Educational Application and Innovation of Machine Learning from the Perspective of Artificial Intelligence

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Abstract: Artificial intelligence plays an important role in the development of the future society. Education is the main way to improve the overall quality of human beings, help us acquire knowledge and experience, understand the world, and transform the world to promote healthy growth of human beings. The application and development of artificial intelligence in the education industry is an inevitable requirement of the development of the times. This paper focuses on the application and innovation of machine learning in the field of modern education.

1. Introduction

With the advent of machine learning technology and the development of computer and Internet technologies, the intelligent technology of robots has developed rapidly. The education industry is one of the important application areas of artificial intelligence, using the powerful information and data processing capabilities of the robot itself, analyzing capabilities, and providing assistance for the development of the education industry. Intelligent robots must function like humans and machine learning is the key for learning is the symbol of robots moving towards intelligence and the core technology of artificial intelligence. This paper introduces the definition of machine learning, the integration of machine learning and modern education, and its application and development in modern education.

2. Development process of artificial intelligence

The development of artificial intelligence is roughly divided into three processes, as shown in figure 1: Development of artificial intelligence, that is, the initial operation phase of the program code, the machine learning phase, and the deep learning phase. The first is to execute the operation phase according to the program code. The robot at this stage performs the task in the order of the preset program instructions. The robots at this stage are the main force of modern manufacturing systems. Many current manufacturing companies use this primary robot to replace human operations, improve production efficiency, reduce costs, and promote the development of mechanical automation technology.

The second one is machine learning. Modern manufacturing system is a flexible manufacturing system, and many enterprise processing products need to adapt to the production and processing of different varieties, different shapes and different stations. This requires the robot to automatically adapt to different environments, through the learning function, automatically change the station and the robot arm to produce different types of products.

The third phrase is the deep learning phrase, that is, the robot, like human beings, can improve its performance by learning, and can independently think about problems and solve problems. A typical example is the chess war between man and robot. In the confrontation between humans and robots, robots have the upper hand, which is also the result of deep learning of robots. It can be seen that machine learning is the core technology of artificial intelligence and an important indicator for robots to move toward intelligence.
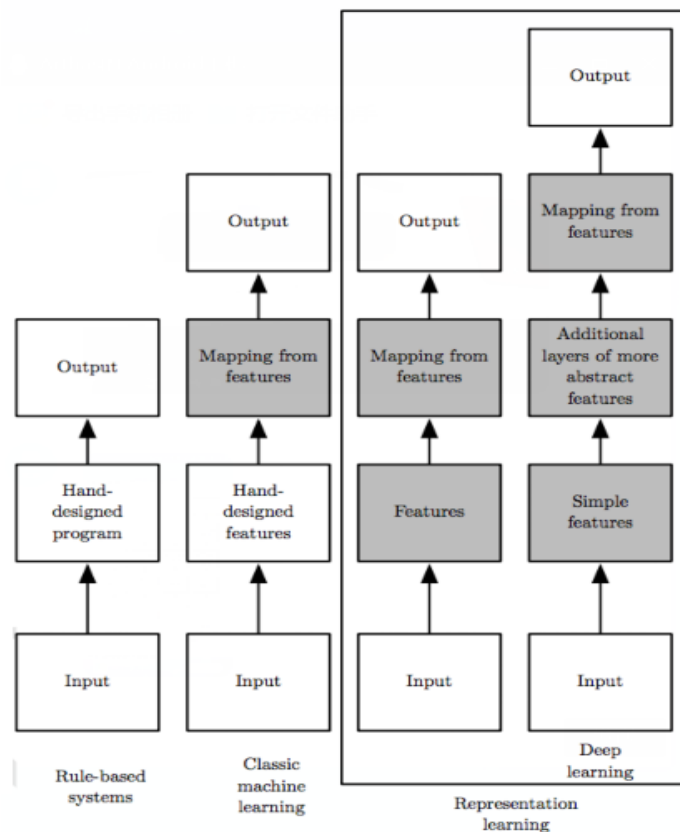
Figure 1. Development of artificial intelligence

3. Development of machine learning in the field of modern education

3.1 Significance of machine learning for modern teaching

With the development of science and technology and the popularization of computer and information technology, intelligent modern teaching methods have gradually developed. It's known that the traditional teaching mode is too mechanical, and the intelligent teaching mode breaks the shackles of the traditional teaching mode, using the network and artificial intelligence to provide students with specialized and personalized teaching services.

This kind of intelligent teaching service can predict students' learning status according to different characteristics of students, and find out ways to improve their learning ability. Intelligent teaching is a new mode of modern teaching. In the broad sense, machine learning analyzes a large amount of data, finds the law and optimizes its performance. The characteristics of machine learning meet the requirements of the development of intelligent education. Through machine learning, students can automatically construct data information models of students. And after analysis, it provides customized education services for students. Therefore, machine learning is an important means to realize intelligent teaching [1].

3.2 Process of applying machine learning to modern education

The application of machine learning in modern education mainly includes the following aspects: First, data collection. Machine learning applied to modern education is mainly aimed at educational data information, including student information, teaching information, that is, all information data of the teaching activities. Second, data processing. The most important feature of artificial intelligence is that the data collection and processing speed is faster, which is impossible to achieve by traditional education. Through the analysis of these information and data, new educational methods are generated. For example, after analyzing the students' learning methods, the degree of knowledge, and the learning habits, the teachers are provided with new teaching plans, innovative and optimized

teaching methods, etc., thus helping teachers improve the efficiency of teaching and improve students' learning ability. Third, the recommended program. After the data collection, analysis and processing, the machine automatically recommends the teaching program for the teacher. And the program is used for the customized teaching of students to improve student performance [2].

4. Application process of machine learning in the field of modern education

As shown in Figure 2. Application of machine learning in modern education, machine learning has developed rapidly in the field of modern intelligent education through six application modules:
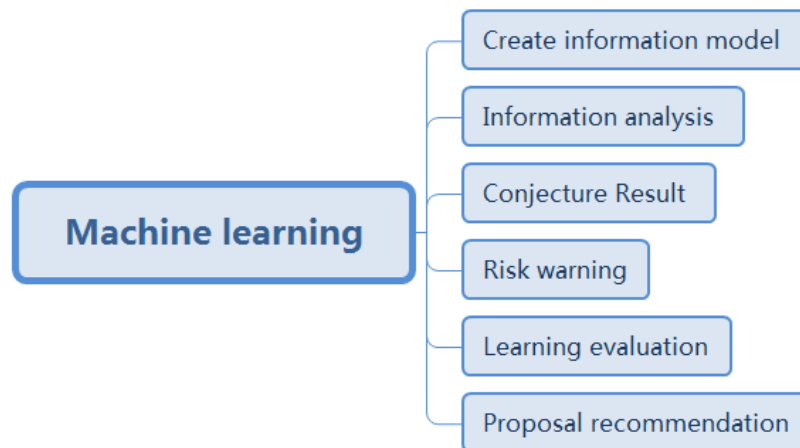

Figure 2. Application of machine learning in modern education

4.1 Create an information model

Creating an information data model is the first step in the application of machine learning in the field of education. By collecting student data information and teaching information, the original data model is established, information is collected dynamically in real time, and the data model unit is maintained and updated. The model includes students' study habits, daily performance, usual grades, class attention, active learning ability, etc. The data model can reflect all the student's learning activities and provide original opinions to the teacher for reference when the teacher evaluates the students [3].

4.2 Information analysis

Information analysis and evaluation refers to the process of analyzing and evaluating the data collected by the information model. The information collected by the information model covers many aspects, and the data information must be analyzed and evaluated to obtain accurate learning status of students.

4.3 Conjecture results

Based on the results of model data analysis and evaluation, students are expected to learn possible future learning outcomes. For example, students' academic performance, comprehensive quality, intellectual level, learning efficiency, and digestion time of new knowledge can be treated as quantified data indicators. The conjecture results can also be used to predict the student's college entrance examination scores, essay scores, mastery of various types of questions, and so on.

4.4 Risk warning

Based on the conjecture results, we can understand the students' academic performance, learning status, including emotional changes, and provide early warnings on these results. For example, according to the current student's learning status, the student can only be admitted to a third collage.

The students can be given an early warning and he will be reminded students to work hard. Another example is that if the students have very poor learning status and have the risk of dropping out of school, and it is difficult to complete their studies according to the current state of development, teachers, parents, and students can be reminded to take measures in advance to avoid further deterioration of the problem.

4.5 Learning evaluation

Learning evaluation is a comprehensive evaluation of the current student's learning status. Based on the evaluation results, artificial intelligence automatically finds the corresponding plan. Evaluation is the premise for the students to customize the service. And according to the evaluation results, the the computer automatic evaluates program and recommends the education program for the next step.

4.6 Proposal recommendation

The proposal recommendation is that the robot recommends the special education service to the students according to the results of the previous evaluation. This service is highly targeted. For example, the result of our evaluation is that there is a gap between the scores of a student's college entrance examination and the first-batch scores. The robot automatically recommends the solution and predicts the student's academic performance of the new program to achieve satisfactory results for the students.

5. Application and innovation of machine learning in higher education

Machine learning has played a very important role in the field of education, improving the quality of teaching and promoting the development of intelligent education. Machine learning has innovative applications in all stages of education in China. The following describes its innovation and development in the field of higher education.

The innovative application of machine learning in colleges and universities mainly includes the following aspects: First, identity authentication and encryption. Today's society is a highly information society, the Internet is highly developed, and the identity of students' information is very important on the network. Once our information is leaked, it will bring immeasurable consequences. Machine learning can help us verify identity through data analysis and prevent the disclosure of identity information caused by hacker attacks. Second, admission management. Throughout the process of entering the university, from filling out the volunteering, to the release of the college entrance examination results, and then to be admitted to the school, machine learning can use strong data collection and tracking capabilities to ensure that quality students can successfully enter their ideal school. Third, student evaluation. Machine learning through the comprehensive evaluation of college students during school, can predict the future development of students, and recommend suitable positions. This application also provides an effective way for enterprises to select outstanding talents.

6. Conclusion

Machine learning is the core technology of artificial intelligence. In the current intelligent education process, machine learning uses its own characteristics and advantages to provide specific and customized education services for students, including creating information model, information analysis, conjecture result, risk warning, learning evacuation and proposal recommendation. Artificial intelligence and modern teaching are integrated and mutually promoted, and their future development prospects will be broader.

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