Smart Education -- The Necessity And Prospect Of Big Data Mining And Artificial Intelligence Technology In Art Education

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Abstract: smart education refers to a new education form and education mode relying on Internet technology, big data mining, artificial intelligence (AI) technology and mobile communication technology to realize online, platform, convenient, modular, accurate, and even mobile and fragmented learning knowledge and skills. This is a big trend. The education form of traditional art colleges is old-fashioned, conservative and lack of innovative means to adapt to it. It is imperative to improve the guidance, systematicness and convenience of art education curriculum by using new technology and new means. However, it is not very beneficial to simply transfer the curriculum and teaching materials under the offline learning mode to the Internet for all art students. Therefore, we put forward the concept and Prospect of "smart education". In short, smart education is the comprehensive development and utilization of online education platform, knowledge base, artificial intelligence (AI) and big data mining technology.

Keywords: Intelligent Education; Artificial Intelligence (AI); Big Data Mining Technology; Art Education;

1. Introduction
In recent years, the "Internet plus traditional industry" mode has developed rapidly, relying on the advantages of the Internet, and the progress of broadband network transmission and mobile communication technology, has promoted the upgrading and transformation of traditional modes in various industries, and promoted the innovation and development of the whole society and the whole industry. Under this background, "Internet plus education" came into being. The integration of Internet and education is a new form of education. Traditional art education institutions, large and medium-sized art colleges and universities are mostly combined with audio-visual education system, multimedia system, the use of high-quality courses on demand to achieve the sharing of educational
resources. However, in the traditional teaching mode of art colleges and universities, although it pays attention to the accumulation of curriculum resources, there are still too stylized and patterned teaching, with single form and small radiation. For the demonstration link which emphasizes practice, it only stays at the technical level. For the related knowledge points around stimulating related interdisciplinary, it is unable to realize the connection and sharing of knowledge points. In order to learn more about the regularity of art creation, making use of the advantages of high bandwidth of mobile network and being online at any time, artificial intelligence, big data and cloud computing technology are used to assist teaching, so as to realize the online, convenient, grid, precise, and even mobile and fragmented learning knowledge and skills. This is an upgrade and exploration of the existing online art education platform, It is also a subversive challenge to the traditional audio-visual education.

2. Brief Introduction of "Smart Education" and Analysis of the Current Situation of Online Education

The core of smart education is online education. In recent years, with the rapid development of Internet technology, online education has creatively realized a lot of new education methods, which has led to a lot of thinking about new education concepts.

The autonomy of learning behavior: to achieve any time, any place, any way, anytime and anywhere to choose their own need to learn any knowledge point.

Maximize the use of resources: live learning can be real-time, important basic knowledge points can also be recorded and broadcast teaching. We can learn it over and over again, and we can also choose the key points to learn. We can avoid repeating and wasting resources and time.

Interactive learning: learning and communication channels can be established by grouping and grouping according to knowledge points, online discussion and collaboration can be achieved.

However, although the current online education also has many deficiencies. For example, a mainstream online cloud classroom is an online practical skills learning platform created by a famous portal website. The classroom platform mainly provides learners with massive and high-quality courses. Users can arrange their own learning progress according to their own learning level. In addition to art education courses, it also covers more than ten categories, such as practical software, it and Internet, foreign language learning, life and home, interests and hobbies, professional skills, financial management, examination and certification, primary and secondary schools, parent-child education and so on.

The content is complex and extensive, and lacks the systematicness and depth of teaching, which reflects the lack of teaching experience and professionalism, and the quality of teachers can not be guaranteed.

The continuity of the course is not good, it can not be carried out continuously and stably, and the students' learning situation should be feedback and evaluated.

Classroom should not stay in the establishment of a curriculum library, but should be tracked and assisted according to students' personalized learning, which is the closed loop of effective learning process.

Communication and Q & A cannot be timely and accurate.

Lack of collaborative practice, operation courses.

In addition to the limited interaction of live broadcast courses, art courses such as painting need timely and close interaction scenes, which can not achieve real-time demonstration and communication at present.

Based on the above problems, through AI assisted and speech recognition technology, combined with big data mining technology, students' voice narration can be achieved. Artificial intelligence can recommend courses to students through matching big data platform, and even can accurately push knowledge video clips to students as needed, just like looking up a dictionary. In order to do this, teachers only need to record the course according to the original recording mode without interruption.
The backstage platform uses the blockchain technology of artificial intelligence, the video analysis and processing technology of artificial intelligence and the automatic shooting process, automatically and non artificially intervenes to set up labels for video segments, establish feature codes, establish keyword indexes, and establish segmented knowledge point index database and knowledge base. Moreover, with the accumulation of data, the background platform can even establish a feature code for each student, establish a personalized learning path for each student, analyze knowledge points, and draw the outline of the student's own knowledge base, so as to establish a complete knowledge point skill tree of students. In this way, the recommended courses and Q & A interaction can be more accurately matched, and personalized matching can be made more accurately.

3. Application of Artificial Intelligence and Big Data Mining Technology in Art Education Curriculum

For art education courses, the traditional online education courses on demand, communication, interaction, Q & A, demonstration, especially for art students, demonstration and interaction are particularly important. On the existing online education platform, it is unrealistic to solve a large number of feedback problems one by one manually, and the time of live class is fixed, and only limited interaction can be done, and the advantage of time freedom of live class cannot be exerted. Then the solution to this problem is to establish big data and accumulate problem database, which can be realized through targeted problem index, matching demonstration and communication video. It can even be achieved that virtual artificial intelligence assistants can be created according to their preferences for the parts of courses, skills and skills demonstration that are not recorded in the knowledge base, or in interdisciplinary and overlapping fields, such as Microsoft's Cortana, Apple's Siri, etc., to decompose and recombine knowledge points and establish new courses in the knowledge base.

Since it's smart education, online classroom must first of all be assisted learning certain skills. How to obtain knowledge in the shortest time and with the highest efficiency, and how to make teachers have strong will and enthusiasm to create high-quality teaching courses and achieve maximum communication are the problems that need to be solved urgently by using artificial intelligence and big data in this online education mode of intelligent education.

Artificial intelligence, abbreviated as AI. It is a new technology science to research and develop the theory, method, technology and application system for simulating, extending and extending human intelligence. Artificial intelligence is a branch of computer science. It attempts to understand the essence of intelligence and produce a new kind of intelligent machine which can respond in a similar way to human intelligence. The research in this field includes robot, language recognition, image recognition, natural language processing and expert system. Since the birth of artificial intelligence, the theory and technology are increasingly mature, and the application fields are also expanding. It can be imagined that the scientific and technological products brought by artificial intelligence in the future will be the "container" of human intelligence. Artificial intelligence can simulate the information process of people's consciousness and thinking. Artificial intelligence is not human intelligence, but it can think like human beings and may surpass human intelligence. Artificial intelligence is a challenging science. People engaged in this work must know computer knowledge, psychology and philosophy. Artificial intelligence is a very wide range of science, it is composed of different fields, such as machine learning, computer vision and so on. In general, one of the main goals of artificial intelligence research is to make the machine competent for some complex work which usually needs human intelligence to complete.

Data mining refers to the process of searching hidden information from a large number of data through algorithms. Data mining is usually related to computer science, and achieves the above goals through statistics, online analysis and processing, information retrieval, machine learning, expert system (relying on past experience) and pattern recognition. It plays a very important role in the education system. The process composition is shown in the following Figure 1.
Figure 1. The process composition

Data mining combines artificial intelligence technology, cloud computing technology, statistics, machine learning, visual database technology and information retrieval technology from a new perspective, and integrates their own characteristics, so as to obtain new and deeper knowledge from data.

According to the technical architecture, the big data processing platform can be divided into four layers: data acquisition layer, data storage layer, data processing layer, service sub packaging layer, and two modules running through all levels of big data blowing platform: data security and implicit protection module.

Figure 2. Big data processing architecture
Combined with the advantages of online education, art colleges and universities can guarantee the quality, professionalism, systematicness and continuity of courses. At present, we need to establish personalized knowledge base of various colleges and universities with the help of new Internet technology, artificial intelligence and big data platform, so as to accurately connect and trigger the needs of students, customize personalized courses and modularize knowledge points. For example, if students need to understand the green techniques of Chinese landscape painting, they can input the key words: "green techniques" by voice to present the relevant demonstration videos. Through the analysis of students' individual factors by artificial intelligence, we can make learning plans for students, help students decompose learning tasks, determine learning objectives, and then improve learning efficiency.

4. Conclusion
With the rapid development of traditional education mode to information technology in art colleges, the mode of education informatization and online strongly impacts on the traditional teaching mode and education concept. Educational informatization is a very important driving force and supporting force in educational reform. Online education and intelligent application of artificial intelligence technology and big data mining technology are strategic and forward-looking for the informatization of art education.

The Internet plus era, with online education and massive accumulation of data, uses artificial intelligence and big data mining technology to build knowledge base and intelligent online intelligent education platform, targeted personalized teaching, data driven standardized evaluation, interest, knowledge, prediction, statistics, efficient learning, guidance, interaction, and intelligent assistance. Teaching is the inevitable trend of education development.
Reference

[1] Liu Yu, editor in chief; Ni Wenyin, deputy editor in chief; Bian naizheng, chief editor. Twenty years of development of Chinese network culture (1994-2014). Network technology: Hunan University Press, 2014.11: page 150

[2] Yang Liangbin, information analysis method and practice: Northeast Normal University Press, January 2017: page 213

[3] Liu Jun, Yan Fang, Yang Xi. Integration of Internet of things and logistics management and control: China Fortune publishing house, April 2017: page 431

[4] Liu Qi et al: Research on educational data mining technology for online intelligent learning. Zhang zenglian. Research on university financial analysis, evaluation and management based on non-profit, data mining and scientific management: Capital University of economics and trade press, 2014.05: page 70

[5] Wang Guiqin, ecliptic. Review of data mining technology [C] proceedings of the 18th National Conference on computer technology and application, 2007

[6] Aminer.org Data mining in artificial intelligence, issue 1, 2019, P. 75

[7] Jiawaihan, Micheline kamber, Jian Pei, et al. Data mining: concepts and technologies [M]. China Machine Press, 2012

[8] Liu Jun, Yan Fang, Yang Xi. Integration of Internet of things and logistics management and control: China Fortune publishing house, April 2017: page 431