is a technology that presents human intelligence through ordinary computer programs. The concept of artificial intelligence was put forward as early as 1956, and the concept has undergone more than 60 years of development and evolution, and new results have been continuously achieved. This kind of technology can liberate human's heavy labor in some aspects, such as the application of artificial intelligence in the news industry, robot news, artificial intelligence technology has been applied to content production; it also has an indispensable position in the field of sports and fitness, artificial intelligence technology brings a more intelligent side to mankind.

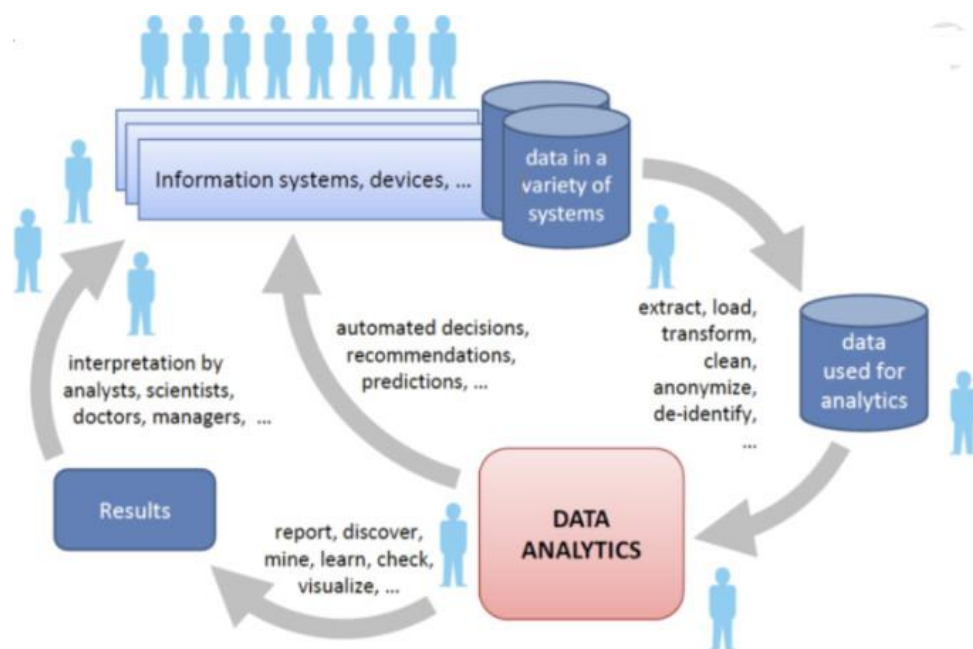
## 2. Big data analysis

Computer big data technology is an important technology in the current intelligent age. It relies on a huge database and analyzes and processes the data through algorithms, and finally obtains the information people need. Big data has four characteristics, namely Volume (large volume), Velocity (high operating speed), Variety (various types) and Value (providing value). Big data technology can provide consumers with more reference and more accurate service information, and enhance the effect of information dissemination; provide impetus for the development of intelligent media, and algorithm recommendations based on big data technology enable users to understand their needs more clearly through the Internet . For example, when people consume sports and fitness through the intelligent network, the network will use big data technology to recommend relevant information for users based on the user's search and browsing records, thereby increasing the conversion rate of user consumption. Now big data technology is beginning to be used by all walks of life and continue to create greater value for society [1].

## 3. Current application status of artificial intelligence technology

In the field of sports economy, computer technology, artificial intelligence, big data, virtual reality and other technologies have begun to emerge, making people feel smarter changes in consumption.

5G technology can not only support devices such as mobile phones and computers, but also wearable devices such as fitness trackers and smart watches. VR glasses, smart bracelets, smart headsets, powerful network speed and low latency in the 5G era will provide basic support for various new smart wearable devices in the future, and various smart wearable devices will become sports consumption in the era of smart media the important part. For example, people can experience the scene of a sports game immersive through virtual reality equipment; artificial intelligence can greatly enhance the experience of the public in participating in fitness, and effectively help everyone understand the effect of fitness. The technology is shown in Figure 1.



**Figure 1.** Overview of the application of artificial intelligence sports economy big data technology.

## 4. The status quo of sports economic analysis

### 4.1. From the perspective of consumption motives, sports economy

The motivation of college students' sports consumption is concentrated in physical fitness, material needs, and aesthetic entertainment and so on. Some people summarize the motivation of college students' sports consumption as a physical perspective, a development perspective, and a fashion perspective. It is believed that sports fitness or learning needs, aesthetic psychological satisfaction, the influence of the group environment, the call of individual idols, etc. [2] are the motivations of college students' sports consumption expenses, which can be summarized as a physical perspective, a development perspective, and a fashion perspective. It is believed that the needs of sports fitness or learning, the psychological satisfaction of aesthetics, the influence of the group environment, the call of personal idols, etc. are all motivations for college students' sports consumption. Some people also think that the motivation of college students' leisure sports consumption is mainly concentrated in two aspects: physical exercise and psychological relaxation, and the purpose of instrumentality can be realized by other means.

### 4.2. From the perspective of consumption structure, sports economy

Physical sports economy is the main aspect of sports economy. Someone pointed out that the vast majority of the sports economy is in physical consumption, which mainly includes the consumption of sports apparel, shoes, hats, equipment and other products. It is believed that college students are more dependent on online shopping, and physical products of college student's account for a higher proportion of the sports economy. Among them, the purchase of clothing, shoes and hats accounts for the highest proportion of sports economic expenditure, and physical sports economy is also the

main content of the sports economy of college students. The results of the study show that college students' sports economy projects are mainly concentrated in swimming, badminton, etc. Among them, sports economy accounts for the largest proportion of swimming, and a large part of the reason is that the university offers swimming courses and students must purchase swimming. The product [3].

### **4.3. Looking at the sports economy from influencing factors**

Economic factors, social environmental factors, personal factors, media factors, etc. are all important factors that affect the sports economy. The research conclusion points out that consumption in sports accounts for a relatively low percentage of total living consumption in each semester, and the overall consumption capacity is not high and needs to be improved. Someone pointed out that the sports economy, personal interests, and sports awareness are also affecting consumption. In the era of rapid development of the Internet, new media has also become one of the important factors affecting the sports economy. Research on sports economic behavior shows that students will not make effective preliminary preparations before sports economics, and new sports media can indirectly promote sports economics. Summarized the influence of online media on different cities, different genders, and different levels of education. Someone pointed out that new sports media, as an important channel for consumers to understand sports information, has a significant influence and effect on sports economy [4].

## **5. The theoretical logic of artificial intelligence to promote the development of sports economy**

### **5.1. Sports Economy in the Context of Policy**

The digital economy provides the background of the economic era for artificial intelligence to promote the development of the sports industry. Economy In 2016, the country signed the "G20 Digital Economy Development and Cooperation Initiative" at the G10 Summit. "Digital Economy Economy" appeared in the country's official documents for the first time; in October of the same year, Xi Jinping General Secretary Ping clearly stated during the 36th collective study of economics by the Politburo of the CPC Central Committee that it is necessary to promote the digitalization and intelligent transformation of traditional industries into economic models, enlarge and strengthen the digital economy, and expand new space for economic development.

### **5.2. Sports economy in the context of technology**

Mobile Internet, big data, cloud computing, and the Internet of Things provide lasting economic power for data in the sports industry by leveraging the advantages of economic interconnection of all things, and to a certain extent will continue to reduce the cost of acquiring data and economic data resources for sports enterprises; The digital upgrade of sports equipment production equipment and the emergence of various new smart sports products will inevitably generate a large amount of economic data resources, which lays a good economic foundation for the unlimited supply of data resource elements, and further contributes to artificial intelligence in the sports industry. The development of economic value mining and creation provides sufficient guarantees; the fields of competitive economics, technical sports and national fitness have basically completed the upgrading and transformation of information economics, providing artificial intelligence for the extensive and economic penetration of the sports industry. Foundation support. In short, artificial intelligence based on new software economic algorithm technology can be widely and economically penetrated and applied through digital and intelligent economic sports venues, equipment, equipment and related sports goods. It is widely used in the traditional sports industry. Economic penetration and practical application enable data resources, a new key production factor, to continuously play the function of value creation.

### 5.3. Sports economy under the economic background

The average level of productivity in the development of sports economy will be greatly improved, and a series of development frameworks and standard systems in the field of sports economy will be innovated to provide new space for the development of sports economy. As the "new technology-economic paradigm" can significantly improve work efficiency, when artificial intelligence widely penetrates into the sports economy, it will continue to transform traditional sports formats and spawn emerging sports formats, and ultimately achieve the goal of sports economic development. The sports economy uses a new technology-led model with a higher technical level and more advanced economic productivity to guide the traditional sports economic structure to a more advanced new stage. With the rise and development of the emerging smart sports economy, it will attract new labor force, capital and other production and economic factors, which will continuously increase the overall proportion of the emerging smart sports industry in the entire sports economic system. Promote the increase in the proportion of knowledge-intensive economy and technology-intensive economy in the traditional economic structure system of sports economy, and ultimately promote the development of sports economy.

## 6. The role of artificial intelligence in big data analysis of sports economy

### 6.1. Measuring the difference in sports economic development

The added value of China's sports economic output has been increasing year by year, and a complete economic chain of upstream resource production, midstream economic operation and dissemination, and downstream product arrival has been formed. At the same time, the integration of new business forms has formed a new growth pole for economic benefits. The development is quite different. At the same time, the national sports economy differs significantly between urban and rural areas, and between the east and the west. Second, the national sports economic structure is at the low end of the industry and the degree of marketization is low. Sports economic big data is procedural and spatial in terms of acquisition and analysis. Through systematic analysis of massive sports economic big data, qualitative and quantitative fusion research provides information and forward-looking forecasts for regions and even enterprises, so as to achieve inter-regional and regional the flow of resource elements of internal synergy. The analysis process is shown in Figure 2.

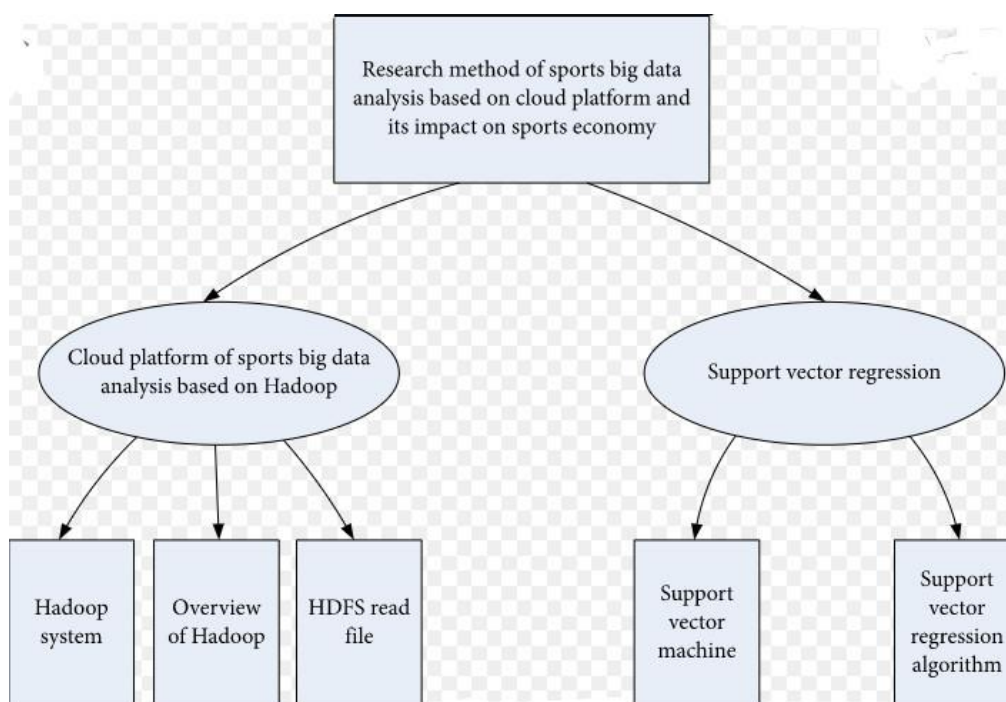


Figure 2. Application of Big Data Technology in Sports Economy.

### 6.2. Constructing the structure and associated network of the sports economy

The status quo of the structure of the national sports economy is that the sporting goods industry is developing rapidly, accounting for about 70% of the total, the sports service industry accounts for a small proportion, and the overall sports economic resource allocation is low-level. In the context of the rapid development of Internet technology, the Internet of Things and smart equipment have gradually integrated into people's daily lives. With the full implementation of the "National Fitness" policy, "smart sports" with Internet elements has now become a new trend. The 5G enhanced mobile broadband application scenarios provide technical support for the creation of "smart sports". The application scenarios of "smart sports" have broad prospects and will bring changes to multiple sub-sectors such as sporting goods and sports competitions. For example, competitive sports has formed a new format that integrates venue services, competition performances, and sports media. Visualization technology and Hawkeye technology make sports games more fair; fitness and leisure bring "venue service + sports training integration format" and "sports +Tourism" resource compound economic integration business, such as the use of IoT sensors to obtain sports consumer monitoring data, which can provide users with personalized services. In the future, it will develop into a global resource, comprehensive layout, and global creation emerging business formats involving all citizens.

### 6.3. Reveal the scale and type of sports consumer market

From the perspective of the development of China's sports economy market, the continuous growth and the number of people participating in exercise has promoted the steady growth of the sports consumption market. In the traditional sense, physical sports consumption is constantly breaking through the boundaries of the sports economy and Internet technology. More sports services, Experience and even virtual products have begun to be included in the scope of sports consumption. Sports consumption big data can reveal the regional and scale problems of sports supply and consumption imbalance, optimize the relationship between supply and demand, and meet the diverse sports needs of the people. 3.5 Operation and management of fine sports venues According to statistics on the preference of national residents' fitness and leisure places, outdoor public venues, gymnasiums and home exercises are ranked in the top three. With the increase in public health awareness and the "SARS" and "new crown" epidemics it is warned that the proportion of participating in exercise and fitness in professional sports venues will gradually rise. From the perspective of big data, research on the spatial configuration, distribution differences, and operational efficiency and management types of stadiums will make the operation of stadiums more intuitive and specific. The annual analysis and research is shown in Figure 3.

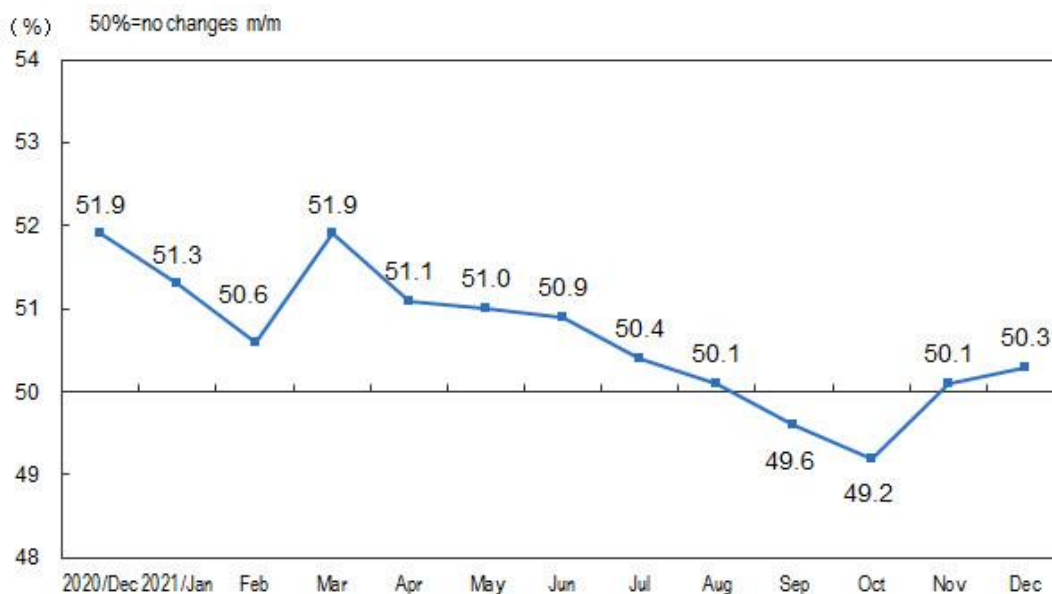


Figure 3. Research on the Analysis and Application of Sports Economy in the Whole Year.

#### **6.4. Assessing the effects of sports events**

Excluding traditional sports such as football and basketball, the proportions of running and e-sports have been increasing, which has made the business layout of sports events increasingly diversified, and subsequently brought diversified operating income models. Big data of sports events can evaluate the promotion effect of the event on the local economy, the promotion of local culture, and the health impact of individual contestants, forming a comprehensive understanding of the development law of sports events. Event big data realizes information sharing through the network platform, and obtains information feedback through people's comments and forwarding. On a global scale, using big data to analyze the types and distribution of sports events, organization and management, evaluation and effects of sports events, changes in the scale of sports events and individual trajectories will all be an inevitable trend in the future.

### **7. Application of artificial intelligence in sports economic big data**

#### **7.1. Optimize the sports big data innovation ecosystem**

Entrepreneurship ecosystem refers to a materialized entity that fully releases entrepreneurial innovation motivation and conducts specific entrepreneurial activities in a specific entrepreneurial environment. The entrepreneurial ecosystem is in the process of continuous development. It is necessary to break down the traditional physical barriers, disparity in resource allocation, and asymmetry in information exchanges to achieve cooperation in various elements in industrial innovation, products and services, market information, entrepreneurship education, etc. It is in a brand-new interaction mode and operation process with the competition. Only by adapting to the ever-changing internal and external environment and maintaining the internal stability of the overall ecosystem can we have the ability to choose and change the environment. Only in this way can we cultivate a sports big data big data entrepreneurial ecosystem with sustainable development momentum and promote the entire Optimization and evolution of the entrepreneurial ecosystem.

#### **7.2. Convergence of big data related industries**

Sports big data big data is used in many fields. How to make sports big data serve the national strategy more scientifically, competitive sports big data, fitness and health, sports big data industry, etc. are important topics in the application of sports big data big data. The development of sports big data is inseparable from the strong support of related big data industries. It needs sports big data big data to actively seek opportunities for integration, carry out extensive exchanges and cooperation, and add new capabilities to the development of sports big data big data. , New ideas and new directions, only in continuous adjustments, can we better serve sports big data. Openness, tolerance, sharing and integration are objective requirements for accelerating the development of big sports big data strategy. The development of big sports big data should be built with a more open concept, a more tolerant way, a more shared model and a more integrated attitude. An open, inclusive, sharing and integrated innovation cooperation platform will vigorously accelerate the overall improvement of the sports big data big data innovation chain, value chain, and industrial chain.

#### **7.3. Regional Collaborative Sports Big Data Innovation Capability**

The development of sports big data requires the optimal allocation and optimal application of resources, technologies, and talents. Therefore, the development of sports big data must achieve regional coordinated development. Due to some traditional system and conceptual reasons, the information and data of various sports big data management subjects are not interoperable, and the lack of sharing mechanism has resulted in the emergence of information islands. Although the country currently has many sports big data research centers, the collaboration capabilities are seriously insufficient, resulting in sports big data. Data processing and application capabilities are generally low. Therefore, the traditional point, line, and surface structure needs to be reshaped. From the point

of view, with the help of the collection and storage functions of sports big data, the collection and management of a large number of individual data in different regions can greatly enhance the effectiveness and efficiency of the data. Authenticity provides a basis for providing more scientific decision-making. From a line point of view, with the help of the integration and optimization functions of big data, speeding up the communication and feedback of information in different regions can reduce the problems of poor implementation, lax implementation, and data waste caused by information asymmetry in different regions. From a general point of view, with the analysis and decision-making functions of big data, it is more conducive to coordinate actions in different regions and take into account the different characteristics of different regions. Therefore, through the integration of sports big data, to realize the coordinated development between regions, between governments, and between departments, it is possible to better realize the overall integration of sports big data and the individual treatment of differences.

## 8. Conclusion

Artificial intelligence drives the high-quality development of the sports economy mainly through the precise allocation of production factors, the improvement of resource matching efficiency, the empowerment of digital technology innovation, and the heavy impact of industrial value. Combined with the analysis of the mechanism of the digital economy driving the high-quality development of the sports industry, the corresponding realization is proposed. Path, research believes that artificial intelligence can provide a better economic format structure and effect evaluation for the high-quality development of the national sports industry in terms of big data analysis.

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