Adult and Higher Education (2023)
Clausius Scientific Press, Canada

DOI: 10.23977/aduhe.2023.050313
ISSN 2523-5826 Vol. 5 Num. 3

Research on the Training Mode of Intelligent Sports Engineering Professionals

Zhanfeng Sun[1], Lei Geng[2,*], Nan Zhang[2]

[1]*Department of Aviation and Sports, Aviation University of Air Force, Changchun, China*
[2]*Jilin Sport University, Changchun, China*
[*]*Corresponding author*

Keywords: Intelligent sports engineering, talent training mode, artificial intelligence, output orientation, practical ability training

Abstract: With the continuous development of science and technology in recent years, artificial intelligence has gradually entered various fields of sports such as competitive sports, social sports, school sports, and has played an important role in leading the scientific and technological development of sports. With the rapid development of intelligent sports, professional and technical talents of intelligent sports engineering are urgently needed. Therefore, under the larger market demand, the intelligent sports engineering specialty is also born, and talent training has been carried out in fewer universities. In order to better build and develop the specialty of intelligent sports engineering, this study analyzes the talent training of the specialty of intelligent sports engineering. By using research methods such as literature and expert interviews, and drawing on the relatively mature talent training system and training mode of artificial intelligence and other related majors, this paper discusses the training mode of intelligent sports engineering professionals in colleges and universities, mainly expounds the necessity of setting up intelligent sports engineering specialty, and comprehensively analyzes the teaching concept, curriculum system, teaching method, faculty strength, evaluation method, etc. of intelligent sports engineering specialty, The purpose is to provide some theoretical reference for the future development of intelligent sports engineering professional training.

1. Introduction

With the progress of society and the improvement of the overall living standard, people's cognitive concept of sports is constantly changing. From the initial pursuit of sports only to the pursuit of scientific sports, and then to the present more health-oriented sports. In 2017, China issued the New Generation AI Development Plan, which promoted the research on AI to the national science and technology development strategy, and promoted the rapid development of China's AI industry. Various industries combined with AI have blossomed everywhere [1]. In 2018, Beijing Sport University took the lead in establishing the College of Sports Engineering based on the characteristic discipline of "sports science", integrating multiple engineering disciplines such as computer science and technology, artificial intelligence technology, electronic science and

technology, information and communication engineering, and biomedical engineering, and opening the specialty of intelligent sports engineering to train students to engage in teaching in intelligent sports, sports big data, Internet, computer technology, and other electronic technologies High-level compound sports science and technology talents for scientific research and management· The development of intelligent sports engineering cannot be separated from professional talents. As an important base for talent export, colleges and universities have certain advantages in teachers and scientific research for the training of intelligent sports engineering professionals. Therefore, this study aims to provide some reference for the development of intelligent sports engineering specialty in the future by discussing the relevant contents of the development of intelligent sports engineering specialty in colleges and universities.

2. Analysis on the Necessity of Setting up the Specialty of Intelligent Sports Engineering

2.1. The Trend of Intelligent Sports

The research of intelligent sports in China has been studied by scholars since the 1990s, but because the development of sports industry at that time has not yet risen to the national level, a series of problems have hindered its development. Since 2014, due to the rise of the third wave of artificial intelligence and the support of national policies, the research of intelligent sports has begun to become active again [2]. At present, AI has been integrated into all fields of sports. In the field of competitive sports, it is permeated with technical and tactical analysis, tactical modeling, event referee, dissemination of events, prediction of event results, simulation training, etc; In the field of school sports, intelligent gymnasiums, wearable devices and other AI products improve the scientific and efficient teaching; In the field of mass sports, AI can enable the public to monitor their health status and record sports data at any time, and provide personalized sports health management services for mass fitness, as well as efficient and convenient sports environment [3]. The rapid development of intelligent sports urgently needs professional and technical talents of intelligent sports engineering to serve the field of intelligent sports and promote the development of intelligent sports.

2.2. Driven by the National Sports Power Strategy

To promote the construction of a sports power in China, two tasks are to comprehensively enhance the international influence of national sports, as well as its influence and control over global sports affairs, and to create a modern sports industry system with international influence. In addition, scientific and technological innovation is an important strategic support for the sports power. To accelerate the promotion of the sports power strategy, we must drive the strategy through science and technology [4]. Artificial intelligence technology is the most cutting-edge technology in the current era and plays an important role in promoting the development of various industries. And the emerging AI industry can create a good opportunity to solve the existing economic and social problems. China's social progress and economic development urgently need the participation of AI. China's industrial transformation and upgrading and social development and reconstruction also urgently need a group of excellent "new engineering" talents facing AI. Intelligent sports engineering is a new engineering specialty combining artificial intelligence with sports, which will be beneficial to the construction of a sports power.

2.3. Lack of Professional Talents in Intelligent Sports Engineering

The long-term development of intelligent sports engineering cannot be separated from the

promotion of high-quality professionals. In terms of talent reserve, China is still in the initial stage of training sports AI talents, and there is a big gap in the "sports+AI" compound talents. The competitive talents of AI are the key. As the talent export base, colleges and universities and scientific research institutes have problems such as inadequate setting of disciplines related to sports AI and immature talent training system [5]. As of 2022, the only institutions of higher learning in China that offer the specialty of intelligent sports engineering are Beijing Sport University and Harbin Institute of Technology. Beijing Sport University is the specialty of intelligent sports engineering opened in 2018, while Harbin Institute of Technology has just opened this specialty. It can be seen from this that colleges and universities have just started to cultivate talents of intelligent sports engineering, and a series of contents such as the curriculum system, teaching methods and content of the specialty are in the exploratory stage, while the first batch of college students of the specialty have not yet entered the job, and the talent gap in this field in China will continue for some time.

3. Talent Training Mode of Intelligent Sports Engineering

3.1. Adhere to the Teaching Concept of Students' All-Round Development and Ability Output

While working to improve the talent training system of intelligent sports engineering and accelerate the development of this field, it is still the first priority to pay attention to the quality of talent training. In the training of intelligent sports engineering professionals, we should not only pay attention to the training of their professional knowledge, but also pay attention to the development of their ideological and moral quality, thinking innovation ability, personality and emotional concept, and physical quality. And as a talent receiving higher education, we should not only accept knowledge learning, but also pay attention to R&D innovation. The development of new engineering needs continuous innovation and reform. In talent training, we should pay attention to the educational concept of "ability output", in order to meet the requirements of new engineering professional education vigorously advocated by the country [6]. When cultivating talents of intelligent sports engineering specialty, we should pay attention to the teaching concept of the ability output of the engineering specialty and the teaching concept of the comprehensive development of students required by the conventional education. Only in this way can we improve the quality of training intelligent sports engineering talents.

3.2. Define the Training Level and Objectives of Intelligent Sports Engineering Professionals

3.2.1. Training Level of Intelligent Sports Engineering Professionals

Like other majors, the talent training level of intelligent sports engineering can be set as undergraduate and postgraduate levels, mainly undergraduate education. Undergraduate education talents are mainly targeted at the talent needs of enterprises, and graduate level talents are mainly targeted at the scientific research and innovation direction of intelligent sports engineering specialty, aiming at the scientific research talents required by intelligent sports engineering laboratories, scientific research institutes and other aspects. This hierarchical cultivation method can well solve the talent demand in the field of intelligent sports engineering industry and promote the innovation and sustainable development in this field. In terms of enrollment requirements, undergraduate students should pay attention to their abilities in physics. In addition to students majoring in intelligent sports engineering, computer information technology and similar majors in engineering can be transformed into intelligent sports engineering majors in graduate enrollment.

3.2.2. Define the Training Objectives of Intelligent Sports Engineering Talents

Clarifying the goal of talent training is an inevitable requirement for the high-quality development of intelligent sports engineering talents in colleges and universities. Based on the concept of paying attention to the all-round development of students, and guided by the national and social demand for intelligent sports engineering professionals, we focus on cultivating students' practical ability. While mastering the ability of this major, we can learn some interdisciplinary knowledge, pay attention to the cultivation of students' practical ability, and grasp the professional ability of artificial intelligence, and learn relevant interdisciplinary knowledge, Cultivate their ability to learn independently to achieve the goal of cultivating compound talents. As a result, students in this major can not only engage in the work related to intelligent sports, but also turn to the work related to big data, internet, computer technology, etc.

3.3. Create a Curriculum System with Practice as the Core and Interdisciplinary Integration

3.3.1. Cross-disciplinary Integration based on its Own Advantages

In terms of curriculum, colleges and universities should build a basic curriculum system based on their own advantages and integrate other professional courses required by other intelligent sports projects. Since the basic courses of all sports related majors in sports colleges and universities involve sports related courses, the relevant theoretical knowledge of computer science and information science can be integrated into the basic courses in the curriculum of intelligent sports engineering. If engineering colleges and universities offer sports engineering majors, they can integrate their strong computer majors, artificial intelligence majors and other similar fields with basic sports knowledge, and then build the relevant basic curriculum system of intelligent sports engineering majors. It should be noted that curriculum integration cannot be made into simple curriculum superposition, and curriculum system should be set up scientifically.

3.3.2. Form a Professional Curriculum System Focusing on Improving Innovation and Practice Ability

The field of intelligent sports engineering is mainly to solve practical problems, so we should focus on practice in the curriculum arrangement. In terms of curriculum practice, it can be divided into scientific research and practice. Innovative talents can be better trained through scientific research projects, and practical talents can be better trained through competitions. Institutions of higher learning have set up a complete training and guidance system for scientific research projects, regular competition activities, and relevant incentive measures to encourage students to love scientific research, have the spirit of scientific research, be good at innovation, and be willing to practice [7]. In addition, cultivating students' scientific research awareness from the undergraduate stage will help improve the basic ability of students at the graduate stage, and thus help promote the rapid development of the field of intelligent sports engineering. Internship is an important part of testing students' practical ability. The "3+1" model can be used to learn theoretical knowledge, practice and scientific research ability in the first three years of college. In the senior year, I began to practice in enterprises to strengthen students' practical operation ability and provide guarantee for future employment.

3.4. Establish a Cross-integrated Professional Teacher Team

3.4.1. Introduction of Talents in the Field Of Artificial Intelligence

Although the specialty of intelligent sports engineering is a newly opened specialty, as an interdisciplinary discipline, high-end talents in the field of artificial intelligence can be introduced. In short, intelligent sports engineering is to deeply integrate AI, virtual reality, cloud computing, Internet of Things and other technologies with sports, build sports big data based on sports related theories, study the laws of human movement in sports, build intelligent systems, use high-tech technology to improve athletes' sports ability, strengthen the scientific nature of mass fitness, and promote the development of sports industry, Therefore, cultivating AI talents and carrying out research in the field of sports is bound to be an important basis for the establishment of the professional teacher team of intelligent sports engineering. Professionals in the field of intelligent sports engineering need not only computer information technology but also corresponding sports knowledge and skills to apply relevant intelligent science and technology to sports. This also means that in the allocation of teachers, we should pay attention to the allocation of teachers in sports and artificial intelligence engineering technology at the same time. Most of the teachers in sports colleges are experts in the field of sports, while some engineering schools have rich professional teachers in engineering, computer science, information science and other high-tech fields. Therefore, through the cooperation between sports colleges and engineering universities, sports colleges and universities hire professional teachers of first-class engineering related to AI professional teaching to carry out teaching, which can effectively solve the problem of teacher strength, and the integration of the two fields is more conducive to the cultivation of intelligent sports engineering professionals.

3.4.2. Create a School-enterprise Integrated Double-division Team

School-enterprise cooperation is an important measure to make up for the lack of practical teaching and training experience of some college teachers. To this end, colleges and universities should actively introduce enterprise professionals with front-line practical experience to teach students practical skills as enterprise teachers. As an emerging discipline of "artificial intelligence+sports", intelligent sports engineering teachers also have the phenomenon of "strong theory, light practice". Therefore, when creating teaching methods, we should strengthen the cooperation between enterprises and universities, and employ senior professional technicians from intelligent sports engineering enterprises or artificial intelligence technology enterprises to train students' practical operation ability in universities. At the same time, students should also be actively organized to practice, train and visit relevant enterprises. This will enable students to better understand the professional employment orientation and contact the working atmosphere earlier. In addition, colleges and universities can strengthen cooperation with enterprises, sign agreements on joint talent cultivation and talent transfer, and strengthen students' practical operation ability with the help of relevant scientific and technological laboratories of enterprises.

3.5. Integrate Multiple Advantages and Cultivate People

Talent training cannot only rely on the internal education of schools. The government, schools and society should strengthen cooperation and open the training of intelligent sports engineering talents to allow more subjects to participate. According to the current situation of talent cultivation in China, some scholars have formulated the cultivation mode in the field of AI, and formed three modes of mutual cooperation through the cooperation of enterprises, universities and scientific

research institutions, and proposed that the talent cultivation mode of AI, as one of the emerging technologies, is representative to some extent. This model is also applicable to other emerging fields similar to AI [8-10]. Therefore, this research integrates this model in the talent training of intelligent sports engineering, and will help the talent training of universities and colleges with enterprises and scientific research institutions. Through the joint efforts of enterprises and universities to improve the training of students' practical operation ability, and through the joint efforts of universities and scientific research institutions to improve the training of students' scientific research quality, this way can gather the resources, information, platforms, technologies, etc. of all parties to jointly cultivate the talents required by the country. The collaborative training among the three can build a joint training network platform with the help of the Internet information platform. Enterprises and scientific research institutions can upload some actual cases and scientific research projects to the platform for students to learn. In addition, colleges and universities can share their teaching results with enterprises and scientific research institutions, and the three can not only achieve win-win results through mutual cooperation, At the same time, it can better train high-end intelligent sports engineering professionals for the country.

3.6. Construction of Talent Training Quality Evaluation System

In the era of information technology, new and high technologies are rapidly updated. As a kind of new and high technology, intelligent sports engineering will also change with the progress of society. Therefore, the cultivation of intelligent sports engineering professionals should also continue to evaluate the quality of training effect in the exploration, and then carry out continuous reform. Some scholars have divided the evaluation of talent training quality into two dimensions. First, evaluate the degree of achievement of the training objectives and the degree of satisfaction of the training objectives for the development needs of the industry; Second, evaluate the degree of achievement of students' graduation and the degree of conformity of graduation requirements to the training objectives. The process includes evaluation, analysis, improvement and continuous quality improvement. The talent evaluation system for intelligent sports engineering can also learn from this evaluation system. First of all, the school can set up relevant evaluation organizations to comprehensively evaluate the graduates' knowledge and skills, as well as the degree of conformity with the training objectives; Secondly, the university conducts a survey on the working ability, professional ability, environmental adaptability and other aspects of graduates by tracking and investigating the enterprises and institutions where the graduates practice or work; Third, we can also investigate the employment situation and treatment level of graduates and their parents. Carry out teaching reform through evaluation and feedback, and re-evaluate and re-reform in a continuous cycle to continuously improve the curriculum system for the training of intelligent sports engineering professionals in colleges and universities, keep pace with the times, constantly update the educational objectives to meet social needs, and continuously improve teaching methods to improve students' learning efficiency and professional level. Through the above methods, the quality of the training of intelligent sports engineering professionals in colleges and universities has risen spirally.

4. Strategies to Promote the Cultivation of Intelligent Sports Engineering Professionals

4.1. The Government Formulates Relevant Assistance Policies

The construction of intelligent sports engineering specialty needs corresponding teaching and experimental conditions and corresponding driving environment for project development. Therefore, the government should formulate relevant policies to help the construction of intelligent sports

engineering experiments and teaching facilities through financial allocations or special funds, encourage various industry associations and enterprises to actively connect with universities, provide practical operation support to universities, and encourage scientific research institutions to open laboratories to universities, Or jointly build corresponding laboratories with universities. In addition, the state should create scientific research projects in this field, increase fund projects in this field, and help scientific research in the field of intelligent sports engineering.

4.2. Carry Out Inter-school Experience Exchange

In the construction of intelligent sports engineering specialty in colleges and universities, colleges and universities should strengthen exchanges and share their successful experiences. Colleges and universities can learn and exchange with Beijing Sports University, which has set up intelligent sports engineering specialty, which has a certain perfect curriculum model and teaching system. In addition, colleges and universities can also choose some foreign universities with strong intelligence sports engineering majors to visit and exchange according to their own conditions. In this way, colleges and universities can complete their professional construction relatively efficiently. And through mutual experience exchange and problem discussion, it will be beneficial to the innovation and continuous improvement of the construction of the intelligent sports engineering specialty.

5. Conclusion

At present, the construction of the intelligence and engineering specialty in China's colleges and universities is still in the initial stage. Based on the national and social demand for intelligent sports engineering talents, the training mode of intelligent sports engineering talents in colleges and universities is proposed on the basis of the training mode of artificial intelligence talents. Through research, it is concluded that the cultivation of intelligent sports engineering professionals should focus on cultivating students' scientific research ability, innovation ability and practical ability; In addition, it is suggested that the government should formulate relevant policies to strengthen the hardware strength of intelligent sports engineering in colleges and universities, as well as the scientific research ability and the establishment experience between colleges and universities to promote the construction of intelligent sports engineering specialty. Due to the fact that there are few intelligent sports engineering majors in colleges and universities at present, this study lacks practical demonstration. On the basis of this study, we can conduct more in-depth research in combination with the current situation of the cultivation of students in this major in colleges and universities.

References

[1] Hou Qun, Qi Weimin. Exploration of the cultivation mode of artificial intelligence professionals integrated with industry and education. Modern Information Technology, 2019 (22): 183-186.
[2] Zheng Fang, Xu Weikang. Smart Sports in China: Rise, Development and Countermeasures, Sports Science, 2019, 39 (12): 14-24.
[3] Yang Kaifang, Ma Miao, Huang Cong. Overview of the development of intelligent sports engineering, Computer Technology and Development, 2021, 31 (3): 1-7.
[4] Bao Mingxiao, Qiu Xue, Wu San, Zhao Yilong. Several basic theoretical issues on accelerating the construction of a powerful sports country -- based on the report of the 19th CPC National Congress, the strategic issues of the overall development of sports are put forward, Journal of Beijing Sport University, 2018, 41 (02): 1-6+16.
[5] Cao Yu, Liu Zheng. The value, dilemma and countermeasures of AI application in sports, Sports Culture Guide, 2018, (11): 31-35.
[6] Wang Jin, Zhou Xiaobing, Pu Yuanyuan, etc. The exploration and practice of artificial intelligence talents training

mode oriented to capacity output_ Wang Jin, Computer Education, 2021, (4): 164-168.
[7] Cheng Keyang, Meng Chunyun, Zhan Yongzhao. Exploration of the new mode of "artificial intelligence+" talent training, Computer Education, 2019, (12): 68-71+75.
[8] Wang Lujin, Pei Ruimin. Research on artificial intelligence talent training mode based on industry- university-research cooperation _ Wang Lujin, Chinese scientific and technological talents, 2021, (4): 42-53.
[9] Cai Hongjuan. Exploration and practice of artificial intelligence talent training mode under the background of new engineering. Education and Teaching Forum, 2022, No. 591 (40): 107-110.
[10] Huang Beibei, Qian Xiaolong. Exploring the mystery of AI talent training in world-class universities -- A holistic analysis of Stanford University's AI talent training model. Tsinghua University Education Research, 2022, 43 (03): 33-41.