

The Application Field, Potential Risks and Implementation Path of Artificial Intelligence under the National Fitness System

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Abstract: As the leading technology of the fourth human industrial revolution, artificial intelligence is of great significance to promoting the high-quality development of China's sports industry. Under the general policy of national fitness, this paper analyzes the specific application fields of artificial intelligence and proposes its potential risks. On the basis of risk response, the realization path of artificial intelligence under the national fitness is put forward.

Keywords: National fitness; Artificial intelligence; Risk

So far, ai research and its application can be divided into three stages: The first stage is marked by the application of expert systems in the field of law. The second stage is the machine autonomous learning (neural network and deep learning) stage. It links expert systems to system-controlled learning, mimicking the structure of the human brain to acquire, store, connect, and replicate information^[1]. The third stage will replace the functional / technical problem solution of the system from the predetermined parameters inherent and independently generated of artificial intelligence, that is, to create an independent, self-flowing, intangible and abstract decision-making path that is no longer similar to the human brain^[2]. These three stages roughly correspond to weak AI, strong AI and super AI. Therefore, this paper intends to analyze the application of artificial intelligence to sports. Super-AI is the ultimate challenge, and once it arises, the problem may not be how human beings legislate for AI, but how artificial intelligence "legislates" for humans.

1. The application field of artificial intelligence under the national fitness system

1.1 Movement data collection and analysis

Through wearable devices, intelligent sports equipment and other means, personal fitness data can be collected in real time and accurately, such as heart rate, steps, exercise amount, etc. These data can directly reflect individual physical conditions and exercise habits, providing an important basis for subsequent training programs and exercise guidance. On the one hand, data collection depends on a variety of sensors and detection equipment. Such as heart rate band, step meter, oxygen sensor, accelerometer, etc. These devices need to be connected to devices such as sports devices or smartphones to upload the collected data to cloud servers in real time for processing and analysis. On the other hand, data analysis requires the use of various AI algorithms, such as machine learning, deep learning, natural language processing, etc. These algorithms can analyze and predict the user's physical condition, exercise ability, exercise habits and other aspects according to their fitness data, so as to provide a basis for the follow-up training plan and exercise guidance.

1.2 Fitness program design and recommendations

The recommendation of personalized fitness program is one of the important links in national fitness. It is necessary to use artificial intelligence algorithm to recommend the most suitable training plan and exercise program according to personal health status, exercise ability and exercise goals, so as to help users achieve healthy, safe and efficient fitness goals. First of all, different fitness program recommendation models need to be established for different user groups. For example, for beginners, on the one hand, their physical condition, exercise experience and exercise willingness, and for fitness experts, their exercise goals, training programs and training

effects should recommend more personalized training plans. On the other hand, personalized fitness program recommendation relies on a large amount of fitness data and artificial intelligence algorithms. According to the user's body data, exercise data, exercise habits and fitness goals data, machine learning, deep learning and other algorithms are used to build a personalized fitness model. These models can dynamically adjust the training program and exercise program according to the factors such as the user's physical condition and exercise goals to achieve the best training effect.

1.3 Fitness coach assistance and guidance

With fitness and exercise becoming a part of more and more people's lives, virtual fitness coaches emerge. With the support of artificial intelligence technology, virtual fitness coaches can provide users with personalized fitness guidance and feedback, so as to better help them achieve their fitness goals. One of the advantages of a virtual fitness coach is that it can be adjusted in real time based on the user's exercise data and performance to improve the training effect. With sensors and other smart devices, virtual fitness trainers can collect the user's heart rate, steps, calorie consumption, and other key data, and then match the data to the user's fitness goals and personal situation to develop a personalized training plan. In addition, virtual fitness trainers can adjust to the user's performance and schedule to ensure the continued effectiveness of the training program. Virtual fitness trainers can also provide guidance and feedback to users in a variety of ways, including voice and images. For example, when the user makes the incorrect movement, the virtual fitness instructor can point it out in time and provide the correct demonstration. In addition, virtual fitness trainers can provide users with advice and support on healthy eating, rest and other healthy lifestyle through voice prompts, text instructions and video displays. The use of virtual fitness coaches is also very convenient. Users only need to download the corresponding app or software to use the virtual fitness coach, anytime and anywhere. This is especially useful for those who are busy, who can do fitness training anywhere after work and family life.

2. Potential risks of AI under national fitness

2.1 Data privacy and security risks

With the rapid development of artificial intelligence technology, data privacy and security risks have become an important topic. In the process of artificial intelligence application, a large amount of data support is needed, which may contain the user's personal privacy information, such as personal identity information, social network activities, shopping habits, etc. Data leakage, abuse, tampering and other problems also follow, bringing privacy and security risks to users.

The main manifestations of data privacy and security risks include the following aspects:

2.1.1 Data leakage risk: due to the lack of data storage and transmission security, the data may be obtained by hackers, viruses and other malicious attackers. These attackers can use these data to conduct fraud, fraud and other activities, endangering the security of users' property.

2.1.2 Risk of data abuse: Enterprises or organizations may use users' personal data for commercial purposes, such as advertising, marketing and other activities, and these user data may be maliciously used maliciously, leading to the disclosure or abuse of users' personal information.

2.2 Human-computer interaction and communication risks

With the rapid development of artificial intelligence technology, human-computer interaction and communication are becoming more and more popular, but there are also some risks in this process.

First of all, human-computer interaction and communication may lead to excessive human dependence on artificial intelligence, thus losing the ability of independent thinking and judgment. People may rely too much on the answers and suggestions provided by AI systems and ignore their own judgment and decision-making ability, thus reducing the innovation ability and autonomy of individuals and society.

In addition, the technical limitations of human-computer interaction and communication may have adverse effects on some individuals. For example, for some voice interaction systems, communication difficulties may be caused for people who are not fluent. Some visual interaction systems, however, may impose limitations on people with visual impairment. These adverse effects could undermine the popularity of AI and hinder its development.

2.3 Algorithmic discrimination and ethical risks

With the rapid development of artificial intelligence technology, algorithms are playing an increasingly important role in our lives. However, this follows with an increase in algorithmic discrimination and ethical risks. Algorithmic discrimination refers to the defect of the algorithm in treating some groups or individuals unfairly, while the ethical risk refers to the ethical problems or social

problems that the algorithm may cause. On the one hand, algorithm discrimination may be caused by data bias, algorithm bias, or model parameter setting. For example, a lender may use a predictive model to decide whether to make a loan to a customer. If the model makes decisions based on gender, race, and other characteristics, then there is discrimination. This discrimination may result in loans to those unable to repay. This discrimination not only violates the principle of equality, but also will bring economic losses. On the other hand, the ethical risk refers to the ethical problems or social problems that the algorithm may cause. For example, some intelligent robots can automatically control flight, which can cause air traffic accidents and casualties. In addition, some algorithms may have an impact on personal privacy, such as some social media platforms that may use users' personal information to promote ads or sell users' data to third parties.

3. The realization path of artificial intelligence under the national fitness system

3.1 Talent training and reserve

First of all, we need to cultivate a team of high-level technical personnel. These people need to have a deep foundation in computer science and mathematics, as well as a deep understanding of the fitness field. They need to be skilled in artificial intelligence algorithms, data analysis technology and software development skills, and be able to independently complete technology development and application development work. In addition, we also need to pay attention to the latest developments and technological trends in the field of fitness, and constantly learn and update our knowledge.

Secondly, we need to cultivate a professional team of fitness talents. These talents need to have the qualifications and experience as a fitness trainer and deeply understand the knowledge and skills in the fitness field. They need to understand the needs and problems in the fitness field and to be able to provide relevant solutions. In addition, it also needs to have good communication skills and service awareness, and to be able to effectively communicate and cooperate with users.

Finally, there is a need to establish a talent pool mechanism. This includes recruiting and training interns, graduate students, postdoctoral students and other young talents, developing their technical and business capabilities, and providing them with a good development platform and opportunities for them. In addition, it is also necessary to cooperate with domestic and foreign universities and research institutions to jointly carry out personnel training and technology research and development work.

3.2 Formulate and improve laws

3.2.1 Data privacy and protection: Artificial intelligence requires a large amount of data to learn and train, which contains sensitive information such as users' personal information and health data. Therefore, relevant laws and regulations are needed to clarify the principles and norms for data privacy and protection, as well as the punishment measures for violations.

3.2.2 Liability and compensation: In the field of fitness, AI may have an impact on the health of users, such as providing improper fitness advice and causing sports injuries. Therefore, it is necessary to clarify the relevant responsibilities and compensation mechanism to protect the rights and interests of users.

3.2.3 Safety and supervision: The application of artificial intelligence needs to have a certain security and reliability, otherwise it may bring losses and harm to users. Therefore, more supervision and management of AI applications are needed to ensure that they comply with relevant safety standards and norms.

References:

- [1] See Hannes Schulz & Sven Behnke, Deep Learning: Layer-Wise Learning of Feature Hierarchies, KI-Künstliche Intelligenz, Vol.26:1, p.1-7 (2012).
- [2] Vgl. Sascha Mattke, Künstliche Intelligenz Verdrängt Menschliche Arbeit in Juristischen Berufen, Technology Review Heft 12 (2017), S.12.