



Application Scenario of Artificial Intelligence Technology in Higher Education

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Abstract. Since the emergence of artificial intelligence, it has experienced more than 50 years of exploration and change, showing a vigorous vitality. Science and Technology Promote Industrial Revolution and Industrial Revolution Promote Educational Reform. With the continuous development of artificial intelligence technology, in order to comply with the actual needs of colleges and universities to train innovative talents and teach students in accordance with their aptitude, it is bound to be the general trend to apply artificial intelligence to higher education. This paper mainly analyses the current situation of AI development, designs the overall framework of AI technology integration in the field of higher education, and points out the future development direction of AI in combination with higher education, such as enhancing the application of virtual reality technology, personalized learning, assistant teaching, building intelligent cloud schools, etc., which provides a new way of thinking for the information construction of higher education.

Keywords: Artificial intelligence · Virtual reality technology · Personalized learning · Assistant teaching · Intelligent cloud school

1 Introduction

Artificial intelligence is a new technological science that studies and develops theories, methods, technologies and application systems for simulating, extending and expanding human intelligence [1]. Artificial intelligence mainly includes speech and image recognition, machine learning, in-depth learning, natural language processing, computer vision, data mining and expert systems [2]. With the continuous development of computer science and technology, artificial intelligence has gradually penetrated into production, health, medical, education, home and life. In the near future, artificial intelligence will bring us a new work and life experience. Because of the particularity and complexity of higher education, we should pay more attention to the effectiveness of personnel training and embody the core connotation of teaching students in accordance with their aptitude. In the field of higher education, it is urgent to solve the contradiction between the current situation of education and the advocacy of individualized education and teaching based on students' aptitude. Integrating artificial intelligence into higher education will be a new way to keep pace with the times and solve the problems.

2 Development of Artificial Intelligence Technology

The popular practical applications of AI are advanced machine learning software, such as search algorithm, behavior algorithm, intelligent voice assistant Siri and so on. In addition, the breakthrough of Tesla's driverless technology and the shock of Alpha Go's victory over the world Go champion are all important achievements of AI application in various industries [3].

In July 2017, the State Council issued the New Generation of Artificial Intelligence Development Plan, which regards the development of Artificial Intelligence as a long-term national strategic plan and provides policy support for the integration and innovation of Artificial Intelligence and higher education [4]. In April 2018, the Ministry of Education issued the Action Plan for Artificial Intelligence Innovation of Colleges and Universities, pointing out that by 2030, colleges and universities should become the core force of building the world's major AI innovation centers and the talent highland leading the development of a new generation of AI, providing scientific and technological support and talent guarantee for China to be among the forefront of innovative countries [5]. With the vigorous support of national policy, the integration of AI and higher education shows an inevitable trend, aiming at improving the efficiency and quality of education. The exploration of AI technology in the field of higher education is in the preliminary stage of practice, and has not yet formed a certain technological system structure. The country is also extremely short of technical talents with new ideas of AI. How to integrate AI with higher education perfectly, realize man-machine cooperation, stimulate students' in-depth learning, and ultimately realize individualized education based on the core idea of teaching students according to their aptitude is a big problem to be solved urgently.

3 The Overall Framework Design of Integration of AI and Higher Education

Integration and application of AI technology in higher education need to be driven by big data, cloud computing, mobile interconnection, Internet of Things, wearable technology, brain science and other major mainstream technologies, showing new features such as in-depth learning, intelligent analysis, human-computer collaboration, autonomous control and so on [6]. The application of AI in higher education can be summarized as four main aspects: teaching, learning, evaluation and management, As is shown in Fig. 1.

The specific objectives of AI and higher education integration are as follows:

- ① Provide a new education model for the teaching according to aptitude and innovative development of higher education, break through the limitations of traditional classroom, and realize free, open and mixed education.
- ② Achieve man-machine cooperation with university teachers as the core and artificial intelligence as the supplement. To reduce pressure and increase efficiency for teachers, avoid repeating simple work, and let teachers devote their energies to deeper education and teaching.

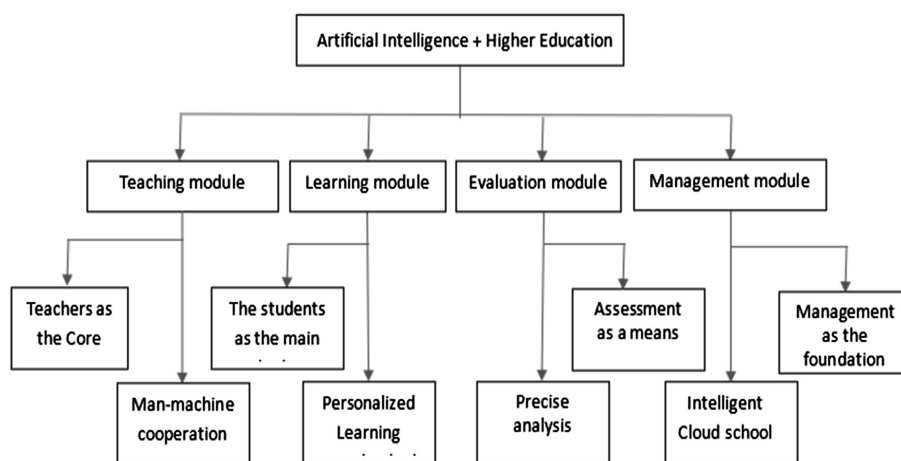


Fig. 1. Overall framework of integration of AI and higher education

- ③ In order to achieve the students as the main body, artificial intelligence assisted learning, teaching by learning, to achieve efficient and customized, personalized learning model.
- ④ By means of evaluation, the learning results are accurately analyzed by artificial intelligence algorithm, and the teaching is promoted by evaluation, and the process-based assessment method is implemented.
- ⑤ On the basis of intelligent management, Intelligent Cloud schools are constructed to realize integrated and energy-saving intelligent campus management. Breaking through the geographical restrictions and providing a digital cloud platform for the open and sharing of higher education resources, so that college students and even members of society can learn independently [7].

4 Research on the Application Scenario of AI in Higher Education

4.1 Application of Augmented Virtual Reality Technology in Practical Teaching Scene

As a popular high-tech field, virtual reality technology will be applied more and more widely. Its core principle is to construct a virtual three-dimensional space to achieve visual, auditory and tactile simulation, so that people can consciously feel like they are in the scene, in fact, all they experience are fictional scenes [8]. In many universities, due to the limited resources of professional laboratories, the high price of experimental hardware equipment and the huge number of students, students' professional experiments are limited by time, space and hardware equipment, and can not fully carry out professional practice. With the help of artificial intelligence, virtual reality technology

and cloud computing, we can simulate the experimental practice teaching scene, generate virtual teacher roles and virtual experimental equipment. Under the guidance of teachers, we can realize one-to-one intelligent practical teaching guidance, analysis and process evaluation, and construct an open virtual practice teaching cloud platform [9]. The limited experimental resources will be infinite, simulated, shared and equitable, so as to provide college students with on-line simulation experimental cloud platform environment at any time, and improve the efficiency and quality of professional practice teaching.

4.2 AI Realizes Self-adaptive Individual Learning Model

There are individual differences among college students, especially in logical thinking mode and learning method. The essence of education is to teach students in accordance with their aptitude. The value of AI lies in the self-adaptive personalized learning model. Through regular large data collection and algorithm analysis of College Students' learning behavior, describes their learning characteristics and mind map, so as to learn and teach, and adjust the learning content and progress adaptively. In addition, according to the real-time data analysis and results, teachers can achieve overall control of the students' situation, make more accurate teaching plans, focus on cultivating students' interest in learning, and break through and strengthen the bottlenecks and difficulties encountered by students. With the passage of time, the results of artificial intelligence analysis will become more accurate and intelligent, and gradually form a personalized learning model suitable for each college student, the learning effect will be more ideal [10].

4.3 AI Achieves Assistant Education Teaching + Precision Analysis and Evaluation

In the era of artificial intelligence, the profession of teacher can not be replaced, on the contrary, it is in the leading position of the core and teaches people in cooperation with artificial intelligence. Teachers use the assistant function of artificial intelligence to complete homework correction, test paper grading, teaching plan writing, artificial intelligence algorithm scheduling and course selection, etc. With the help of the efficient work of artificial intelligence, teachers should devote more energy to the individualized teaching of students [11]. At the same time, AI can also serve as teachers' personal learning assistant, and constantly improve teachers' professional level and professional ability. More importantly, with the help of artificial intelligence technology, the process-based assessment can be realized, and the exact and comprehensive assessment of college students is no longer based on the theory of scores.

4.4 AI Builds Smart Cloud School and One-Stop Platform University

As an independent individual, each university has a vast geographical location. By using the integration of artificial intelligence and Internet of Things technology, it connects the campus objects, covers all departments in the university, and constructs an intelligent cloud campus. In administrative affairs, the use of intelligent robots to assist

programmed office, to provide school management with convenient and intelligent business operations, streamline the personnel structure and number of schools, to meet the normal management of school affairs. In addition, through sharing educational clouds and connecting with each other, universities can break through the limitations of geographical location, realize the sharing of high-quality educational resources and exchange of experience, and truly realize a one-stop platform university.

4.5 AI Leads the Hybrid in-Depth Learning Model

The great change that artificial intelligence will bring to higher education is to provide a deep learning mode based on sharing, opening and mixing. It can provide two kinds of mixed learning modes of “online + offline” for college students (e.g. online learning, distance learning, on-site learning, etc.) and change the restraint and restriction of traditional classroom. Secondly, according to the big data mining technology, simulate the thinking track of human brain, excavate the deep learning ability of College students, stimulate the inherent potential of students, and cultivate more excellent innovative talents.

5 Conclusion

Artificial intelligence technology is the symbol of the new era of industrial revolution. There are infinite possibilities in the field of higher education in the future. It is a process of sustainable development to realize the integration and innovation of the two. However, there is still a long way to go. If we want to return to the essence of education and realize teaching according to aptitude, we need to deal with the deep relationship between artificial intelligence and higher education. Similarly, the government, universities, enterprises and all sectors of society should work together. I believe that in the near future, the era of artificial intelligence will come, which will bring new impetus and comprehensive development to higher education.

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